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Short Communication

A Participatory Approach to Strengthening Health Emergency Response Capacity for Landslide Disasters in Genilangit Village, Magetan Regency

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ABSTRACT

Geni Langit Village in Magetan Regency's Kartoharjo District has been named a Disaster Resilient Village (*Destana*). However, due to poor coordination, a lack of an emergency command structure, and little training and simulation, its ability to manage health emergencies is still restricted. Thirty people participated in the community service project, which used a Participatory Action Research (PAR) methodology. Four objectives emerged from the identification of needs: generating a risk and vulnerability map, updating health vulnerability data, building a command structure, and drafting a contingency plan. Thirty training hours (JPL) of intensive training were completed over the course of four days. The average pre-test score of 66.67 rose to 80.33 in the post-test, but after a month, it dropped to 77.6, suggesting difficulties in retaining the information. There was a high level of participation, with more than 62.38% of responses in the excellent category. Discussion participation and problem-identification abilities continued to show weaknesses. Reflection revealed that while engagement was comparatively high, material comprehension and practical abilities fell into the moderate range. Although the PAR intervention was successful in raising involvement and knowledge, retention tactics must be strengthened if the effects are to be sustained. While active participation is important, problem analysis and conversation need to be improved. The village administration is dedicated to using the village budget (APBDes) for regular simulations, outreach, and evacuation facilities. In addition to establishing partnerships with health and disaster management organizations, the *Destana* Forum has decided to make the training a regular biennial event.

Keywords: Empowerment; capacity; crisis; health; disaster

1. INTRODUCTION

Disaster management in Indonesia remains dominated by the emergency response and recovery phases, while aspects of prevention, mitigation, and preparedness have not received optimal attention.[1,2] This paradigm has resulted in low community preparedness for facing health crises caused by disasters, including in Genilangit Village, Magetan Regency.

Genilangit Village is a mountainous area prone to landslides due to its steep topography and high rainfall.

Although the village possesses various institutional assets—such as the Disaster-Resilient Village Forum, PKK (Family Welfare Empowerment), Karang Taruna (Youth Organization), Linmas (Civil Defense), the Alert Village Forum, BUMDes (Village-Owned Enterprises), and the village government—these capacities have not been optimally integrated into disaster-related health crisis management.[3] Persistent challenges include limited capabilities in conducting Rapid Health Assessments, victim triage and evacuation, ineffective cross-sector coordination, slow emergency responses, and the absence of an integrated command system. Furthermore, contingency plan documents require updating, past simulations have not focused on health crises, and public outreach remains limited.

A history of recurring landslides indicates a high disaster risk in Genilangit Village. Therefore, capacity strengthening is required through the development of risk assessments and health crisis risk maps, the updating of contingency plans, improved cross-sector coordination, regular simulations, the provision of adequate funding, and public education to enhance preparedness.[4] Previous research also indicates that disaster-resilient villages still face obstacles regarding resource mobilization, early warning systems, the drafting of contingency documents, the formation of rapid assessment teams, and the provision of disaster management budgets.[5]

Given these conditions, the proposed solution is to empower community capacity through the Participatory Rural Appraisal (PRA) approach. This activity involves all village stakeholders in training on the preparation of health crisis response documents, contingency plans, emergency operation plans, rapid health assessments, evacuation and casualty triage techniques, and emergency sanitation in evacuation sites. This approach is expected to enhance community resilience and create a village resilient to disaster-related health crises, aligning with the transformation of the national health resilience system.

2. METHODS

Participatory Rural Appraisal (PRA) is an approach used to involve the community in the decision-making and development planning process at the local level.[6] This approach emphasizes the community's active participation in identifying problems, developing solutions, and implementing development programs. The implementation strategy of the PRA method begins with identifying the parties involved in the activity, aligning perceptions through an initial coordination meeting, using participatory tools to gather ideas and information from the community, jointly analyzing the collected data and ensuring that the community's perspective is recognized and understood in data interpretation, joint planning and implementation, ongoing evaluation and monitoring, as well as acknowledgment and dissemination of results.[7] In addition, PRA is a process to increase community capacity and independence that combines community knowledge with a scientific perspective so that the solutions obtained are more contextual. In decision making, community participation is very necessary, not just attendance at activities and researchers as facilitators only facilitate the decision-making process.

3. RESULTS

3.1 Community Service Implementation

Needs identification

The results of the community service activities are presented based on the stages of the community service activities (Figure 1). The results of the activities are presented below in accordance with the sequence of these stages in Figure 1. Through the results of group discussions and participatory mapping involving the community, it was found that the village does not yet have an up-to-date document or map related to health vulnerability. In addition, there is no defined command structure to handle emergencies related to disaster health crises. This situation results in: 1) Pre-crisis mitigation being undirected, 2) Delayed emergency response, 3) Health services for the affected community not being timely, 4) Unclear division of responsibilities. This condition explains the importance of strengthening community capacity through a participatory and collaborative method. Through brainwriting techniques and group discussions with the Genilangit Destana FPRB (Disaster Risk Reduction Forum) on 19, 21, and 23 May 2026, several urgent needs were identified that must be met immediately to improve preparedness and response to health crises in the village. The results of the discussion were as follows:

a. The need to establish a command structure to handle disaster health crisis emergencies.
b. The need to establish a command structure to handle disaster health crisis emergencies.

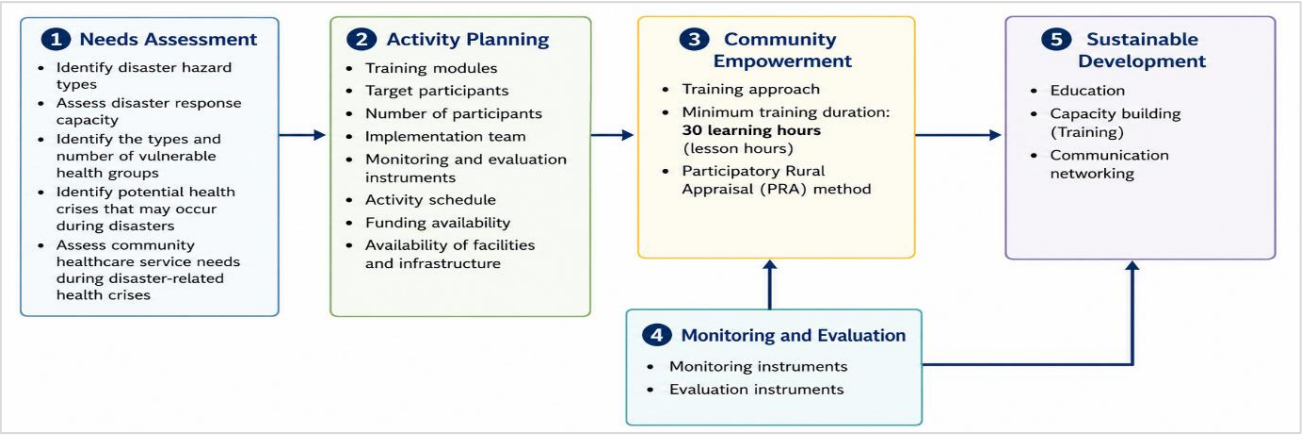


Figure 1. Implementation strategy of the solution to the partner village's problems

c. The importance of preparing a contingency plan document for disaster health crises as a guideline for facing emergency situations.
d. Updating the disaster management plan document to align with current conditions.
e. Strengthening logistics for food and non-food needs to support the basic needs of affected residents.
f. Capacity training in handling disaster victims for volunteers and health workers.
g. Standardization of evacuation site locations to meet health, security, and comfort criteria.
h. Updating data on health vulnerability as a basis for intervention planning.
i. Preparation of risk maps for areas experiencing health crises and vulnerability maps to clarify vulnerable locations.
j. Conducting emergency response simulations as a training tool to improve community preparedness.

Based on the nine identified needs, priorities were then set by considering the level of impact and urgency, which were then grouped into the following four quadrants. Based on the results of the urgency level and impact magnitude analysis, several needs emerged as top priorities for immediate follow-up (Figure 2), namely:

a. Establishment of a command structure for disaster health crisis emergency management to clarify coordination and the implementation of emergency response.
b. Preparation of a Disaster Health Crisis Contingency Plan document as a guideline for facing emergency conditions.
c. Updating health vulnerability data as a basis for

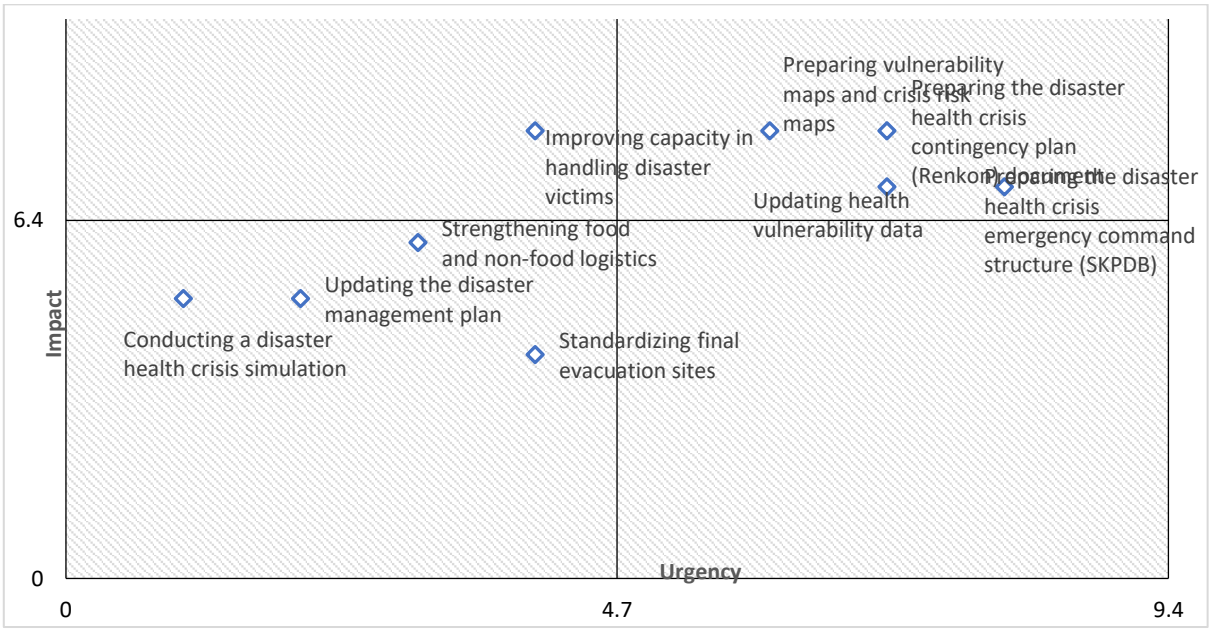


Figure 2. Priority needs for capacity strengthening

planning and determining well-targeted interventions.

d. Preparation of health crisis risk maps and area vulnerability maps to identify and clarify areas with high risk levels.

Activity planning

Activity planning was carried out participatorily, involving 30 participants. The results of the meeting agreed that the empowerment program would be carried out through intensive training using the Participatory Action Research (PAR) approach over four days, with a total learning load of 30 lesson hours (JPL).

Observation results

The training was conducted over four days and attended by 30 participants from the Genilangit Village Disaster Risk Reduction Forum (FPRB). The training material was delivered based on a jointly developed module, using a combination of interactive lectures, group discussions, assignments, and hands-on map-preparation practice. Facilitators consisted of a service team from the university and representatives from the Magetan Regency PRB Forum.

a. Increase in partners' capacity in understanding the material

Figure 3. The results of the training to increase partners' capacity in understanding show that participants' pre-test scores averaged 66.67, with a score range of 20–85, indicating that participants' initial knowledge was relatively good although there was still variation in ability. After the training, the average post-test score increased to 80.33, with a range of 50–100, indicating that the intervention provided a significant increase in understanding for almost all participants. Evaluation one month after the training showed an average score of 77.6, with a range of 48–97. Although there was a decrease compared to the post-test results, the score was still higher than the pre-test, indicating that the training had a positive impact on increasing knowledge. Nevertheless, these results also indicate the need for a follow-up strategy to maintain participants' long-term knowledge retention.

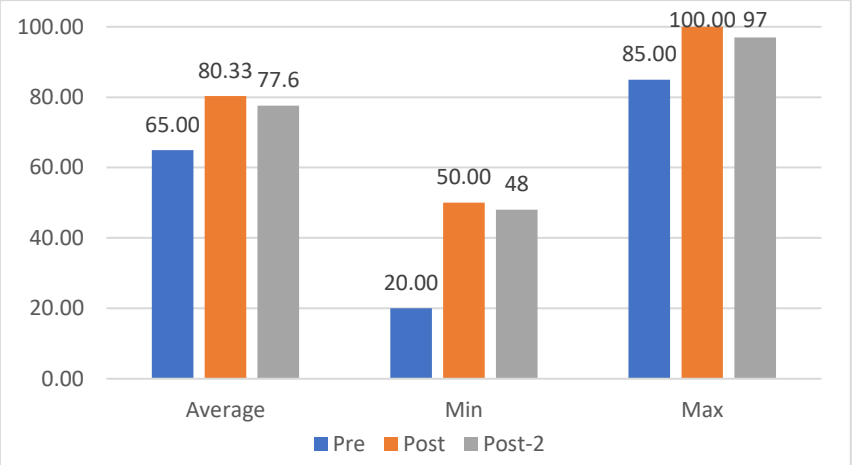


Figure 3. Results of increased partner capacity in understanding the material

b. Participant participation in the implementation of community service

The level of participant participation during the implementation of Community Service was classified as high. Evaluation results show that more than 62.38% of the 13 assessment indicators fell into the very good category, around 31.19% fell into the good category, and the remainder fell into the fair category. These findings indicate that most participants actively participated in every stage of the activity. Nevertheless, there are still several aspects that need improvement, particularly involvement in group discussions, active participation in asking questions, and the ability to identify problems. Overall, the results from the 30 participants show that participation went well, although strengthening these aspects is needed so that participant involvement becomes more optimal and even. The results of the participant participation assessment are presented in Figure 4.

c. Availability of a disaster health crisis risk map for Genilangit village

Discussions with the community yielded a landslide risk map, as shown in Figure 5 below. The risk map indicates that Neighborhood Units (RT) 19 and 20 are the two areas at high risk.

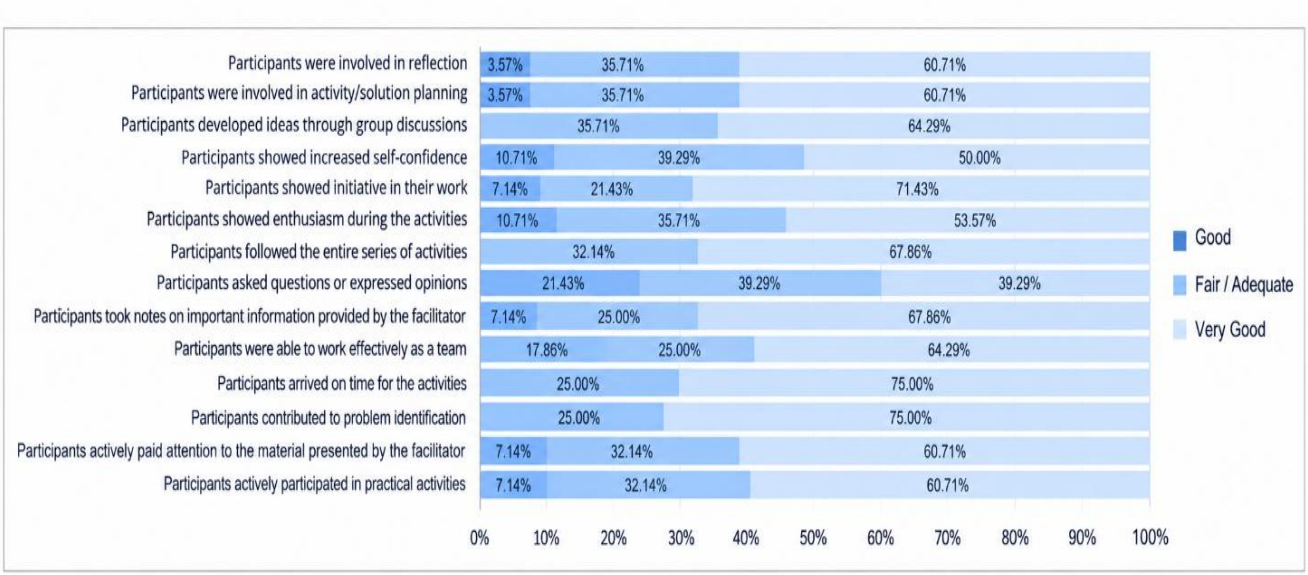


Figure 4. Results of community participation assessment

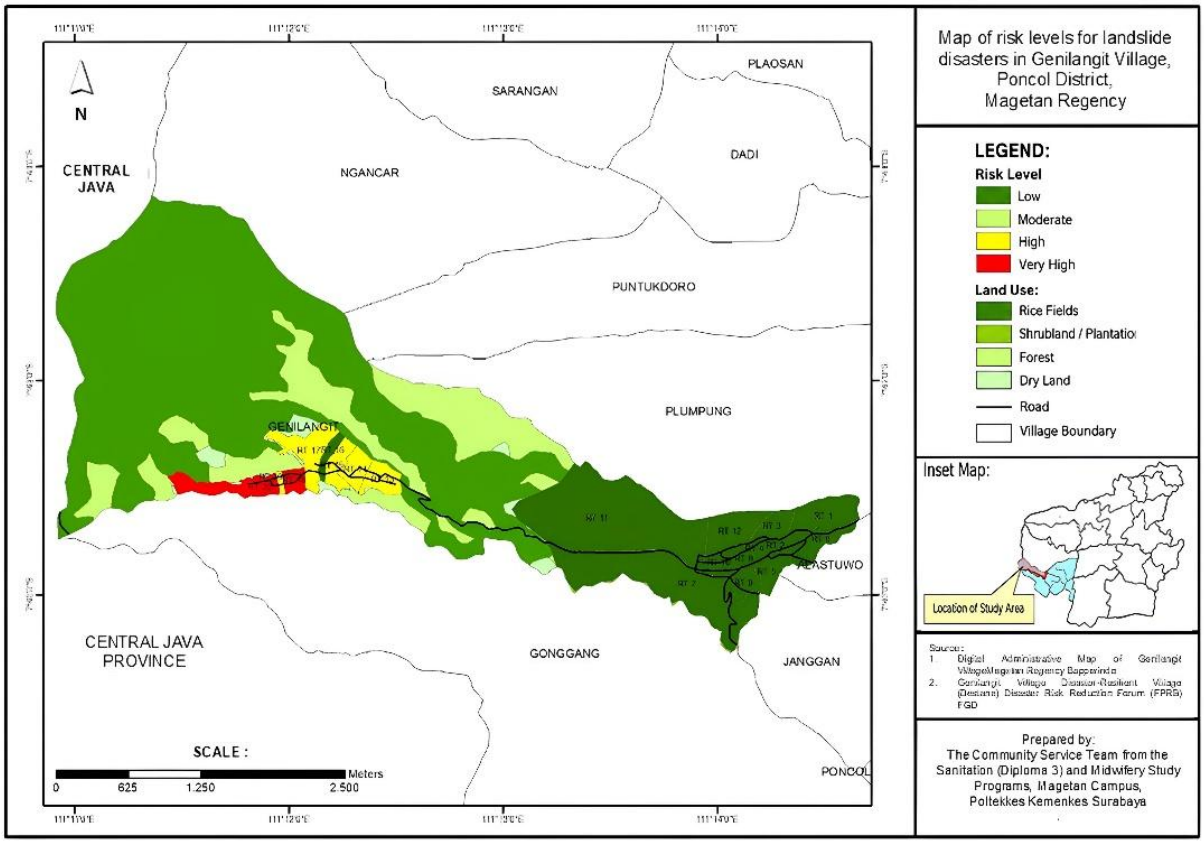


Figure 5. Map of risk for landslide in Genilangit Village

d. Availability of a village disaster health crisis emergency management command structure

The village disaster health crisis emergency management command structure of Genilangit Village was established by Decree of the Head of Genilangit Village Number: 188/33/Kept/403.401.5/5/2026 dated 29 May 2026, with the following structure in Figure 6.

3.2 Reflection Results

Figure 7. On the material comprehension aspect, out of 12 questions, participants' scores ranged from 36 to 60, with an average of 44. This indicates that most participants already understood the material well, but still fall within the moderate comprehension category, so further deepening is still needed. For practical skills, out

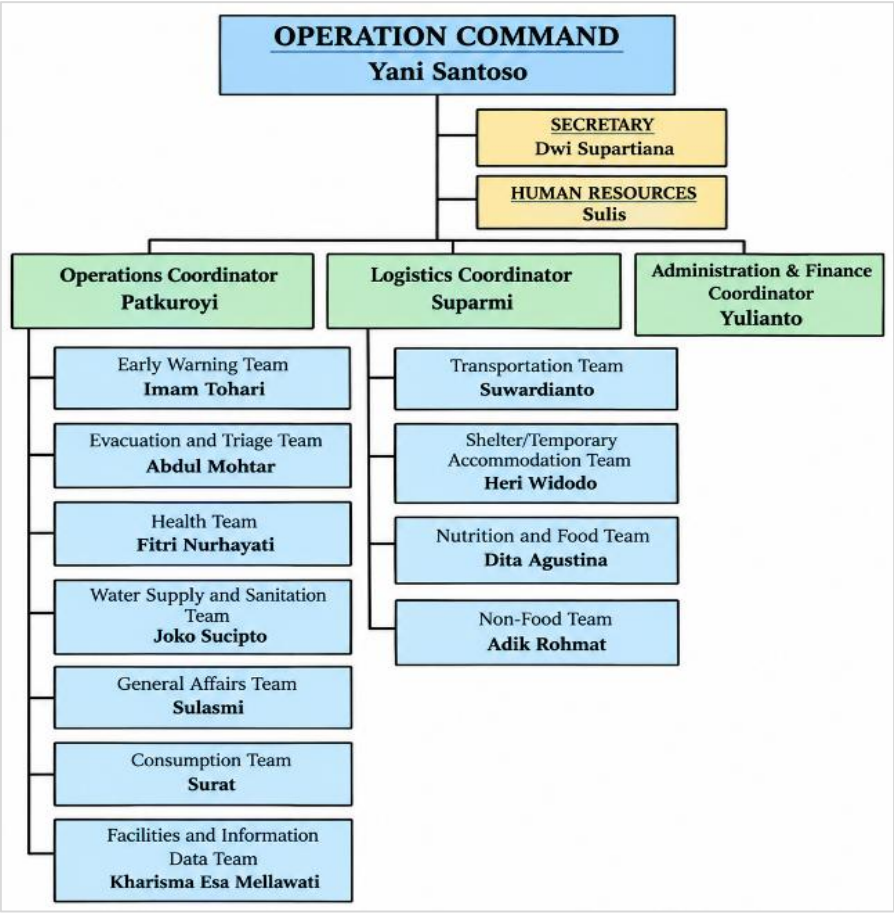


Figure 6. The village disaster health crisis emergency management command structure of Genilangit Village

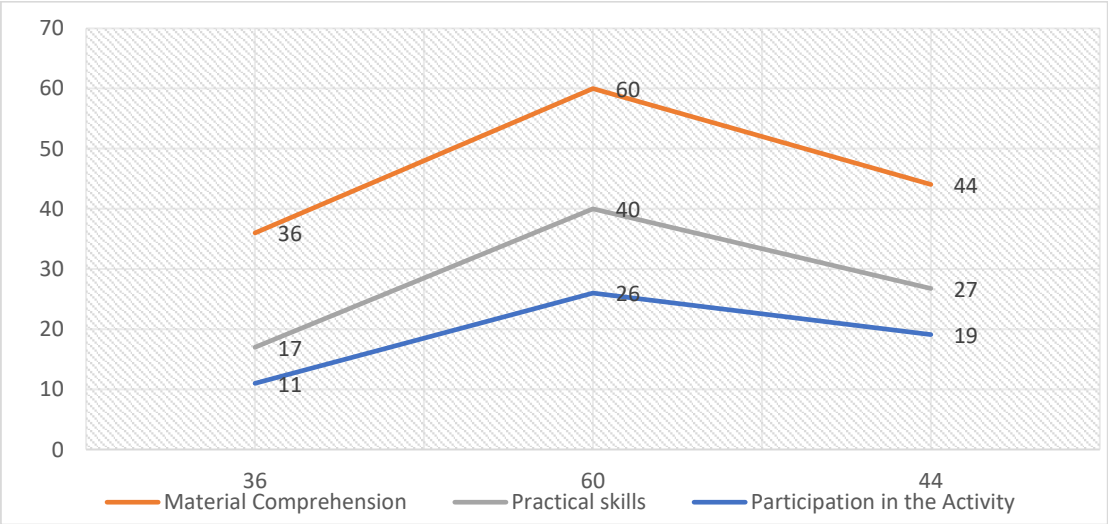


Figure 7. Observation results on material comprehension, skills, and participation in the activity by training participants

of a score range of 17 to 40, the participants' average score was 27. This means that participants' practical ability is categorized as moderate, although some participants already have good skills, so mentoring is still needed. Meanwhile, for the reflection on participants' participation in the activity, out of a score range of 11–26, the participants' average score was 19. These results indicate that the level of participant involvement was fairly high, although some participants were still passive.

3.3 Activity Follow-Up

As a follow-up, the village government is committed to allocating a budget from the Village Budget (APBDes) to complete facilities and infrastructure at evacuation sites and to disseminate the training results to the community,

especially in high-risk RT (neighborhood) areas. The Destana Forum, together with all capacities, has agreed to hold regular disaster health crisis emergency response simulations and to make this training a routine biennial program. In addition, this activity opens up opportunities for broader cooperation with health and disaster management agencies to sustainably strengthen the village's resilience system.

4. DISCUSSION

The Community Service (*Pengabmas*) activity successfully improved the capacity of the Genilangit Village community in facing disaster-related health crises. The increase in participants' knowledge is evident from the rise in pre-test and post-test results, although the evaluation conducted one month after the training showed a slight decline in knowledge retention. This condition indicates that improving community capacity requires ongoing strengthening through simulations, field practice, and periodic refresher material. This finding is in line with research by Widodo et al., which states that community-based preparedness training effectively improves community capacity, but knowledge retention will decline if not supported by continuous mentoring.[8] Similar results were also reported by Ayuningtyas and Alim, who showed that post-training knowledge tends to decrease if participants do not regularly take part in simulations and field practice.[9]

In addition to increasing knowledge, the training also successfully strengthened participants' practical skills, such as establishing an emergency command structure, carrying out triage and evacuation of victims, identifying vulnerable groups, and preparing vulnerability maps and health crisis risk maps. These results show that the Participatory Action Research (PAR) approach is effective in improving the community's operational capacity in facing emergency situations. This finding is in line with research by Sunarto et al.,[10,11] which reported that the PAR approach is able to improve the community's ability in disaster response simulations, the establishment of a command system, and the organization of community-based health resources.

The results of participants' reflections show that most of the training material could be completed within a single cycle of activity. However, the preparation of risk maps and vulnerability maps required a longer time because it requires spatial analysis, validation of local information, and more intensive mentoring. This condition is consistent with the findings of Suparji, Nugroho, and Sunarto,[12] who stated that the preparation of risk documents and contingency plans is the most complex stage in community-based disaster risk reduction.

Observations during the implementation of the activity showed a high level of participant participation, marked by active involvement in discussions, group practice, field simulations, and joint reflection. The PAR approach has proven capable of creating a collaborative learning process, increasing the sense of ownership of the program, and strengthening community preparedness. This finding is consistent with the results of research by Fadhilah et al.,[13] which affirm that active community participation is an important factor in the success of community-based preparedness programs.

Based on the resilience index assessment results, Ngelang Village falls into the primary resilient category because it already has adequate institutions, regulations, and community participation in disaster risk reduction. Nevertheless, the aspects of emergency preparedness and post-disaster recovery still require strengthening through ongoing training, routine simulations, development of a community-based emergency response system, and preparation of post-disaster health and economic recovery plans. This recommendation is in line with the concept of the Community Resilience Framework,[14] and the Disaster Risk Management Cycle,[15] which emphasize the importance of continuously strengthening community capacity to build village resilience that is not only administrative but also operational in facing crises.

5. CONCLUSION

The implementation of the Participatory Action Research (PAR) approach contributed to strengthening the capacity of the Genilangit Village community to respond to health crises caused by disasters. Findings indicate improvements in community knowledge, practical preparedness skills, and active participation in disaster risk reduction activities. These results can explain the potential of PAR as a participatory approach to empower communities in terms of identifying local risks, developing context-specific solutions, and strengthening community capacity in facing disasters. However, sustaining these capacity improvements requires continuous training, periodic simulation exercises, and ongoing support involving community members and relevant stakeholders. Thus, integrating

PAR into community-based disaster preparedness programs can support the formation of more resilient, knowledgeable, and proactive communities.

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Ethical Approval

Not required.

Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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