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# Building a Culture of Disaster Preparedness in the Health Sector: Strengthening Community Capacity

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**ABSTRACT**

Along the vulnerable West Sumatra coast, the looming threat of earthquakes and potential tsunamis remains a constant concern. To address this threat, disaster management efforts focus on mitigation, particularly by fostering a culture of preparedness within the healthcare sector through comprehensive training. The primary goal of this training was to enhance the capabilities of healthcare professionals to respond to disasters effectively. Out of 25 participants, an impressive 21 engaged wholeheartedly in this initiative. The training unfolded in several stages, spanning planning, execution, and evaluation, employing a participatory approach grounded in andragogy education principles. Objective assessments via pre- and post-test evaluations were used to gauge knowledge capacity. Notably, most participants in the 50-60 age groups had never undergone disaster training before. The paired samples t-test analysis revealed a statistically significant knowledge capacity increase ($p<0.05$), surging from an average of 69.4 to 91.2. Upon completion, participants were surveyed for satisfaction, reflecting their contentment with the materials and tasks. The duration of the training was deemed adequate, and participants expressed a desire for further specialized training. In summary, this initiative effectively bolstered the knowledge capacity of the participants, reinforcing their readiness to confront potential disasters along the West Sumatra coastline.



## INTRODUCTION

Aceh's December 25th, 2004 tsunami still leaves West Sumatran coastal communities concerned. These concerns increased with several large and small earthquakes at different times. An article in the March 2005 edition of National Geographic Indonesia corroborated the issue. Geological experts believe earthquakes cannot be predicted (Ferdinan, 2020; Panza et al., 2018). The Padang City is located between the sea and hills on tectonic plates. This location makes the city susceptible to various natural disasters. Potential disasters include floods, landslides, tornadoes, storms, coastal abrasion, earthquakes, and tsunamis. Sumatra has experienced numerous earthquakes since 2004, particularly around Simeulue Island and Aceh. Researchers like Chasanah et al. studied seismic activity in West Sumatra and found it high. This activity is characterized by a short reoccurrence period (Chasanah, Prastowo, 2013). Based on observations, most of the community still experiences panic during every earthquake. This condition led to the community

did not follow proper self-rescue procedures.

In the Ring of Fire, tectonic earthquakes caused by plate shifts and volcanic activity. Both nature events can produce similar damage. When nature cannot be manipulated or modified, increasing self-capacity to reduce disaster risks is an option (Hanifa et al., 2019; Rozi, Ritonga, & Januar, 2021). Disaster risk reduction (DRR) is one of The Sendai Framework's for Disaster Risk Reduction 2015-2030 (UN, 2015). Disaster preparedness aims to reduce the risk of future disasters. It targets an effective response when hazardous events occur. It also empowers communities to "Build back better" during recovery, rehabilitation, and reconstruction. In disaster management, this priority falls under the mitigation phase of the pre-disaster stage (BNPB, 2014).

At the national level, the Decision of the Head of BNPB number 173/2014 (BNPB, 2014) divided disaster management (DM) into eight clusters. One of these DM clusters is the health cluster, which includes the reproductive health sub-cluster. Despite having a guideline for implementing the minimum initial service package (MISP) for reproductive health in health crises, healthcare workers still need to strengthen their and their families' capacity. Everyone can become a victim or survivor during disasters, including healthcare workers or those classified according to the national DM cluster. The Department of Midwifery at the Ministry of Health's Health Polytechnic has a teaching topic on reproductive health management in disasters. However, almost all educators still need appropriate training to meet the demands of this competence. This need is likely due to the development of regulations related to disasters in Indonesia over the past decade. As the front-line service providers for active reproductive age, midwives must have sufficient preparation, especially in Padang, a potentially multi-hazardous area. Therefore, increasing the capacity of this institution is vital.

In Padang City, the Tsunami Alert Community (KOGAMI) has been carrying out DRR activities through community capacity building since 2005. It resulted from active learning after the earthquake and tsunami in Aceh. The disaster activists gathered in KOGAMI consist of various elements in society. The elements are students, civil servants, business and the industrial world (DUDI), practitioners, members of the legislative body, and community leaders. It is such a rich and heterogeneous background of the members. Having this potential, KOGAMI focuses on educational activities. The targets are schools, community disaster response groups (KPB), and the private sector. This recent activity was a capacity building of partner healthcare institutions. It aimed to initiate participants to become individuals with appropriate capacity in disaster management. We expected this training to provide participants with an introduction and practice on implementing disaster management in related sub-clusters. In addition to being individuals who must save themselves, participants will also play a role as officers. This role will help provide emergency response, rehabilitation, and possibly reconstruction.

## METHODS

The method of capacity strengthening service was through interactive training and lectures. The training took four full days (18-21 November 2022) at the Truntum Padang Hotel. The current activity utilized interactive, participatory approaches and ended with case simulations. The participants were the head of the associate's degree of midwifery program and their staff, lecturers, technicians, and operators, totaling 25 people. Overall, the activity details adopt several pieces of literature on creating effective learning processes (Cheung & Ng, 2021; Haleem, Javaid, Qadri, &

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Suman, 2022; OECD, 2009) to ensure its success.


**Figure 1.** A class learning contract

The activity began with introductions and then administered a pre-test based on the topic. Before diving into the training content, a teaching team member was responsible for leading the class at the start of the learning process to establish a learning agreement with participants (Figure 1). After the speaker's presentations, the participants carried out individual or group tasks, which were learning topic-specific. The material covered in the disaster management training for the reproductive health sub-cluster included 1) Group dynamics activities, 2) Introduction to disaster management and response, 3) Disaster risk management, 4) Disaster risk assessment, 5) Coordination and reporting, 6) Management of emergency centers, 7) Reproductive health and disasters, and 8) Rapid health assessment (RHA). Participants were also enriched with Basic Life Support (BLS), directly practicing what they learned using training dolls or mannequins. Each participant was allowed to practice chest compressions using the mannequin. The overall flow of the activity can be seen in Figure 2.

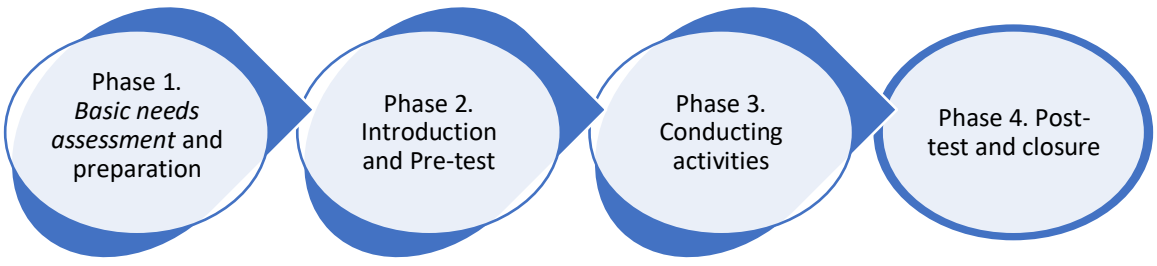


**Figure 2.** Community engagement flow diagram

We used the interactive and participatory method to enhance participant engagement and increase their self-efficacy and understanding of the topic (Munna &

Kalam, 2021). The utilization of network applications such as Quizizz, Kahoot, and Mentimeter was among the interactive activities. The participatory method required relevant case scenarios, simulations, and assignments, especially in groups (Chernikova et al., 2020; de Sousa, 2021). The speaker created simulation scenarios for relevant topics, such as those in topics 5, 6, and 8. Participants worked in groups to better understand topics 3 and 4. Competitive group work was conducted in this training by awarding participants who completed their tasks early and efficiently. The groups present their discussion results to be appreciated by other groups (Figure 3).

**Figure 3.** Group presentation after group discussion

Participants were assigned individual tasks to be completed at the end of the day and submitted to the speaker by the following morning. After completing all learning activities, participants engaged in a simulation exercise. The simulation conducted was a self-rescue simulation from an earthquake. During the training sessions, the team of speakers would invite participants to play and retrieve essential points from the previous session. The participants conducted self-reflection to draw crucial values and skills as take-home messages.

We evaluated the training to assess the improvement of participants' knowledge and satisfaction with the training provided. Post-tests were carried out at the activity's end after all sessions were completed, not per session as in the pre-test. The questions asked have also been modified. It was to ensure that participants' knowledge has increased due to the activities carried out rather than memorizing the answer points from the pre-test. The performance evaluation included the organizing team, speakers, and relevant material topics. At the end of the training, participants were invited to list the training they expected as a follow-up activity. The evaluation of the activity's implementation used a Likert scale from 1 to 6 with a description of 1 (very dissatisfied/very bad), 2 (unsatisfied/bad), 3 (less unsatisfied/less bad), 4 (sufficient/enough), 5 (satisfied/good), 6 (very satisfied/very good).

The success indicators of this community service were the improvement of participants' knowledge about disaster management in general and reproductive health sub-clusters in particular, and participants were satisfied with the implementation of the activity.

## RESULT AND DISCUSSION

The four-day training was attended by participants aged 20 to over 60 years old. The majority of participants, comprising 32%, fell within the age range of 50 to 60

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years old. Most participants had never undergone disaster preparedness training before (64%) and were interested in attending this training to enhance their knowledge of disaster and reproductive health (60%). Specifically, participants who expressed their desire to focus on health crisis issues, self-improvement, and being in a disaster-prone area were one person each (4%). Participants attending the program with academic responsibility motivation (28%) were mainly due to the alignment with the program's vision and mission as the course instructor or disaster laboratory provider.

The basic needs assessment conducted through the participant registration form revealed that the training attendees aspire to implement the training outcomes within the academic setting as part of lecture topics and in the community through emergency response actions. The participants expected this would be one of their efforts to enhance their competencies, aligning with the midwifery academic domain. They aim to achieve collaboration with the improvement of knowledge and skills acquired during the training, with two participants each. One participant specifically intended to make this activity a way to expand their network and expected unity in the content and topic. Six participants aspire to gain knowledge relevant to the training topic in general.

Most participants (84%) fully participated in the activity and completed the pre-test and post-test quizzes (Figure 4). There was an increase in participants' knowledge at the end of the training, with an average score before and after the training. The average score increased from 69.4 during the pre-test to 91.2 during the post-test. Paired sample t-test showed a significant increase in understanding with a p-value of 0.0001 ($p < 0.05$).

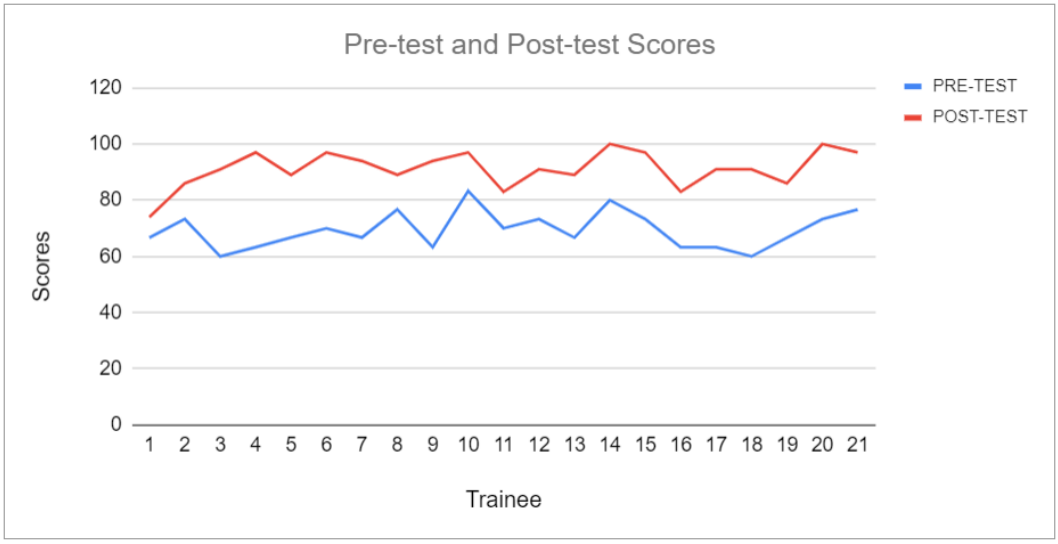


**Figure 4.** Knowledge improvement after the activity

The activity evaluation showed that all participants were satisfied (100%) with a score range of 4-6, which means a positive impression of this training. The resource person evaluation domain showed that the resource person's presentation was appropriate to the training topic (100%). All participants considered the resource person's explanation straightforward to comprehend by all participants (100%). According to the participants, the resource person could manage the class well, where the management ability was in the range of "good" and "very good" with 30.4%

and 69.6%, respectively. The resource persons with their interactive methods received the same recognition in providing opportunities for participants to give opinions and interact (100%). The participatory learning training received a positive response from participants, stating that the methods used in the activity were interesting (95.7%).

Domínguez, in his book Participatory Learning, noted that the participatory learning strategy was based on behavioral theory. In this learning method, the teacher or resource person becomes a facilitator rather than a lecturer. The resource person creates opportunities for learners to engage in discussion, problem-solving, and collaborative activities (Domínguez, 2012). In this training, the participants also engage fully in the case study or issues raised by the source person.

The first hour was a dynamic base of participant interaction, and we observed some tension among specific participants. The trainers identified these emotional clues and decided on the most suitable icebreaker activity to blend the participants thoroughly. Different learning methods should be implemented for different situations to ensure effective learning. The teaching team explored the participants' experiences in experienced-based learning (Andresen, Boud, & Cohen, 2020). The issue raised by the speaker allowed the participant to recall their memories in relevant and specific contexts prior to the training. The participants analyzed their experience by reflecting, evaluating, and reconstructing it to draw meaning from it. This experience sharing also worked out as an ice-breaking in a particular topic.

**Figure 5.** Discussion and feedback from the resource person

Almost all participants (96%) felt the topics were appropriate to their needs. The teaching team developed the curriculum, learning outcomes, and lesson plans by considering participants' needs. The basic needs assessment conducted before the training provided sufficient information for the resource team to design activities based on participants' prior knowledge. Participatory learning emphasizes participants' active involvement and collaboration (Domínguez, 2012). In his research on participatory approaches, de Sousa (2021) found that social learning indicators such as learning, critical thinking, problem-solving, and dealing with conflict emerged during the learning process. Trainees also gained different reasoning when working collaboratively to solve environmental problems (de Sousa, 2021). These results also triggered participants to ask for another training using the same method with deepening material and practice. They also requested training topics around

disasters that focus on several other issues to improve their professional competencies.

Professionalism is one of the core competencies for health workers. However, one of the most formidable challenges is to propose the core of professional values and behavior that the student can easily understand (Parsa, Murphy, Drynan, & Jarus, 2021). In this recent training, the teaching team created simulation-based learning to offer various opportunities to harvest context understanding and practice complex skills. Simulation-based learning also facilitated effective learning in alignment with a participatory approach to stimulate participant engagement (Chernikova et al., 2020; Tasantab, Gajendran, Owi, & Raju, 2023).

One of the hallmarks of KOGAMI's activities is the required follow-up plan for trainees. The follow-up plan is intended to build participants' commitment to the knowledge, skills, and knowledge they have gained during the training. Participants who are also decision-makers in their institutions have follow-up plans to implement the topic of disaster management in the reproductive health sub-cluster into the independent curriculum of higher education. This follow-up plan is one of the strategies to ensure the sustainability of the planned program (Negi & Sohn, 2022).

Park and Park (2019) in their article mentioned that in modern society, it is crucial to multitask and achieve all the targets that have been set. This ability is related to self-regulation, part of intrinsic motivation (Park & Park, 2019). In this training, participants who are the deciders in their respective institutions were allowed to propose an action plan as a sustainable action. Providing expert lectures for students is a short-term action plan proposed by the participants.


**Figure *6.*** Hands-on training in basic life support (BLS) external cardiac massage

This activity also involved students as a support team. The involvement of students in the training process can enrich their soft skills and increase their interest in volunteering for disaster relief or other humanitarian activities (Andresen et al., 2020). A final-year student who has passed the cardiopulmonary resuscitation block

and has trained in basic life support simulation became one of the resource persons in this training (Figure 6). At the closure of the training, the participant carried out a professional activity and process called reflection that helped participants learn from their experiences (Coulson & Harvey, 2013).

## CONCLUSION AND SUGGESTIONS

Community service in the form of disaster management training for the reproductive health sub-cluster has succeeded in increasing participants' knowledge and building participants' commitment to its implementation. The institution may carry out this activity regularly and provide deepening in the context of disaster at several points needed by the institution and the midwifery profession in general. Further review and evaluation of the implementation of the action plan should be carried out periodically per quarter to see the partners' independence in implementing their activity plans.

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