

Strengthening Health Preparedness for Children and the Elderly in Disaster Situations through an Education-Based Community Service Program and Community Participation in Padang City

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ABSTRACT

Indonesia is a region with a high risk of disasters, so vulnerable groups such as children and the elderly are at risk of experiencing health problems when a disaster occurs. Purpose: This study aims to analyse the effectiveness of community service programs in improving health preparedness for children and the elderly through disaster education, first aid training, evacuation simulations, and the development of family preparedness plans. Method: The activities were conducted in Padang City from January to March 2026 using a one-group pretest-posttest design. A total of 75 participants, consisting of 40 children and 35 elderly individuals, attended the entire series of activities. Data were collected using knowledge questionnaires and skill observation sheets, then analysed descriptively and inferentially with a paired sample t-test. Result: The results show a significant increase in knowledge in both groups after the intervention ($p < 0.001$). The average knowledge score of children increased from 58.4 to 85.6, while for the elderly it increased from 52.1 to 80.4. Implications: In terms of skills, the majority of participants were able to recognise evacuation routes, perform self-protection, and apply basic first aid, although the elderly's performance in the evacuation simulation was lower compared to children. Conclusion: This education-participation-based program has the potential to strengthen the health preparedness of vulnerable groups through the involvement of families, volunteers, and the community.

Keywords: Health Preparedness, Disasters, Children, Older People, Disaster Education, Community Services

INTRODUCTION

Indonesia is one of the countries with the highest disaster risk levels in the world because it is located at the intersection of three major tectonic plates and lies on the Pacific Ring of Fire. These geographical conditions make Indonesia prone to various types of disasters, such as earthquakes, tsunamis, volcanic eruptions, floods, landslides, droughts, as well as forest and land fires. This vulnerability is further exacerbated by climate change, which drives the frequency and intensity of hydrometeorological events in various regions. Disasters not only cause physical damage and economic losses but also have serious impacts on public health in both the short and long term (Efendi et al., 2021).

From a public health perspective, disasters often disrupt the healthcare system, which plays a crucial role in meeting the health needs of the population. Healthcare facilities can suffer damage, healthcare workers can face limitations, and the distribution of medicines and medical logistics can be hindered. This condition increases the risk of infectious diseases, environmental health issues, nutritional disorders, and the worsening of chronic diseases that the community suffered from before the disaster. In addition, the psychological impact of post-disaster situations is also a health issue that requires special attention because it can affect the quality of life of survivors in the long term (Hein et al., 2022; Suciana et al., 2025).

Among the various affected community groups, children and the elderly are the most vulnerable. These two groups have biological, psychological, and social limitations that result in their lower ability to adapt to emergency conditions compared to the productive age group. Therefore, disaster risk reduction efforts need to pay special attention to the needs and characteristics of vulnerable groups so that the health impacts of disasters can be minimised (Dodd-Butera et al., 2021; Yuliwulandari et al., 2025).

Children are a group that is highly dependent on adults in the process of protection and evacuation during a disaster. Physical limitations, lack of experience, and low understanding of disaster risks make children more vulnerable to injuries, loss of family members, mental health disturbances, and various other health issues. Research shows that children living in disaster-prone areas often have low levels of preparedness because they have not received adequate and sustainable disaster education. Therefore, enhancing children's capacity to face disasters becomes an important strategy in community-based disaster risk reduction (Heryana & Handayani, 2026).

Besides children, the elderly are also a group that is very vulnerable to the health impacts of disasters. Decline in physical function, limited mobility, sensory impairments, and high prevalence of chronic diseases cause the elderly to face various obstacles during evacuation and post-disaster recovery. Many elderly individuals require continuous access to medication and healthcare services; therefore, disruptions in the healthcare system during disasters can worsen their health conditions. Recent studies show that the elderly are at a higher risk of experiencing health complications, psychological stress, and even death if they do not receive adequate support in emergency situations (Efendi et al., 2021; Yuliwulandari et al., 2025).

Various studies also show that morbidity and mortality rates among vulnerable groups tend to be higher compared to other age groups when disasters occur. Children are at risk of experiencing infectious diseases, nutritional disorders, and psychological trauma, while the elderly are at risk of worsening chronic diseases, mental health issues, and limited access to healthcare services. A systematic review of post-disaster child nutrition management in Indonesia also shows that refugee



conditions increase the risk of malnutrition, infectious diseases, and growth disorders in children (Laili et al., 2022).

Although Indonesia is a disaster-prone country, the level of disaster literacy and public health literacy is still relatively low. Many people still do not have adequate understanding of disaster risks in their living environment, self-rescue steps, and health actions that need to be taken before, during, and after a disaster. This lack of understanding results in the community's preparedness for emergencies being still low. Hargono et al. (2023) show that public awareness of disaster risks is significantly related to the level of preparedness; the higher the risk awareness, the better the community's preparedness in facing disasters.

Another issue that is still often encountered is the limited availability of sustainable disaster education programs. Most educational activities are still incidental and only conducted when a disaster occurs or before a specific event. As a result, the knowledge acquired by the community does not develop into skills that can be applied in real situations. In fact, effective preparedness requires a continuous learning process through regular training, simulations, and mentoring (Fatmah, 2022).

Moreover, community involvement in disaster risk reduction efforts is still not optimal. Many disaster management programs are still top-down orientated, resulting in relatively low levels of active community participation. In fact, various studies show that community-based approaches are more effective in building community resilience because they encourage direct citizen involvement in the processes of risk identification, planning, and implementation of preparedness activities (Wolff, 2021).

The community service approach is seen as an effective strategy to enhance the health preparedness of vulnerable groups. Through community service activities, various interventions can be carried out directly to the target, such as disaster health education, first aid training, evacuation simulations, and the preparation of family preparedness plans. This approach allows the community to gain knowledge as well as practical experience that can strengthen their ability to face emergencies (Widayati et al., 2025).

The implementation of community service programs involving families and communities also has the potential to create sustainable impacts. Research on school-based disaster education in Indonesia shows that increasing children's knowledge can positively influence other family members through intergenerational knowledge transfer. These findings indicate that education provided to certain groups can offer broader benefits to the community (Harada et al., 2023).

Ideally, children and the elderly living in disaster-prone areas need to have adequate knowledge, attitudes, and skills to face emergency situations. They also need to be supported by families with household preparedness plans and communities that are responsive to disaster risks. In addition, disaster education integrated with health aspects needs to be implemented sustainably so that community capacity continues to improve. This principle aligns with the priorities of the Sendai Framework for Disaster Risk Reduction, which emphasises the importance of enhancing risk understanding and strengthening community capacity as part of building disaster resilience.

However, the conditions on the ground indicate that the level of health preparedness for children and the elderly is still low. Access to disaster education specifically designed for vulnerable groups is still limited, while community service programs that integrate health and disaster aspects have not been optimally implemented in various regions. As a result, vulnerable groups still face a

high risk when disasters occur and are likely to experience more severe health impacts compared to other community groups (Heryana & Handayani, 2026).

The gap between the ideal conditions and the actual conditions indicates the need for the implementation of community service programs focused on improving health capacity and disaster preparedness for children and the elderly. Educational, participatory, and sustainable programs are expected to enhance knowledge, foster preparedness, and develop practical skills necessary for facing emergencies. In addition, the involvement of families and communities in the program can strengthen the social support system that is greatly needed by vulnerable groups during disasters.

Based on the description, the implementation of community service programs aimed at improving the health preparedness of children and the elderly becomes very important. This program not only supports the national agenda for disaster risk reduction and the development of disaster-resilient communities but also contributes to reducing the risk of illness, disability, and death due to disasters. Through disaster health education, emergency skills training, the formation of disaster preparedness cadres, and the strengthening of family and community roles, it is hoped that a more prepared and resilient society will be created to protect vulnerable groups from various health impacts caused by disasters.

METHODS

This community service activity was carried out in Padang City, West Sumatra Province, from January to March 2026. The location was chosen because Padang is highly vulnerable to various disaster threats, especially earthquakes, tsunamis, floods, and landslides. The target of the activities is vulnerable groups consisting of school-aged children and the elderly living in the area where the activities take place. In addition to the main participants, the program also involves families, healthcare workers, and community leaders to strengthen the community's capacity to face disaster situations.

The approach used is an educational-participatory approach based on community empowerment. The initial stage of the activities includes coordination with local government, health facilities, healthcare workers, and community leaders, accompanied by needs identification through field observations and discussions with stakeholders. The implementation stage includes disaster health education, first aid training, evacuation simulations, and assistance in developing family preparedness plans. The material is delivered through interactive lectures, group discussions, demonstrations, and educational media tailored to the participants' characteristics. For children, the approach is combined with educational games and simple simulations, while for the elderly, a communicative approach and direct practice are used.

Evaluation was conducted using a pretest and posttest design to assess changes in participants' knowledge after the entire program series was completed. The evaluation instrument consisted of a structured questionnaire regarding disaster knowledge, health preparedness, and actions in emergencies. Participants' skills were assessed through direct observation during evacuation simulations and first aid practice using observation sheets prepared by the implementation team. Data were analysed by comparing the average pretest and posttest scores and using the paired sample t-test at a significance level of 0.05.



RESULTS

This community service activity was attended by 75 participants, comprising 40 school-aged children (10–12 years) and 35 older adults (≥ 60 years). All participants took part in the full programme, from the pre-test, education and training sessions, through to the simulation and post-test. Participant demographic data are presented in Table 1 to provide an overview of the research subjects' characteristics.

Table 1. Demographic Characteristics of Participants by Target Group

Characteristics	Children (n=40)	Older adults (n=35)	Total (n=75)
Gender			
Male	22 (55.0%)	15 (42.9%)	37 (49.3%)
Female	18 (45.0%)	20 (57.1%)	38 (50.7%)
Age (Mean $\pm$ SD)	10.8 $\pm$ 1.2 years	68.4 $\pm$ 5.1 years	-
Highest Level of Education (Elderly)			
No schooling	-	8 (22.9%)	-
Primary School/Equivalent	-	20 (57.1%)	-
Lower Secondary School or Equivalent	-	7 (20.0%)	-
Experience of Disasters	28 (70.0%)	31 (88.6%)	59 (78.7%)

The characteristics of the participants indicate that this program reaches the target groups in line with the focus of the activities, namely vulnerable groups in disaster-prone areas. The relatively high history of disaster experience in both groups indicates that this intervention is relevant to the real needs of the community. In the elderly group, the relatively low level of education reinforces the rationale for using a communicative approach and direct practice so that the material is easier to understand and apply.

The programme's effectiveness was analysed by measuring changes in participants' knowledge levels using a structured questionnaire. The average knowledge scores before and after the intervention, along with the results of the statistical tests, are presented in Table 2.

Table 2. Comparison of Average Knowledge Scores and Statistical Test Results

Variable	Pre-test (Mean $\pm$ SD)	Post-test (Mean $\pm$ SD)	Average Increase	p-value
Children's Knowledge	58.4 $\pm$ 12.3	85.6 $\pm$ 8.7	27.2	<0.001
Knowledge of the elderly	52.1 $\pm$ 14.5	80.4 $\pm$ 9.1	28.3	<0.001
Combined	55.4 $\pm$ 13.8	83.2 $\pm$ 9.0	27.8	<0.001

Paired-sample t-test, $\alpha=0.05$

These results show a significant increase in knowledge among children and the elderly after participating in the education and training program. The consistent increase in scores in both groups indicates that the educational-participatory approach is capable of strengthening participants' understanding of health preparedness in disaster situations. These findings also show that adjusting the learning methods based on the participants' characteristics yields positive results.

In addition to knowledge, participants' skills were also assessed through direct observation during evacuation simulations and first-aid practice sessions. Data on participants' skill attainment are presented in Table 3.

Table 3. Distribution of Participants' Skill Attainment in Simulations and Practical Exercises

Skill Component	Children (n=40)	Elderly (n=35)
Evacuation Simulation		
Identifying Evacuation Routes	36 (90.0%)	28 (80.0%)
Reaching the Correct Assembly Point	38 (95.0%)	25 (71.4%)
Carrying out personal protection procedures	35 (87.5%)	22 (62.9%)
First Aid		
Treatment of Minor Injuries	33 (82.5%)	24 (68.6%)
Prevention of Dehydration	37 (92.5%)	30 (85.7%)

In general, participants demonstrated good skill achievements in evacuation simulations and first aid practices. The group of children achieved higher results compared to the elderly in aspects that require physical mobility, especially in reaching the assembly point and performing self-protection. However, in procedural aspects such as dehydration prevention, both groups showed good results. This shows that both conceptual and procedural skills can be well received by participants if delivered using appropriate methods.

Overall, these results show that community service programmes integrating education, training and simulation have proven effective in improving the health preparedness of children and older adults in disaster-prone areas, although there is a need for more intensive, specialised support strategies for older adults regarding the physical aspects of the evacuation process.

DISCUSSION

1. Improvement in Knowledge Among Children and the Elderly After Intervention

The research results show a significant increase in knowledge in both target groups after participating in the program. In the children's group, the knowledge score increased by 27.2 points, while in the elderly group, it increased by 28.3 points. The results of the statistical test showed a highly significant difference before and after the intervention ($p < 0.001$).

These findings align with adult learning theory and pedagogical approaches that emphasise the importance of learning methods tailored to the characteristics of the participants. In the children's group, the use of educational games and simple simulations proved effective because children learn through direct experience and enjoyable activities. Meanwhile, in the elderly group, a communicative approach and hands-on practice align with the learning needs of adults, emphasising the relevance and practical application of the material. This is supported by Fatmah (2022), who demonstrated that disaster preparedness training for families with elderly members can significantly enhance knowledge.

The results of this study are also in line with Rofiah et al. (2021), who found that important elements in disaster mitigation education in inclusive school environments are the adjustment of teaching methods to the characteristics of participants, the development of varied teaching methods,



and the empowerment of participants as active parts of the learning process. Similarly, Wardana et al. (2021) showed that children still have a low level of disaster awareness, making integrated and sustainable education very important.

Based on these results, the educational-participatory approach has proven effective in bridging the disaster literacy gap among vulnerable groups. This success is believed to be related to the use of contextual methods, involving participants' direct experiences, and utilising age-appropriate learning strategies. The implication of these findings is the importance of strengthening systematic and sustainable disaster education programs, both in schools and in the community. Education that is only incidental without follow-up will not result in long-term behavioural change.

2. Evacuation and First Aid Skills for Children and the Elderly

The research results show that the group of children has a higher ability in evacuation simulations compared to the group of elderly, especially in indicators such as reaching the assembly point and self-protection. On the other hand, in aspects of procedural first aid such as dehydration prevention, both groups showed good results.

The difference in skill achievement between children and the elderly can be explained through the ageing theory, which states that the decline in physical, mobility, and sensory functions in older age becomes a factor that hinders the ability to perform physical actions that require speed and agility. Pradana et al. (2021) explain that the degenerative process in the elderly causes a decline in organ function, metabolic disorders, decreased physical ability, and limited mobility. This condition causes the elderly to face greater obstacles during the evacuation process compared to the productive age group.

Fitriana & Kuncorowati (2021) also show that the elderly are the group with the highest risk of death in emergency conditions due to physical limitations and a high prevalence of comorbidities. Furthermore, emergency response plans that are sensitive to the needs of the elderly are still not optimal due to the lack of accurate databases and systematic operational procedures. These findings reinforce the research results that physical evacuation skills for the elderly require special support and training tailored to their conditions.

On the other hand, the good results in the aspect of dehydration prevention show that simple procedures can be understood and well-applied by all age groups if conveyed in the right way. Lusmilasari et al. (2023) show that low health literacy increases individual vulnerability while also affecting the overall resilience of the community. This is in line with the finding that procedural knowledge can be well absorbed if the delivery method is appropriate to the participants' capacity.

Thus, the difference in skills between children and the elderly is more due to physiological factors and mobility rather than an inability to understand the material. The implication of these findings is the need for more specific support strategies for the elderly, especially in aspects of evacuation that require physical activity. Preparedness programs for the elderly should not only focus on cognitive education but also on physical exercises tailored to each individual's abilities.

3. Implications of Community Service Programs for the Preparedness of Vulnerable Groups

Overall, the community service program that integrates education, training, and simulation has proven effective in improving the health preparedness of children and the elderly in disaster-prone areas. The formation of disaster preparedness cadres from the local community is expected to

ensure the sustainability of the program because these cadres can become educators and facilitators in preparedness activities within their respective environments.

The community empowerment approach used in this program aligns with the Sendai Framework for Disaster Risk Reduction 2015–2030, which emphasises the importance of enhancing risk understanding and strengthening community capacity as part of disaster resilience development. This program also applies the principle of a people-centered approach, which places the community as an active subject in disaster risk reduction, rather than just recipients of aid. Wardana et al. (2021) research shows that children still do not fully understand disaster threats, so a school-based approach involving all elements of the school community is very important to build a culture of preparedness from an early age. Meanwhile, Rofiah et al. (2021) emphasise the importance of involving various stakeholders in the success of disaster mitigation education. These findings support the strategy in this research, which involves families, healthcare workers, and community leaders to strengthen community capacity.

Widayati et al. (2025) also show that a participatory approach in preparedness planning results in a higher level of preparedness compared to a top-down approach. Therefore, the success of community service programs is highly determined by the active involvement of the community in the planning and implementation processes. The presence of local cadres is also a long-term investment that enables the sustainable transfer of knowledge and skills within the community. The implication of these findings is the need for commitment from local governments and related institutions to support the sustainability of the program through budget allocation, periodic cadre training, and strengthening cross-sector coordination. In addition, collaboration between academics, the government, and the community needs to be continuously strengthened to form a sustainable disaster preparedness ecosystem.

4. Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, there is a potential for social desirability bias in the observational assessment, particularly because the skill observations were carried out by the implementation team itself. Such a condition may have influenced participants' performance during the simulation and practical sessions. Second, the study did not include a long-term follow-up measurement to determine whether the knowledge and skills gained were retained after the programme ended. Third, the possibility of selection bias cannot be ruled out because the sampling procedure was not clearly described in detail. Fourth, the study used instruments whose validity and reliability were not explicitly reported, which may affect the precision and consistency of the measurement results. Therefore, future studies are recommended to use a more rigorous experimental design, a clearly defined sampling strategy, validated instruments, and follow-up assessments to examine the sustained impact of the programme.

CONCLUSIONS

Community service programs with an educational-participatory approach have proven to enhance health preparedness for children and the elderly in disaster-prone areas. There was a significant increase in knowledge in both groups, with 27.2 points in children and 28.3 points in the elderly ($p < 0.001$). In terms of skills, children showed higher achievements in evacuation simulations,



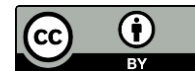
while the elderly continued to demonstrate good results in procedural first aid. These findings indicate that interventions tailored to the characteristics of participants, along with support from family and the community, have the potential to strengthen the resilience of vulnerable groups to disasters.

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REFERENCES

- Dodd-Butera, T., Li, H., Beaman, M. L., Amaral, M., Eggleston, C. J., & Podolske, D. (2021). Progress On The Sendai Framework (2015–2020): Focus On Families With Children With Special Health Care Needs (CSHCN). *Progress in Disaster Science*, 12, 100193. <https://doi.org/10.1016/j.pdisas.2021.100193>
- Efendi, F., Indarwati, R., Aurizki, G. E., Susanti, I. A., & Maulana, A. E. F. (2021). Policymakers' Perspectives On Responding To The Elderly's Mental Health Needs In Post-Disaster Situations. *Journal of Public Health Research*, 11(1). <https://doi.org/10.4081/jphr.2021.2386>
- Fatmah. (2022). Effect Of Disaster Training On Knowledge Regarding Flood Risk Management Amongst Families With Older People. *Jamba: Journal of Disaster Risk Studies*, 14(1). <https://doi.org/10.4102/jamba.v14i1.1262>
- Fitriana, K. N., & Kuncorowati, P. W. (2021). Disaster Mitigation for Elderly: The Challenges of Social Welfare Services for Elderly in The COVID-19 Pandemic. *IOP Conference Series: Earth and Environmental Science*, 884(1), 012048. <https://doi.org/10.1088/1755-1315/884/1/012048>
- Harada, T., Shoji, M., & Takafuji, Y. (2023). Intergenerational Spillover Effects Of School-Based Disaster Education: Evidence From Indonesia. *International Journal of Disaster Risk Reduction*, 85, 103505. <https://doi.org/10.1016/j.ijdrr.2022.103505>
- Hargono, A., Artanti, K. D., Astutik, E., Widodo, P., Trisnawati, A. N., Wardani, D. K., & Lioni, E. (2023). Relationship Between Disaster Awareness And Disaster Preparedness: Online Survey Of The Community In Indonesia. *Journal of Public Health in Africa*, 14(9). <https://doi.org/10.4081/jphia.2023.2376>
- Hein, L., Spadaro, J. V., Ostro, B., Hammer, M., Sumarga, E., Salmayenti, R., Boer, R., Tata, H., Atmoko, D., & Castaneda, J.-P. (2022). The Health Impacts Of Indonesian Peatland Fires. *Environmental Health*, 21(1). <https://doi.org/10.1186/s12940-022-00872-w>
- Heryana, A., & Handayani, P. (2026). View of Disaster Preparedness as a Health System Performance Indicator: An RR-Based Pathway Modeling Framework for School-Based Disaster Risk Reduction Program Implementation in Indonesia. *Journal of Public Health and Digital Industry*, 1(1), 41–52. <https://publicapress.id/index.php/jphdi/article/view/13/7>



- Laili, R. D., Dwi Alristina, A., Hayudanti, D., & Ethasari, R. K. (2022). Establishing Nutritional Management after Natural Disaster for Children Under-five Years in Indonesia: A Systematic Review. *International Journal of Advancement in Life Sciences Research*, 05(04), 11–18. <https://doi.org/10.31632/ijalsr.2022.v05i04.003>
- Lusmilasari, L., Noviana, U., Perdana, M., & Pertiwi, A. A. P. (2023). Health Literacy About COVID-19 Prevention Among Women in Low-Income Families in Indonesia. *Kobe University Monograph Series in Social Science Research*, 61–81. https://doi.org/10.1007/978-981-99-4546-7_4
- Pradana, A. A., Nasution, L. A., & Casman. (2021). A Review of Health Mitigation Policies for Vulnerable Groups in the Post-Pandemic Period and Other Public Health Emergencies. *Jurnal Kesehatan Kebijakan Indonesia*, 10(3). <https://doi.org/10.22146/jkki.62692>
- Rofiah, N. H., Kawai, N., & Nur Hayati, E. (2021). Key Elements Of Disaster Mitigation Education In Inclusive School Setting In The Indonesian Context. *Jamba - Journal of Disaster Risk Studies*, 13(1). <https://doi.org/10.4102/jamba.v13i1.1159>
- Suciana, F., Agustiningrum, R., & Pramono, C. (2025). The Effectiveness of Disaster Health Management in Families with Chronic Illnesses on Preparedness for Earthquake Disasters. *Media Keperawatan Indonesia*, 8(2), 83. <https://doi.org/10.26714/mki.8.2.2025.83-89>
- Wardana, S., Herdiansyah, H., & Wicaksono, A. (2021). The Actualization Of Student's Disaster Preparedness At The Elementary And Secondary Education Level Of Disaster-Aware School. *IOP Conference Series: Earth and Environmental Science*, 683(1), 012034. <https://doi.org/10.1088/1755-1315/683/1/012034>
- Widayati, D., Rachmania, D., Almira Hutami, N., & Mukhtar, M. (2025). Emergency Preparedness Planning And Its Effect On Landslide Disaster Readiness: A Community-Based Study. *Indonesian Journal of Community Health Nursing*, 10(2), 43–49. <https://doi.org/10.20473/ijchn.v10i2.71949>
- Wolff, E. (2021). The Promise Of A “People-Centred” Approach To Floods: Types Of Participation In The Global Literature Of Citizen Science And Community-Based Flood Risk Reduction In The Context Of The Sendai Framework. *Progress in Disaster Science*, 10, 100171. <https://doi.org/10.1016/j.pdisas.2021.100171>
- Yuliwulandari, R., El Mahroos, R., Febriawan, Z., Wibowo, A., Devi, D. K., Paripurno, E. T., Pratomo, A. H., Cahyadi, T. A., Maharani, Y. N., Prasetya, J. D., Reza, & Khan, H. T. A. (2025). Natural Disaster And Medication Preparedness Among Elderly: A Scoping Review. *National Library of Medicine*, 13, 1510–1510. <https://doi.org/10.12688/f1000research.157483.2>