





Landslide Resistant Disaster Mitigation Education to Increase the Knowledge of Destana Volunteers

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Article Information:

Received November 23, 2024

Revised December 13, 2024

Accepted December 27, 2024

Keywords:

Destana Volunteers;
Disaster Mitigation;
Education

Abstract

The purpose of this service is to determine the level of knowledge of volunteers in carrying out landslide disaster mitigation. Disaster mitigation is an effort that can be made to reduce the risk of disasters either through physical development. Disaster management volunteers are volunteers who carry out relief activities when a natural disaster occurs, including evacuation, rehabilitation and counseling which has an important role for disaster victims. Its role is quite significant in emergency response, as well as in the speed and enthusiasm of disaster management actions. Matesih District, Karanganyar Regency is an area that has varying slopes ranging from 15 – 30% slope with quite high rainfall every year. In 2024 there will be 4 landslides in Matesih. Matesih District is dominated by steep slopes and experiences high rainfall. This condition causes extensive erosion, weathering and landslides. The service method is carried out by providing education to volunteers before providing the education through a pre-test and after providing the education during the post-test. As many as 30 volunteers attended the outreach event regarding landslide disaster mitigation. with various complex problems. The results can be seen through sessions providing material, discussions and mini simulations regarding landslide disaster preparedness. Volunteers participate actively, especially in discussion sessions with facilitators, this forms the awareness and responsiveness of volunteers in dealing with landslide disaster situations that may occur in their environment. The results obtained were that volunteers were able to know well what to do in the face of a landslide disaster.

A. Introduction

Disaster is a series of events that result in threats and disruption to people's lives and livelihoods caused by either natural or non-natural factors which can result in human casualties, environmental damage, property loss and psychological impacts (Chaudhary & Piracha, 2021).

Landslides are natural disasters that commonly occur in mountainous areas during the rainy season (Froude & Petley, 2018). Landslides can be defined as disasters or natural events that result from the movement of masses of rock (soil) due to the influence of gravity (gravity) or the disruption of the balance of forces on a slope, causing the soil to move downwards (Pánek, 2020). Landslides are natural disasters that occur in

mountainous areas as a result of other natural phenomena such as earthquakes or rainfall, and can result in death and extensive damage to property and infrastructure (Arbanas & Arbanas, 2015).

The main factors that influence the occurrence of landslides are trigger and control factors. High rainfall, earthquakes, slope foot erosion, and human activities are triggering factors. Meanwhile, geological conditions, slope slope, lithology, faults and joints in rocks are controlling factors (Adhastian et al., 2021).

According to data from BPBD Karanganyar Regency (Badan Penanggulangan Bencana Daerah, 2019), in Jawa Pos, RADAR SOLO, there were 43 landslide points in Karanganyar Regency and spread across 7 sub-districts, where the events caused damage to several residents' houses, material loss and damage to public facilities.

Matesih District has topographic characteristics ranging from waves, hills to mountains with altitudes varying from slopes to very steep. Matesih District, Karanganyar Regency is an area that has varying slopes ranging from 15 – 30% slope with quite high rainfall every year. In 2024 there will be 4 landslides in Matesih. Matesih District is dominated by steep slopes and experiences high rainfall. These conditions cause extensive erosion, weathering and landslides. This condition is exacerbated by human activities that ignore land management and conservation as part of landslide disaster mitigation efforts. Significant amounts of inappropriate land use, such as land for agriculture and logging activities, are often found in areas with steep slopes.

Disaster mitigation is an effort that can be made to reduce the risk of disasters both through physical development and increasing capacity to face disaster threats (Rofiah et al., 2021). Mitigation is an action to reduce the dangers that a disaster can cause so that losses can be minimized and includes protective actions that can be initiated before the disaster occurs. One of the disaster mitigation activities can be carried out by providing conventional education, counseling and training to increase the knowledge of the public (Riza et al., 2020). Preparedness to face disasters is vital, namely by providing education regarding preparedness in facing disasters.

Disaster management volunteers are volunteers who carry out relief activities when natural disasters occur, including evacuation, rehabilitation and counseling, which have an important role for disaster victims (Ganoe et al., 2023). Its role is quite significant in emergency response, as well as in the speed and enthusiasm of disaster management actions. The participation of disaster management volunteers is felt to be very meaningful because they (Disaster Management Volunteers) contribute various resources in disaster management efforts, providing real evidence of social, humanitarian life and cooperation to reduce the suffering of others and the desire to realize the resilience of the Indonesian community or nation in facing disasters.

Thus, there is an obligation for the parties involved to provide understanding and knowledge to volunteers about the importance of increasing volunteers' knowledge about landslide disaster mitigation. Based on this identification, there was follow-up action from universities to provide understanding to Destana volunteers regarding landslide disaster mitigation. The form of activity is education involving lecturers from the undergraduate nursing Departement and the Ners STIKes Mitra Husada Karanganyar professional education.

Destana volunteers are in Girilayu Village which is located in Matesih District, Karanganyar Regency, Central Java Province. Several areas in Matesih District, such as Koripan Village, Plosorejo Village, and Girilayu Village, are areas in the red zone prone to landslides.

There are 30 Destina volunteers with various complex problems. The survey results of volunteers showed that some did not understand landslide disaster mitigation. And from the results of surveys and interviews, there are still many residents who do not yet understand the importance of mitigating landslides in disaster-prone areas so that if a disaster occurs they can respond. Insufficient knowledge and information regarding landslide disaster mitigation is an obstacle. Volunteers have provided information related to disasters but in general terms. Therefore, it is necessary to have a deeper understanding regarding landslide disaster mitigation. Increasing volunteers' knowledge regarding landslide disaster mitigation in disaster situations is very important. This is what volunteers can convey to the community so that the community can know more about appropriate landslide disaster mitigation. Through education, we can provide information to volunteers and local communities to be able to mitigate disaster situations.

B. Methods

In this service activity the population is volunteers from Girilayu Village, Matesih, Karanganyar. The number of participants in the service was 30 people. The activity is carried out by providing education, so that the activity is carried out effectively and well, the implementation time is Sunday, August 11 2024, starting at 13.00 until finished. The training was held in the Girilayu Village Hall multi-purpose building. The method used in carrying out community service is that the implementation team uses the PBL (Problem Base Learning) approach. The problems faced by partners are collected by the community service implementation team through FGD (Focus Group Discussion) activities. Instruments or tools used to deliver material in activities using leaflet media. This is done to make it easier to prioritize problems that must be done immediately to resolve partner problems. From the results of the FGDs conducted, the implementing team then formulated various problems faced by volunteers in general and the solutions offered to overcome these problems. From the results of the FGDs carried out, several main problems faced by volunteers were found. The next method is to provide education, after which the team disseminates information about when to educate through local volunteer meetings, through village officials. Coordinate with other teams regarding the types of services to be provided. On the day of the service, the service team delivered education related to landslide disaster mitigation to Destana volunteers. After the education was carried out, the team motivated residents and community leaders, and also provided education about basic aid during a disaster. Increasing citizens' knowledge and understanding of the importance of disaster management.

C. Result and Discussion

The place where this activity was carried out was in Girilayu Village, Matesih District. The time for this activity was 11 August 2024 with 30 people attending, with various complex problems. And from the results of surveys and interviews. Many volunteers still lack the knowledge and understanding of residents regarding waste management. From the results of the service, it can be seen that the efforts made by the sub-district are in carrying out disaster mitigation measures.

Based on the results of the discussions that developed, information was obtained that the village disaster aspect had indeed become an important priority for the Girilayu Village government. Village officials and the local community have identified several types of disasters that are likely to occur in the local village area. These disasters included landslides. This was also confirmed by the STIKes Mitra Husada Karanganyar community, who explained that landslides had occurred. These disasters tend to be caused by river basins that are unable to accommodate the rainwater that falls. This incident caused water to pool on the village entrance to the residential area adjacent to the river. Landslides have also occurred in the hilly area on the southern side of the village which has a hilly profile.

The implementation of this community service activity is educational. This educational activity for volunteers is carried out through four stages which include, (1) fact gathering, namely collecting and getting to know the social problems faced in the field. (2) Identification of stakeholders/participants (volunteers). (3) Action and communication/implementation of education, namely two-way communication and implementation of planned programs. (4) Evaluation of educational results, namely to measure whether the objectives determined during the activity have been implemented as planned. The educational activity was attended by 30 Destana volunteers from Girilayu village. The education implementation stage begins with giving a pretest, then continues with a presentation of the material by the facilitator. After the material presentation is complete, it continues with an in-depth discussion. The material presented in education is responsiveness, agility, resilience in facing landslide disasters. After the discussion activity, the facilitator provided directions for dealing with landslides, at the end of the participant's education a post-test was carried out.

Changes based on the results can be seen through sessions providing materials, discussions and mini simulations regarding landslide disaster preparedness. Volunteers participate actively, especially in discussion sessions with facilitators, this forms the awareness and responsiveness of volunteers in dealing with landslide disaster situations that may occur in their environment. The activities and strategies implemented through the presentation of psychoeducation-oriented material are carried out by facilitators. With the presence of facilitators in activities that accompany the mitigation education process it becomes more communicative and easier to understand, so that volunteers can know well what to do in the face of a landslide disaster.



Figure 1. Presentation of Material



Figure 2. Direction from BPBD Karanganyar



Figure 3. Atmosphere When Presenting the Material

The increase in knowledge after being given training shows that the material that has been given to participants has proven capable and useful in supporting volunteers regarding disaster response situations. This can also be proven by the results of qualitative evaluations through interviews which state that several participants reported an increase in their confidence in answering.

Before the service took place regarding education regarding Landslide Resistant Disaster Mitigation Education to Increase the Knowledge of Destana Volunteers in Girilayu Village. The service team made various thorough preparations. One of the preparations made was to prepare various materials on Landslide Resistant Disaster Mitigation to increase volunteers' knowledge.

In carrying out community service in the form of educational activities in Girilayu Karanganyar Village, there are various preparations made by the service team. The preparations made to carry out educational activities aim to ensure that the implementation process runs smoothly according to the plan. Apart from that, preparation is also included in the stages of educational activities. There are various forms of preparation carried out by the service team, namely the first preparation that is carried out before going directly into the field is discussing the material that volunteers want to educate. Our group service team discussed mitigation for landslides, so our team first looked for literature or references ([Zulkifli et al., 2022](#)).

Educational institutions must facilitate students with disaster preparedness educational activities in order to increase responsive behavior in facing landslides. The facilitator's creativity in creating an atmosphere is also an indicator of success in directing students' understanding of preparedness for landslides ([Arbanas & Arbanas, 2015](#)).

The Relawan Destana educational program carried out by the team and author is a sustainable community service program and requires monitoring. Therefore, as a follow-up plan for this education, it is necessary to carry out regular monitoring and facilitate the provision of additional material. Volunteers tend to carry out changes if they are carried out continuously and there is assistance ([Hasanah, 2018](#)). Apart from that, volunteer cadre formation also needs to be carried out every year to ensure that there are new volunteers who are able to carry out the program in a sustainable manner ([Mujadin et al., 2020](#)).

Disasters are events or series of events that threaten and disrupt people's lives and livelihoods caused by either natural factors and/or non-natural factors or human factors, resulting in human casualties, environmental damage, property loss and psychological impacts ([Mussadun et al., 2020](#)). Disaster can also be interpreted as a severe disturbance causing human casualties, property damage and environmental damage, which exceeds the community's ability to overcome it with the resources it has ([Arinata et al., 2022](#)).

Law Number 24 of 2007 concerning disaster management identifies a disaster as an event or series of events that threatens and disrupts people's lives and livelihoods caused by either natural factors and/or non-natural factors or human factors, thereby causing casualties, environmental damage, losses, property, and psychological impact.

Mitigation means taking actions to reduce the effects of a hazard before it occurs. The term mitigation applies to a wide range of protective activities and measures that may range from the physical, such as building strong structures, to the procedural, such as standard techniques for incorporating hazard assessments into land use plans (Julius et al., 2020).

Landslide natural disasters are one of the natural disasters that can cause enormous losses. The high losses experienced by communities affected by landslides in general can occur due to the lack of public information regarding disasters that may occur in their area and the low level of public awareness of the disaster response situation. This activity can improve the quality of life of the community because volunteers can be independent. Apart from that, the technical knowledge provided can be applied to the surrounding community if an emergency situation occurs (Hasanah, 2018; Santoso et al., 2022).

The service activity was carried out on August 11 2024 at the Girilayu Karanganyar Village hall with participants consisting of volunteers, community leaders and BPBD Karanganyar. Material for implementing this service activity was provided by the Service Team. The final aim of implementing this activity is to increase volunteers' knowledge regarding landslide disaster mitigation. The assumption that the service team wants to formulate is that when volunteers are equipped with the ability or knowledge to mitigate landslides. One of the goals of landslide disaster mitigation is to increase the knowledge of volunteers. Thus, the service team from STIKes Mitra Husada Karanganyar felt the need to carry out service activities. The Service Team and Resource Persons who came from nursing lecturers from STIKes Mitra Husada Karanganyar tried to dig up information by holding discussions with volunteers, the community and related elements, so there were several things related to landslide disaster mitigation.

D. Conclusion

Disaster is a series of events that result in threats and disruptions to people's lives and livelihoods caused by either natural or non-natural factors which can result in human casualties, environmental damage, property loss and psychological impacts. Disaster mitigation is an effort that can be made to reduce the risk of disasters either through physical development. Disaster management volunteers are volunteers who carry out relief activities when a natural disaster occurs, including evacuation, rehabilitation and counseling which has an important role for disaster victims. Matesih District, Karanganyar Regency is an area that has varying slopes ranging from 15 – 30% slope with quite high rainfall every year. In 2024 there will be 4 landslides in Matesih. Matesih District is dominated by steep slopes and experiences high rainfall. These conditions cause extensive erosion, weathering and landslides. This condition is exacerbated by human activities that ignore land management and conservation as part of landslide disaster mitigation efforts. The service method is carried out by providing education to volunteers before providing the education through a pre-test and after providing the education during the post-test. As many as 30 volunteers attended the outreach event regarding landslide disaster mitigation, with various complex problems. The results can be seen through sessions providing material, discussions and mini simulations regarding landslide disaster preparedness. Volunteers participate actively, especially in discussion sessions with facilitators, this forms the awareness and responsiveness of volunteers in dealing with landslide disaster situations that may occur in their environment.

E. Acknowledgments

Thank you to STIKes Mitra Husada Karanganyar who provided facilities for community service and to the ladies and gentlemen of Girilayu Village officials for their assistance and to the respondents who took part in this service. And all related teams that I cannot mention one by one.

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First publication right:

Dikdimas: Jurnal Pengabdian Kepada Masyarakat

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