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Education to Increase Knowledge and Awareness of Household Fire Mitigation in Subdistrict of Lambung Bukit, Padang

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ABSTRACT

A fire is an uncontrolled event in which flames ignite an object or area, causing damage to the surrounding environment. In Indonesia, fire cases reach a significant number. Based on statistical data, the number of fires in Indonesia reached 5.336 cases in the period 2018 to 2023. The purpose of the service is to increase public knowledge and awareness of the importance of fire mitigation in households and provide appropriate solutions when a fire occurs. The service activity was held at the Kelurahan Lambung Bukit Office Hall, Pauh District, Padang City on Monday, December 2, 2024. The service method used is education through counseling and discussion, and is equipped with a pre-test and post-test to evaluate the level of knowledge of the participants. The average knowledge score of 17 participants before counseling was 51.76 and afterwards increased to 68.82. Based on the statistical test results of the average difference before and after counseling, a p-value of 0,000 was obtained, which stated that there was a significant increase in knowledge value. Through this service activity, an increase in knowledge and awareness of housewives and the general public regarding the importance of fire mitigation in the Lambung bukit settlement was obtained. It is recommended that policy makers undertake mitigation efforts against fires and form cadres from trained community elements to form Kelurahan that are prepared for fire disasters.

Keywords: community-empowerment, education, fire, fire-mitigation, knowledge

INTRODUCTION

Fires in Indonesia have a close relationship with the country's unique environmental, social and economic conditions. It is not only the physical damage caused, but also includes other aspects such as moral, social and human life. Fire is an event that occurs when flames burn uncontrollably in an object or area, causing damage to the surrounding environment. This phenomenon occurs when fire is formed from a chemical reaction involving three main elements, namely heat, oxygen (O2), and fuel (Hardiyanti & Hasibuan, 2024). Fire is classified as a type of disaster because of its dangerous nature and impact on life and the environment. According to statistical data, during the period 2018 to 2023, Indonesia recorded 5.336 cases of fires that occurred in various regions. (Lestari et al., 2021).

Residential fires generally occur in densely populated areas, where unplanned building layouts and the use of flammable building materials are the main contributing factors (Arum et al., 2023). This condition is further exacerbated by the lack of fire protection systems, such as the availability of light fire extinguishers and accessibility for firefighters (Yuliana & Akbari, 2023). On the other hand, forest fires in Indonesia can now

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be considered a regional and even global disaster. This is because the impact is not only felt domestically but also extends to neighboring countries. In addition, gas emissions from the combustion process, such as carbon dioxide (CO2), contribute to the increase in global warming (Kristhy et al., 2021).

West Sumatra is a province that has forests and a complex geographical setting. One of the things that West Sumatra is proud of is its landscape. West Sumatra's forests are protected and cultivated areas which include natural reserve forests, but it is not denied that West Sumatra has the potential for natural disasters and forest fires. In 2023, West Sumatra was reported to have experienced forest and land fires at 14 different points (BPS Kota Padang, 2023b). Based on the potential disaster threats in cities and regencies in West Sumatra, Padang City is included in the high-risk category for various disasters, such as floods, earthquakes, landslides, land and forest fires, and drought. According to data from BPS Padang City (2023), 21 disaster events have occurred in Padang City in 2022, with various types of disasters spread across several sub-districts (BPS Kota Padang, 2023b).

Various disasters that have occurred show that West Sumatra, including Padang City, needs to continue to increase knowledge and capacity in an effort to reduce vulnerability in all sectors related to fire preparedness and mitigation. Although there has been a lot of education, counseling, training and simulation provided by the government and the private sector, the impact is still not significant, as evidenced by the number of victims who fall when a fire occurs. In terms of technical feasibility, many building infrastructures do not meet fire handling standards, coupled with the lack of supporting facilities (Yudrika et al., 2023). Limited resources for fire suppression are one of the main challenges often faced in the field in fire mitigation and management efforts.

This condition brings several challenges, especially related to forest fires and their impact on settlements and human activities. One of the community locations that are vulnerable and at risk of fire is the residential area around the hills (Sulistyaningtyas et al., 2024). With the geographical condition of Lambung Bukit Village in a hilly location, it has characteristics that are closely related to the potential for fires in settlements and forests and land. Dense settlements in hilly areas are usually not well planned and have irregular building layouts (Kadir et al., 2020). By paying attention to the characteristics of the landscape, settlement conditions, and types of buildings in hilly areas, these fires tend to be dangerous and detrimental because extinguishing efforts are more difficult because they are located around hilly locations that are far from urban areas and with terrain conditions and areas that are difficult to pass by vehicles and firefighters.

Lambung Bukit Village has the largest area among the 8 village in Pauh Sub-district, covering an area of 38.80 km^2 or around 26.52% of the total area of the kecamatan (BPS Kota Padang, 2023a). In addition, Lambung Bukit is one of the villages with a hilly topography and has great potential in the economic aspects of the community, especially through the agriculture and tourism sectors. However, the hilly landscape increases the risk of potential fires that can harm the community, both in terms of safety and economy. Therefore, fire mitigation efforts in this area are very important to protect the lives and safety of the community.

Mitigation is an action to reduce disaster risk or reduce the adverse impact of disasters on society (Prastowo & Wahyuningsih, 2020). The level of knowledge is one of the important factors in building preparedness and mitigation efforts in the community (Wijaya, 2019). Providing education is expected to increase public awareness in fire mitigation efforts. This education is the first step that aims to increase the understanding and knowledge of the target group regarding the importance of fire prevention measures in their environment (Sriagustini & Rosmiati, 2023). Through an educational approach, participants are provided with relevant and in-depth information on how to identify potential fire hazards and preventive measures. The level of change in the knowledge of the

target group can be measured through evaluations conducted before and after the implementation of education (Yudiantri et al., 2023).

METHOD

The service activity was carried out at the Lambung Bukit Village Office Hall, Pauh Subdistrict, Padang City on Monday, December 2, 2024. The main targets in this activity were housewives and general public in Lambung Bukit Village, Pauh Subdistrict, Padang City with the participation of 17 people. The educational method in this activity was delivered in the form of counseling and discussion and was equipped with a pre-test and post-test. The aim was to evaluate the improvement of participants' knowledge after the education. Educational material delivered through presentation media which contains informations about household fire mitigation efforts

The stages of the activity implementation are as follows:

1. Opening by the moderator and opening remarks by the village.
2. Identify the participants' level of knowledge related to household fire mitigation in the pre-test activity.
3. Delivery of educational materials by the group on household fire mitigation.
4. Discussion and Q&A between resource persons from the group and participants.
5. Evaluate the level of improvement of participants' knowledge of educational materials in the post-test activity.
6. Closing remarks by moderator and documentation
7. The results of the pre-test and post-test were then collected and analyzed using the paired T-test to see if there was a significant difference between the means of the two groups with the same population.

RESULTS AND DISCUSSION

Indonesia is known as a country that has high concerns about various types of disasters. Among these disasters, fire is one of the threats that requires serious attention, given its impact that can be felt quickly and widely. Law No. 24/2007 classifies fires as natural disasters or non-natural disasters, depending on the causal factors. (Presiden Republik Indonesia, 2007). This explains that fires are not only influenced by natural factors, but can also be caused by human negligence. Therefore, in disaster mitigation efforts, in addition to considering physical or natural aspects, special attention also needs to be given to human behavioral (social) factors that contribute to fire risk.

In an effort to mitigate or reduce the risk of future fire impacts, a strategy is needed that focuses on the implementation of mitigation and preparedness for fire disasters. Mitigation activities primarily aim to reduce the likelihood of harm or impact caused by disasters, especially for the community (Nursyabani et al., 2020). These impacts include threats to life safety, economic losses, and damage to material and natural resources. Disaster mitigation not only aims to reduce the risks posed but also to increase public understanding in dealing with potential disasters.

According to Paulo Freire (1970), it is very important to emphasize critical awareness in the education process. Freire argued that education should empower individuals to understand their social conditions and act to change them. In the context of this activity, empowerment is carried out through educational outreach activities to the community by providing an overview of environmental conditions that are vulnerable to fire hazards.

Pierre Bourdieu (1986) in his work "The Forms of Capital" stated that social capital is a network of relationships that can be utilized by individuals or groups to obtain greater resources. This activity seeks to develop the social capital of the Lambung Bukit Village community by strengthening relationships between communities in maintaining the surrounding environment and the culture of mutual cooperation in dealing with fires.

Peter Senge (1990) argued that successful communities or organizations are those that continue to learn and develop through collaboration and innovation. This activity emphasizes the concept of shared learning, where the community is invited to be ready and alert in facing fire disasters through collaboration with students and Village officials. It is hoped that this activity can create an environment that supports sustainable change and innovation, which is important for development in Lambung Bukit Village.

In an effort to support these objectives, Team carried out service activities in Lambung Bukit which took place at the Lurah Lambung Bukit Office Hall, Pauh Sub-district, Padang City on Monday, December 2, 2024. The activity was attended by 17 people with active participation from housewives and the general public. This activity aims to increase public knowledge and awareness, especially housewives, about fire mitigation efforts in settlements, especially in the home environment. The activity began with the opening of the moderator and continued with remarks from the village. Next, a pre-test was conducted to measure the participants' knowledge before the educational material was given. After the pre-test, the material was presented by the group as resource persons. Education is delivered in the form of counseling to the community and is carried out by Team as a community service team. The material presented includes the basic concepts of fire, the origin of fire, the factors that cause it, mitigation steps, and the initial actions taken when a fire occurs in the household environment. In the process of delivering the material, the group used projector media (infocus) to present the information to the participants visually.



Figure 1. Presentation of educational material

After the presentation of the material, the activity continued with a discussion and question and answer session which took place interactively with high enthusiasm from the participants. This discussion session provided an opportunity for participants to express their opinions and ask questions. Furthermore, the activity was closed by conducting a post-test to assess the increase in participants' knowledge after receiving education. The activity ended with a documentation session to document the process and results of the activity.

The success indicator of this community service activity is an increase in community knowledge, especially housewives, related to fire mitigation in the household. To measure this success, knowledge evaluation was carried out through pre-test and post-test given before and after education. The increase in participants' knowledge was measured using 10 questions presented in the form of a pre-test and post-test during the series of activities.

Table 1. Distribution of mean pre-test and post-test results of participants

Variabel	N	Mean	SD	SE	p-value
Pre-Test	17	51.76	11.31	2.74	0.000
Post-Test	17	68.82	11.11	2.69	

The average pre-test assessment result was 51.76 and the post-test was 68.82. The mean difference between the pre-test and post-test results was 17.06. The average distribution of assessment results shows a significant increase. The results of the paired T-test test obtained a p-value = 0.000 meaning that statistically there is a significant difference, it can be concluded that there is an increase in the value of the knowledge test in household fire mitigation education activities in Lambung Bukit. The comparison between the two results illustrates the effectiveness and success of educational activities in increasing the knowledge of the Lambung Bukit community regarding household fire mitigation. This indicates that the materials and delivery used in the activity are able to convey information effectively and relevant to the community.

CONCLUSION

Community service activities carried out in Lambung Bukit Village through education succeeded in increasing community knowledge, especially housewives regarding household fire mitigation. However, the challenge remains to ensure that the community can implement the knowledge in a sustainable and ongoing manner. It is recommended that policy makers undertake mitigation efforts against fires disaster and form cadres from trained community elements to form Kelurahan that are prepared for fire disasters.

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