JOURNAL OF HEALTH COMMUNITY SERVICE

Hypertension Prevention Education Through Training in Making Herbal Teas in Talango Village, Talango District, Sumenep Regency

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ARTICLE INFORMATION

Received: February, 24, 2022
Revised: May, 2022
Available online: May, 2022

KEYWORDS

Talango Village, Education, Hypertension, Herbal tea, Training

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A B S T R A C T

Talango Village is one of the villages located in Talango District, Sumenep Regency. The people of this village make a living mainly as fishermen and farmers. One of the habits carried out by fishers and farmers in between their activities is smoking. The nicotine in cigarette smoke can increase blood pressure and heart rate, narrow arteries, harden their walls, and make blood more likely to clot. This condition can increase the risk of hypertension or high blood pressure. Based on interviews and surveys with partners Yayasan Jala Tani Pertiwi, education about hypertension prevention needs to be carried out to prevent hypertension in fishers and hypertension in Talango Village. This problem has prompted a service team to design educational activities to prevent hypertension by manufacturing herbal teas. This activity is structured through the first step, namely the preparation stage (compilation of training modules, participant selection, and evaluation media creation), the second stage (the process of implementing activities with pre-/post-test and discussion), and the third stage (evaluating the results of the training). A total of 20 farmers and fishers who are members of the Jala Tani Pertiwi Foundation were given education about hypertension, then continued with training to make anti-hypertensive herbal teas. The evaluation results showed an increase in participants' understanding of the material provided by 34%. Participants are known to have been able to understand and make herbal teas made from Moringa leaves, jasmine flowers, lemongrass leaves, and roselle flowers. Furthermore, to increase the participants' interest in this activity, the service team also taught them how to make tea packaging and how to sell it.

INTRODUCTION

Poteran Island is part of the Sumenep Regency Island group. Poteran Island is located southeast of Madura Island (Figure 1.). Poteran Island is astronomically located between 113.92° to 114.08° South Latitude and between 7.04° to 7.12° East Longitude. The area of Poteran Island reaches 49.8 km^2 km or 2.40% of the area of Sumenep Regency, which is included in the administrative area.

Talango District consists of 8 villages (Sumenep, 2016). This island has one sub-district, namely the Talango sub-district, which consists of eight villages, where the majority of each household (head of household) works in the agricultural sector (people who work as farmers are 17.8% of the total population) and fishers. Poteran Island has a sloping topography with an average slope of less than 30%. It is located below 500 m altitude above sea level, which is included in the lowland category (Pamungkas, 2017).

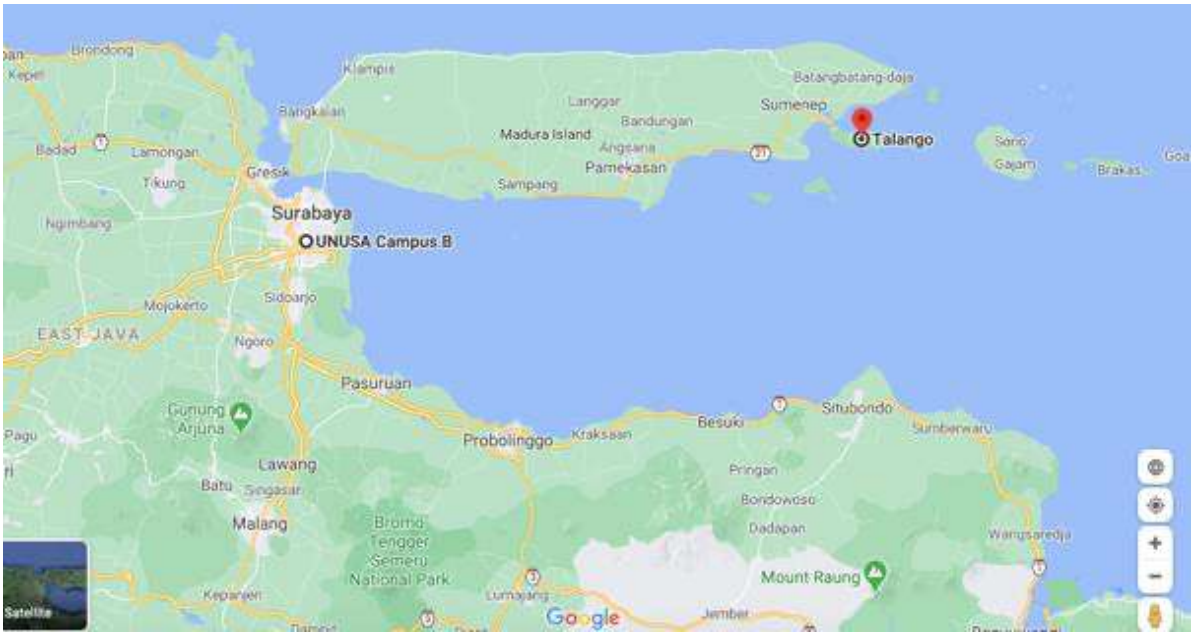

Fig. 1 Location of community service activities on Poteran Island
Source: Google Map, 2021

The survey results and interviews with partners (Yayasan Jala Tani Pertiwi) stated that smoking is a habit that men, both young and old, practice. Smoking is one of the local wisdoms that is a tradition on this island. According to Gumus et al., (2013), smoking and hypertension are significant cardiovascular risk factors. Research on the Chinese population states that smoking is associated with increased systolic blood pressure (Zhang et al., 2021). In Indonesia, many studies on smoking and hypertension have been carried out. One of them is a case-control study in Sidoarjo-East Java which states that smoking increases the risk of hypertension (Lusno, 2020).

Hypertension is a condition of blood pressure above normal values. Smoking habits can cause this condition. Cigarette smoke contains nicotine which can trigger blood pressure and increase heart rate, narrow the width of the arteries, harden the walls of blood vessels, and make blood viscosity high to the point of clotting. This condition can develop into hypertension or high blood pressure (Ain & Regmi, 2015).

Based on the situation analysis, the priority issues agreed upon with partners to be resolved with community service programs. The issues are: (1) How fishers and farmers understand the pathology, symptoms, and therapy of hypertension, and the risk of hypertension, primarily due to smoking activities; (2) How to increase public knowledge about preventing hypertension through making herbal teas.

The materials and training activities were prepared based on the research of the service team entitled In-Vivo Preliminary Examination of Moringa Oleifera Leaves Extract as Antiaging Candidate in Swiss Webster Male Mice (*Mus Musculus*) (Imamsari et al., 2018) and Analysis of protective effects of –

Sitosterol from Moringa oleifera on Oxidation–LDL, lipid profile, C–reactive protein (CRP), and VSMC (vascular smooth muscle cells) proliferation of rat aorta. This activity aims to transfer information from the research team to the community service team.

METHOD

The target participants are people whose livelihoods are fishers and farmers in the coastal area of Poteran Island, Sumenep-Madura. These fishermen and farmers are under the guidance of the Jala Tani Pertiwi Foundation (20 people). The activity will be held on 1-4 September 2021 at a partner location, Jala Tani Pertiwi Foundation (Talango Village, Madura Island-Sumenep Regency).

The flow of the activity stages is depicted in Figure 2. The activity is divided into 3 stages, namely:

a. Preparation phase. The preparation stage started with discussions with several partners, namely the Jala Tani Pertiwi Foundation. This activity partner is located in Talango Village, Sumenep Regency. The discussion was conducted to find out the description of what plants can be found in this village. Field observations were also carried out to determine the activities' location and coordinate with related parties, such as cadres from the local Health Centre Facility (Puskesmas, Pusat Kesehatan Masyarakat), Village Heads, and Wiraraja University colleagues. This activity is needed to prepare training modules by the service team. The training module contains education about hypertension, namely the etiology and how to prevent it with herbal plants. At this stage, an evaluation of activities is also prepared, namely the preparation of pre-and post-tests. This test is used to measure the success of the program being implemented. This activity involves students and several institutions, such as Universitas Wiraraja and Institut Teknologi Sepuluh Nopember (ITS). Socialization and debriefing were carried out on students to improve the team's understanding of delivering material.
b. Stage of activity implementation. The implementation is divided into 2 series, Hypertension Prevention Education and Herbal Tea Making Training. Before the education was conducted, participants were asked to work on 10 pre-test questions. After the education and training process is complete, this question will be given back to the participants. The test questions given are used as parameters for the program's success. Education is done through the technique of delivering material through lectures and followed by discussion. At this stage, the involvement of students from Wiraraja University is significant to help translate or explain to participants the material using the local language. The herbal teas taught to the training participants included Moringa leaf tea, roselle flower tea, elephant ginger tea, lemongrass tea, and the sweetener used was stevia leaf.

Evaluation stage and next plan: The evaluation phase includes discussions with participants and partners regarding the activities' impact and continuation. This evaluation is needed to determine whether there is an increase in understanding of hypertension and ways to prevent it, including the consumption of herbal

teas. In this final stage, an approach was also carried out with community leaders and the Puskesmas to assist the process of mentoring further activities.

RESULT AND DISCUSSION

This community service activity is carried out to solve problems faced by partners. The service team provided a solution by organizing "Hypertension Prevention Education through Herbal Tea Making Training in Talango Village, Talango District, Sumenep Regency". A total of 20 people participated in this activity and attended from the beginning to the end of the event. This activity is based on research related to Moringa or Moringa oleifera. Moringa is the most widely cultivated species on Poteran Island. This plant is a member of the genus Moringa, the only genus in the family Moringaceae. The most nutritious part of the plant is the leaves, which are a good source of B vitamins and vitamin C (Yang et al., 2006). Various studies have tested the content of Moringa in anti-diabetic and anti-hypertensive effects. Figure 3 presents the process of implementing the activities.

Fg. 1 (a) The process of delivering hypertension education materials (first picture); (b) participants making herbal tea (right)

Educational and training materials include:

a. Pathology, symptoms and therapy of hypertension, and risk of hypertension. Hypertension is a condition when blood pressure is too high. Blood pressure is the force exerted by circulating blood on the walls of the body's arteries, the main blood vessels in the body. One of the risk factors for developing hypertension is a lifestyle including an unhealthy diet (excessive salt consumption, a diet high in saturated fat and trans-fat, low intake of fruits and vegetables), lack of physical activity, tobacco and alcohol consumption, and being overweight or obese.
b. Herbal tea making techniques and their combinations. People in Java have generally used herbal plants for a long time as a deterrent, inhibitor, and against diseases found in the body by drinking herbs derived from herbal plants. Several studies have found that herbal plants that live in Indonesia can inhibit cancer formation, reduce high blood pressure, and reduce the risk of heart disease

(Nurhayati & Widowati, 2016; Sailesh, et al, 2018). In *Moringa oleifera*, the leaf contains polyphenols, flavonoids, ß-carotene, and lycopene, possessed 2, 2-diphenyl-1-picrylhydrazyl, hydrogen peroxide, and hydroxyl radical scavenging activities to decrease hypertension. This also contains in other herbaceous plants include paitan, kencur rice, junir tamarind, godhong kates, temulawak, Kunci suruh, gula asem, and chilip uyang (Sumarni et al., 2019).

The village where the activity is carried out has agricultural land. Many residents' plant Moringa, ginger, and jasmine flowers. The results of observations and discussions with partners, residents in this village have not consumed many plants as tea. The existence of this training is one way to introduce the benefits of these plants. One plant that has not been widely cultivated is the roselle flower. Roselle flowers are known to have benefits as antioxidants and reduce cholesterol in the blood. Not many rosella flowers are planted in this village, so in the future, the service team can bring roselle flower seeds and distribute them to the community.

The pre-test and post-test were given to measure the participants' level of understanding regarding the training provided. Figure 4 presents the process of doing the test by the participants. The enthusiasm of the participants in this activity was excellent. The interviews showed that almost 50% of the participants had high blood pressure, so they were enthusiastic about participating in this activity. The results of the questionnaires given showed an increase in participants' understanding of hypertension and herbal teas from 20% to 60%. Table 1 presents the questionnaire and the results of the correct answers given to participants.

Table 1. Tests were used to measure the level of understanding of participants before and after the education was given

Questions	Correct answer (%)	
	Pre-Test	Post-Test
What do you know about hypertension?	40	80
What causes hypertension?	60	80
The following complications that may be caused by hypertension are:	40	80
Here is not an attempt to avoid hypertension?	20	60
The following plants that can prevent hypertension are…	60	80
How do you consume plants to prevent hypertension?	40	80
Average (%)	43	77

Source: Private documentation (2021)

The education and training materials are expected to increase participants' knowledge and understanding of the pathology, symptoms, and therapy of hypertension and the risk; and increase public knowledge about how to prevent hypertension through manufacturing herbal teas.

The service team also provides training to package and sell the herbal teas they make. This activity was carried out to stimulate participants' interest in increasing economic income by selling herbal tea products.

Fig 2. The process of evaluating activities with pre- and post-test to measure the level of understanding of participants
Source: Private documentation

CONCLUSION

The education activity about hypertension prevention indicated that the educational programs effectively increased knowledge and improved self-management. This activity is measured by pre-and post-test, which was carried out to increase the percentage of correct answers by 34%. Participants' understanding of preventing hypertension was good, and their ability to process herbal plants into tea increased. Increased awareness of hypertension education strongly contributes to reducing complications and increasing productivity.

UNKNOWLEDGEMENTS

This activity provides a certain amount of funding from Universitas Nahdlatul Ulama Surabaya. Special thanks to the Jala Tani Pertiwi Foundation for facilitating the service team during the activity, and students from Wiraraja University (Sumenep) who have assisted in the smooth running of this activity.

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