Community empowering to escalate its economy by processing taro tubers into taro chips: case in Kecamatan Patampanua

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Abstract. The Regional Partnership Program (PKW) of the Universitas Hasanuddin in collaboration with the POLITANI Pangkep and the Pinrang Regency Government have carried out community service activities to overcome the existing issues in the Kecamatan Patampanua, especially in the Desa Malimpung. Recognizing the community's knowledge and skills to manage nearby natural resources is essential to increase the economy and in turn, the welfare of the society. It is key to reducing poverty. The activity aims at improving the knowledge and skills of the community in the Desa Malimpung about how to process taro tubers into taro chips was conducted in the Desa Malimpung on July 23-25, 2018 with the Malimpung's society as the audient target. The methods are counseling, demonstration, and implementation. The result is there is an increase of the community's knowledge about the nutritional content of taro tubers and taro chips, materials, and procedures for making taro chips as well as their storage and packaging process.

1. Introduction

The government of the Pinrang Regency makes an effort to improve the community welfare by increasing the family economy, that is, by stimulating the growth of micro-entrepreneurs in the scale of the home industry [1]. Abundant production of taro in the Pinrang Regency is potentially significant for the home industry, especially for women, who are able to support the government efforts in improving the community economy. Besides, taro plants are promising since almost all parts of the plants are available for food, either livestock or human consumptions.

Taro is one of the plants of tubers, and it is an alternative food commodity, which is watery. It also contains carbohydrates 23.7%, starch 18.2%, and sucrose 1.42%. By its nutritional content, it is possible to use taro tubers as the food source of non-rice energy. Taro tubers contain starch, which is easily digested, it contains acids such as potassium oxalate though. The acids might cause itching when it is consumed. Hence, it is necessary to process taro properly. One way to consume taro tubers is to make taro chips. If taro chips are appropriately processed, it results in crispy and healthy food. Furthermore, taro chips have a relatively long shelf life.
The activity aims to increase the knowledge and skills of the Desa Malimpung’s community about the processing of taro tubers into processed products, that is, taro chips. It is expected that the activity will increase the knowledge and skills of the targeted community in processing taro tubers that are economically valuable.

2. Methods
Community service activity was carried out in the Desa Malimpung, Kecamatan Patampanua, Pinrang Regency, Makassar, South Sulawesi. The targeted audience of the activity is the residents of the Desa Malimpung, Kecamatan Patampanua. The method used to improve the knowledge and skills of the targeted community is interactive counseling and demonstrating taro tubers processing.

2.1. Material
The main ingredients used in the activities are taro tubers, cooking oil, and some additional ingredients such as salt, whiting, baking powder, garlic, and topping. The tools used are pan, bowl, spoon, scale, knife, plate, blender, and spinner.

2.2. Activity Phase
The activity begins with a location survey, and it is followed by a discussion about the technical activity implementation with the local government of Pinrang Regency, Kecamatan Patampanua, Desa Malimpung. Further, the counseling about benefits of taro tubers as well as how to process them into various products is conducted first before demonstrating making taro chips with various flavor.

2.3. Evaluation of the Targeted Community’s Knowledge and Motivation
Evaluation sheet consists of a 10-questionnaire-item to evaluate the knowledge level of the targeted community about taro tubers, and its processed products were shared. The targeted community fills the "yes" or "no" answer. Furthermore, they were asked for their opinions about the level of difficulty in the process of making taro chips and about organoleptic tests that are descriptively carried out by participants. Pre-test and post-test were conducted during the activity take place to perceive the different level of the targeted community concerning its knowledge after counseling.

![Figure 1. The participants of activity](image)

3. Results and discussion

3.1. Counseling
Counseling is conducted to increase the participants’ knowledge about taro tubers. It is expected that they have information about the potential benefits of taro tubers. The material information is about the
types of taro, the nutritional content of taro, the types of taro products, the characteristics of taro tubers that are suitable to making taro chips, and the benefits of consuming taro tubers.

Participants actively participate in the counseling program about the production of taro chips. They all attend the activity, and no one is leaving out of the place before the project ends. Participants also asked several questions related to the material given, and the instructor answers them thoroughly and clearly.

3.2. Demonstration
A teacher accompanied with three students from Hasanuddin University conducted the demonstration of making taro chips. Before doing the demonstration, an instructor explains many instances relating to the process of making taro chips to participants. During this section, there is an interactive discussion between the instructor and participants talking about how to modify the processed product of taro snack.

![Figure 2. The explanation of instructor during the demonstration](image)

3.3. The level of participant's knowledge about taro and the processed products
Measuring the level of participants' knowledge is needed in order to figure out the basic knowledge of participants about taro products as well as the effectiveness of the counseling program. Pre- and a post-test instrument containing 10 item questions about taro tubers and how to process them were collected from participants for which, they should fill the sheets honestly.

At the end of the program, the participants should answer the same questions as previously filled before the demonstration. It acts as the post-test. Analysing data from the test informs the level of the effectiveness of participants in absorbing material conducted in each activity (counseling and demonstration). In addition to the ten questions given in the post-test, two questions asking about the participants' opinions about the results of taro chips products are filled. The following is a discussion regarding the pre-test and post-test for taro chips.

3.3.1. Nutritional Content of Taro Tubers. Before counselling activity, all participants were provided a questionnaire containing questions about the level of knowledge of participants regarding taro tubers and taro chips and the nutritional content of taro tubers. Data collected from the pre-test showed that 63.6% of participants are familiar with taro tubers and taro chips. However, there are only 18.2% of them know the nutritional content of the taro tubers. After the counseling and giving material on the nutritional content of taro tubers, the number of participants knowing the point at issue increased by 72.7%. It can be stated that there is a difference in knowledge level before and after the activity, that is, the activity has a significant impact by 0.002.

It seems that the information provided by the instructor has increased the level of participant's knowledge about taro tubers and how to process it. The information is about that taro tubers contain much water as well as 23.7% carbohydrates, 18.2% starch, and 1.42% sucrose [2].
Figure 3. The distribution of participant’s knowledge level about taro tubers and its nutritional content

It seems that all participants have additional knowledge about taro tubers and its nutritional contents from the instructor. It can be seen from the result of the post-test shared to them. 100% of participants answered yes, or they know about the issues being asked. It means that the counseling activity has increased the knowledge of targets society.

3.3.2. Making Taro Chips. The distribution of the participant's knowledge level concerning characteristics and types of taro used in the demonstration activity shows that about 9.1% of participants do not know the concerns. The participants were also asked about their knowledge of the ingredients and the process of making taro chips. Before the activity conducted, there are about 18.2% and 9.15% of them did not know the type of materials used and the procedures of making taro chips, respectively. However, after the counseling and demonstration were conducted, the percentage of participants' knowledge increased from 9.1% to 72.7% for row material type, from 18.2% to 81.8% for the ingredient, and from 9.1% to 81.8% for the procedure to make taro chips (Figure 4). The increase of participant's knowledge is due to the information provided by instructor teaching about taro tubers were harvested after 6-8 months [3].

Figure 4. The Distribution of Participants' Knowledge Level about Taro Chips

The content of calcium oxalate in the taro tubers may irritate the throat, swell, and itch in the mouth and skin. The enzyme is also insoluble in the water. As a result, it is necessary to reduce the level of oxalate in the taro tubers before processing them into taro chips. According to Taufik et al., (2003) [4], heating at 60 °C followed by the addition of 6% Sodium bicarbonate (NaHCO3) or 10% NaCl solution
for 60 minutes could reduce the oxalate level. Furthermore, the deep-frying method can result in crispy and spicy taro chips.

Another focus of the community service program is to measure the level of participant's knowledge about the packaging and storage of taro chips. It is because the storage and packaging process is one of the characteristics that affect the selling power and increase the shelf life of the product. Before conducting counseling activity, the participants' knowledge concerning storage and packaging were obtained, and there are approximately 9.1% of them have knowledge about the matter. The level of participants' knowledge surges significantly after the activity conducted it took 81.8% for storage and 63.6% for packaging. The increase is due to the information provided by the instructor. For storage, it is better to store taro chips in a dry place or not directly exposed to sunlight. The packaging is one of the most important things to keep the chips from external conditions and attract consumers to buy. Similar to other chips, various packaging types can be used to wrap the taro chips. One of them is HDPE packaging, that is, a kind of plastic that is resistant to chemicals and has a high resistance to oils and fats. Besides as a way to attract consumers and protect the product, packaging may facilitate the transportation process [5].

3.3.3. Level of the Consumer Acceptance of Taro Chips Production. Before the demonstration, the participants do not know how to make taro chips. They only steam or cook the taro tubers to consume. After the training and demonstration activities, the question asking the follow up of the community service program was asked to the participants. It is mainly about the progress of making a variety of products from taro tubers. All the participants (100%) would like to make taro chips at home for their family consume or selling.

![Figure 5. The distribution of participants' knowledge level about the packaging and storage of taro chips](image)

![Figure 6. The distribution of the taro chips production](image)
4. Conclusion
While counseling can increase the knowledge of the targeted society concerning taro tubers and their processed products, the demonstration can improve the skills of the targeted society in the processing of taro chips. In order to broaden the benefit of the activity, it is necessary to transfer knowledge and skills about taro tubers and how to process them into taro snack to residents in the Desa Malimpung, Kecamatan Pinrang. Further, it is necessary to encourage the related party to provide means to produce taro chips.

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