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Empowering Kauman Community Members in Malang City through Dragon Fruit Peel Cookie Making

Venny Kurnia Andika, Sirilus Deodatus Sawu dan Yushinta Elsa Valina

Pharmacy Program Study, Sekolah Tinggi Ilmu Kesehatan Panti Waluya Malang
Jalan Yulius Usman No. 62, Malang, Indonesia, 65117

Correspondence: Venny Kurnia Andika (funnyvenny@gmail.com)

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Abstract. Cookies are calorie-dense snacks made from flour with low dietary fiber content due to the addition of sugar, fat, and eggs, making them less beneficial for health if consumed continuously. Nowadays, there is a need for innovation in providing functional food in the form of healthy and safe cookies for individuals with health issues. Dragon fruit peel is rich in antioxidants and contains high dietary fiber due to its pectin content, along with being a source of several beneficial minerals and vitamins, making it a suitable ingredient for making cookies. This empowerment activity aims to enhance the knowledge of PKK members regarding the production of functional food in the form of dragon fruit peel cookies. The activity consists of 3 (three) stages. The first stage involves an explanation of functional food cookies made from dragon fruit peel, the second stage focuses on the process of making healthy dragon fruit peel cookies, and the third stage entails practical cookie-making using dragon fruit peel. Evaluation is conducted by administering pretests and post-tests. Based on the evaluation results, the pretest score (average=61.16) increased by 53.55% after the post-test (average=93.91). This indicates that the information provided regarding the production of dragon fruit peel cookies was well understood by the participants and suggests the success of the conducted empowerment activity.

Keywords: cookies, functional food, dragon fruit peel, dietary fiber

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INTRODUCTION

Kelurahan Kauman is one of the neighborhoods in the city of Malang that is quite special as it is a neighborhood with tourism potential. This uniqueness is due to the presence of Kampoeng Heritage Kajoetangan located in Kelurahan Kauman, precisely on Basuki Rachmat Street gang VI Kauman. Kampoeng Heritage Kajoetangan was officially designated as a cultural area by the Malang City government on April 22, 2018. As a thematic tourist village with a strong atmosphere of past concepts, Kampoeng Heritage Kajoetangan adopts a historical theme to attract tourists (Susanti et al., 2020). Tourists can enjoy Dutch colonial-era buildings as well as architecture from the jengki era that still retains its original form. In addition to colonial-style houses or old buildings, there are also playgrounds and antique items that are well maintained by the residents of Kampoeng Heritage Kajoetangan. There are several tourist spots that can be visited by tourists such as colonial-era Dutch houses and jengki-era buildings, shops, cafes, art galleries, the sacred tomb of Mbah Honggo Kusumo, Krempyeng Market, and murals (Khakim et al., 2019) (Wahyuni et al., 2021).

The potential for tourist destinations in Kampoeng Heritage Kajoetangan continues to be developed by the surrounding community as an effort to improve the welfare and standard of living of the Kauman community, especially residents living around Kampoeng Heritage Kajoetangan, for example, by forming Tourism Awareness Groups (PokDarWis) (Krisnanda et al., 2023) and carrying out settlement improvements with the KOTAKU (Slum-Free City) program to create habitable, productive, and sustainable settlements (Primasari et al., 2023).

Collaboration between Kelurahan Kauman in Malang city and STIKes Panti Waluya Malang has been established through Community Service activities (PkM) carried out in Kelurahan Kauman targeting members of the PKK (Family Welfare Empowerment) in Kelurahan Kauman. Kelurahan Kauman is divided into 10 Neighborhood Associations (RW), and some of them have empowered PKK members through Community Service activities conducted by the Pharmacy Bachelor Program of the Panti Waluya Malang School of Health Sciences through programs such as training in making products utilizing dragon fruit peel such as lip balm, bath bombs, and tisanes from red dragon fruit peel (Andika et al., 2023; Andika & Sugiyanto, 2023; Kusuma et al., 2022).

Community Service (PkM) is one of the three pillars of Higher Education Tridharma, which aims to apply and cultivate science and technology to advance public

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welfare and enrich the nation's intellectual life as stipulated in Law number 12 of 2012 concerning Higher Education, articles 47 and 48. The implementation of PkM in Higher Education aims to:

1. Conduct PkM in accordance with the Minister of Education and Culture Regulation Number 3 of 2020 concerning National Standards for Higher Education;
2. Develop community empowerment models;
3. Increase PkM capacity;
4. Provide solutions based on academic studies to the needs, challenges, or problems faced by communities directly or indirectly;
5. Conduct activities capable of empowering communities in all strata, economically, politically, socially, and culturally; and
6. Transfer technology, knowledge, and art to communities for the development of human dignity with gender justice, social inclusion, and the sustainability of natural resources.

Programs in PkM activities are the results of research or the development of science and technology developed by PkM teams according to their expertise. The community service activities are expected to generate solutions to the problems faced by the target audience (partners) and should be directly applicable by PkM partners. PkM programs must be able to benefit partners in terms of increasing knowledge, skills, health, income, and services. Community service activities can take the form of community services, the application of science and technology according to their expertise, increasing community capacity, or community empowerment (Ministry of Education and Culture Research, Technology, and Higher Education, 2021).

Members of the PKK in Kelurahan Kauman are mothers aged 31-75 years, where PKK members are the target audience (partners) who fall into economically productive groups besides the dasawisma group, Pokdarwis, study groups, or productive housewives (Ministry of Education and Culture Research, Technology, and Higher Education, 2021). Based on pre-screening results conducted previously, it is known that some members of the PKK in Kelurahan Kauman suffer from diseases such as hypertension, cholesterol, uric acid, and diabetes, with 13 people suffering from cholesterol, 9 people suffering from hypertension, 9 people suffering from diabetes, and 3 people experiencing uric acid. This phenomenon can illustrate that the health quality of PKK members still requires attention

in terms of knowledge about nutrition supporting a healthy lifestyle, especially for PKK members who have health problems. A person's health quality is determined by several factors, including food factors. A person's lifestyle affects their quality of life, where besides physical activity and sleep quality, knowledge of food nutrition also affects the individual's health quality (Ratmono et al., 2022). An individual's eating behavior correlates with the nutritional knowledge they possess. Nutritional knowledge can influence a person's eating habits, where the more knowledge about nutrition acquired, the better a person's eating habits (Berliandita & Hakim, 2021). An individual's inability to choose the foods to be consumed such as the types of food, the amount of calories consumed, and the frequency of eating over a long period can cause nutritional problems due to the imbalance between the amount of nutrients consumed and the nutritional needs required, thus affecting a person's health quality (Tambajong et al., 2021). Nutritional knowledge is a process related to increasing knowledge about nutrition, forming healthy lifestyle habits by regulating daily eating patterns, and other factors that influence eating habits as it can improve a person's health and nutrition status (Sefaya et al., 2017).

The habit of consuming high-calorie and unbalanced nutritious foods can trigger health problems. One of the favorite snacks is cookies. Cookies are a type of snack favored by the community because of their various flavors and attractiveness. Generally, cookies are made from high-calorie flour but low in dietary fiber, with the addition of sugar, fat, and eggs. Cookies are a type of biscuit made from soft dough, with high fat content, and the fat content in cookies can reach up to 70% (Fitria & Prameswari, 2022; Muhandri et al., 2018). The characteristic of cookies is having high sugar and fat content and low water content (less than 5%), so they have a crispy texture when packaged (Rosida et al., 2020). Consuming foods with high sugar and fat content can increase the risk factors for diseases such as obesity, hypertension, and diabetes mellitus (Triandhini et al., 2018). Therefore, innovation is needed in providing healthy snacks, such as making functional cookies that can provide health benefits when consumed (Rahardjo et al., 2020).

One way to process cookies into functional foods is by adding dietary fiber content. Adding fiber content to cookies will have beneficial effects on health (Mubarok & Sembiring, 2020). Consuming dietary fiber in sufficient amounts can have positive effects on health such as reducing the risk of obesity, hypertension, stroke, and cardiovascular disease (Salim et al., 2017). In addition to being rich in antioxidants, dragon fruit peel contains dietary fiber that is higher than peaches and pears because of its high pectin

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content (Afriyanti et al., 2023; Indriani & Khairi, 2023). Dragon fruit peel is also a source of antioxidants and several minerals (calcium, phosphorus, and iron) as well as a source of vitamin B1, vitamin B2, vitamin B3, and vitamin C, so it can be added as an ingredient for making cookies (Fatmawati et al., 2018). The addition of dragon fruit peel flour has been proven to increase fiber content in pancakes (3.72 g/100g) and cookies (31.26%) (Lianawati & Warsito, 2019; Rochmawati, 2019). Adding dragon fruit peel flour to a food product is also quite popular because of its attractive color, aroma, and taste (Rista et al., 2019; Triwulandari et al., 2017; Utami et al., 2022).

The community empowerment activities carried out in Kelurahan Kauman are a form of empowerment as a solution to the problems faced by PkM partners. The problems found are that PKK members in Kelurahan Kauman do not have knowledge about the benefits of functional foods that are good for health and do not have knowledge about how to make cookies that can be made into functional foods in the form of dragon fruit peel cookies.

The empowerment activities of PKK members in making dragon fruit peel cookies aim to increase the knowledge and skills of PKK members regarding how to make dragon fruit peel cookies that are good for health and how to process dragon fruit peel to be utilized as functional food in the form of cookies. The number of PKK members participating in the PkM activities is 23 people with an age range of 31-75 years.

PROBLEM

Based on the situational analysis and communication conducted between the implementers and the PKK (Family Welfare Movement) activists in Kauman sub-district, as well as the follow-up actions and collaboration from the previous Community Service Program activities, the following issues were identified with the partners:

a. Members of the PKK in Kauman sub-district, Malang city, lack knowledge about functional food in the form of dragon fruit peel cookies beneficial for health.
b. Members of the PKK in Kauman sub-district, Malang city, lack knowledge about how to make dragon fruit peel cookies beneficial for health.
c. Members of the PKK in Kauman sub-district, Malang city, lack skills in making dragon fruit peel cookies beneficial for health.

The following are the implementation of the Community Service Program (PkM) provided as solutions to address the partners' issues:

a. Providing materials to PKK members in Kauman sub-district, Malang city, about dragon fruit peel cookies as functional food.
b. Providing materials to PKK members in Kauman sub-district, Malang city, about how to make dragon fruit peel cookies.
c. Conducting skills training activities for PKK members in Kauman sub-district, Malang city, on how to make dragon fruit peel cookies.

METHOD

The PkM activities involve providing information and demonstrations aimed at enhancing participants' knowledge regarding the provided PkM program. There are a total of 23 participants from PKK involved in these activities. The PkM activities are divided into 3 stages:

a. Preparation stage, including coordination (September 14, 2023), activity formulation and scheduling (September 12-21, 2023), and preparation of necessary facilities and infrastructure for the PkM activities (October 2-18, 2023).
b. Implementation stage, including providing materials on healthy functional cookies (October 21, 2023), making healthy cookies from dragon fruit peel (October 26, 2023), and practical sessions on making healthy dragon fruit peel cookies (November 16, 2023).
c. Evaluation stage, including evaluating the knowledge improvement by distributing pretest sheets at the beginning of the activities (October 21, 2023), and conducting post-tests at the end of the PkM activities series (November 16, 2023).

Knowledge improvement is measured by assessing the increase in scores from pretests to post-tests. The average pretest score of PkM participants is 61.16, and after participating in the PkM activities, their understanding increased to an average score of 93.91, indicating a 53.55% increase in understanding. A set of 15 questions prepared by the PkM team was used to assess participants' understanding during the PkM activities, covering topics such as dragon fruit peel content, processing methods, functional foods, tools and ingredients for making dragon fruit peel cookies, and the process of making them.

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RESULT AND DISCUSSION

The number of PKK members participating in the PkM activities is 23, with ages ranging from 31 to 75 years old. Based on the pre-screening results from previous activities, it was found that the majority of PKK members in the Kauman sub-district suffer from diseases such as hypertension, diabetes, high cholesterol, and uric acid. The effort to improve the health quality of these PKK members is the basis for conducting PkM activities, which mobilize PKK members to create functional foods in the form of healthy cookies. A food product can be upgraded to functional food through innovation, aiming to prevent diseases or improve health quality when consumed. Some steps to turn a food product into functional food include reducing calorie content, adding or enhancing ingredients beneficial to health, or undergoing certain processes to provide health-enhancing effects (Handa et al., 2012). During this PkM activity, participants were informed about the functionality of functional foods related to health benefits. The PKK mothers were introduced to general information about functional foods and the impact of lifestyle, especially dietary factors, on health problems, as well as the role of functional foods in improving health quality. The activity also introduced the participants to dragon fruit peel cookies as an alternative functional food and reminded them of the functions and various benefits of dragon fruit peel, as well as the reuse of dragon fruit peel waste to produce functional food products.

The PkM activity also taught participants how to make healthy cookies using dragon fruit peel. PKK members were theoretically taught how to process dragon fruit peel, starting from selecting good dragon fruits, drying the peels, to utilizing dried peels to make cookies. This segment explained the stages of the healthy cookies processing procedure using red dragon fruit peel materials. The activity continued with direct practice in making cookies from dragon fruit peel by the Kauman sub-district PKK members. Guidance was provided during the cookie-making practice. Participants directly practiced cookie-making, from weighing ingredients to the cookie maturation process. The participants actively engaged in the activity and enthusiastically asked questions about the dragon fruit peel cookies-making process.

In the evaluation phase, participants were assessed through pre-tests and post-tests. Pre-tests were administered at the beginning of the activity, while post-tests were conducted at the end. A total of 15 questions prepared by the PkM team were given to evaluate participants' knowledge levels during the PkM activity. The average pre-test score

for PkM participants was 61.16. After attending the PkM activity, participants' understanding increased, with the average post-test score rising to 93.91, indicating a knowledge increase of 53.55%. The evaluation results showed that participants could answer more than 70% of the 15 questions correctly, with a minimum score of 86.67 and a maximum score of 100.

Fig. 1 Dragon fruit peel cookies making practice

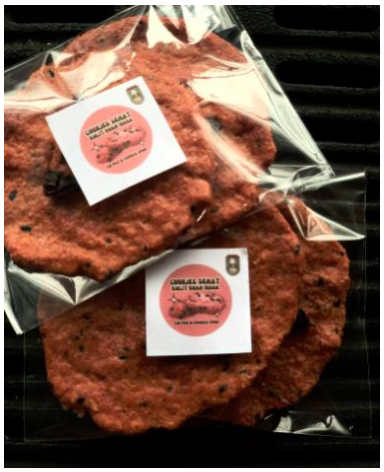

Fig. 2 Dragon fruit peel cookies

Throughout the activity, participants interacted well and responded by asking questions about the ongoing activities. It is hoped that after this empowerment activity, PKK members in the Kauman sub-district of Malang will have the skills to utilize dragon fruit peel more effectively, expanding their knowledge and inspiring them to turn dragon

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fruit peel into useful and economically valuable natural dyes, as well as generating business ideas for PKK members in the Kauman sub-district of Malang.

Fig. 3 PkM participants and dragon fruit peel cookies products.

CONCLUSION

PKK members in the Kauman sub-district, as partners in PkM, have learned about the health benefits of dragon fruit peel cookies and the utilization of dragon fruit peel in making these cookies, as demonstrated by the average score increase of 53.55% during evaluation. Participants could correctly answer more than 70% of the 15 questions, with scores ranging from a minimum of 86.67 to a maximum of 100. The PkM activities conducted did not cover information on the potential commercialization of dragon fruit peel cookies products. Future PkM activities are expected to increase PKK members' knowledge and skills in utilizing existing potentials, turning them into business ideas for PKK members in the Kauman sub-district of Malang.

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