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Empowerment of the PKK Group in Tanjungan Village, Mojokerto Regency through Innovation of Globe Amaranth (*Gomphrena globosa*) Herbal Tea

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Abstract
Community empowerment is a strategic effort to enhance the capacity and self-reliance of local groups, particularly women, in supporting development based on regional potential. This program aimed to empower the PKK group in Tanjungan Village, Mojokerto Regency, through the development of an innovative herbal tea product made from globe amaranth flowers (Gomphrena globosa), which are known for their functional health benefits. The activities included assistance in the cultivation, harvesting, and post-harvest handling of globe amaranth flowers; training in herbal tea processing; and support in production and packaging aspects. The results showed that the PKK group members were able to process the flowers into a consumable herbal tea product with appealing presentation and promising market potential. Moreover, the training significantly improved participants' knowledge regarding the health benefits of globe amaranth and herbal product processing techniques. Pre- and post-training evaluations revealed a 36% increase in participants' knowledge. This initiative also fostered entrepreneurial skills in herbal-based products, offering an alternative source of income for the community. It is expected that this innovation will not only improve local welfare but also support the sustainable development of local potential.

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1. INTRODUCTION

Family Welfare Development (PKK) is a national movement aimed at improving family welfare through empowering community participation, especially women. PKK groups are spread across all levels of government, from the national level down to the village level, and play an active role in various social, economic, and health programs (Alvianta, Prabowo, & Komarudin, 2021; Wadu, Ladamay, & Dadi, 2018One of the PKK groups that has the potential to be empowered is the PKK of Tanjungan Village, Mojokerto Regency, East Java.

Tanjungan Village is a lowland area with 1,052 households and a total population of 3,057, consisting of 1,506 men and 1,551 women. Approximately 75% of the population makes a living as farmers, while the rest work in trade, public services, and other sectors. In addition to its agricultural potential, this village also has a tourist attraction, namely the

Tanjungan Ecotourism, which includes a reservoir area and teak forest with a total area of 40 hectares (Anonymous, 2024; Setyaningrum, Tjahjoanggoro, & Soeherman, 2019). Various facilities have been built to support tourism activities, and before the Covid-19 pandemic, the number of visits had increased significantly (Setyaningrum et al., 2019).

However, since the Covid-19 pandemic, the tourism sector in Tanjungan Village has experienced a decline in visits. Some facilities are no longer optimally maintained, requiring new innovations to revitalize tourist attractions. As a form of recovery, the village government, with support from the University of Surabaya, UPN Veteran East Java, and the Ministry of Higher Education, Science, and Technology, has developed a TOGA (Family Medicinal Plants) Showcase as one of the educational tourist spots in the Tanjungan Ecotourism. The TOGA Showcase is a medicinal plant cultivation area designed aesthetically and functionally, with the aim of not only serving as a means of education and conservation, but also to attract tourists (Kartini, Setyaningrum, Hidayat, & Pudjibudojo, 2024; Solichah, 2015).

Currently, about 30 types of medicinal plants are cultivated, including button flowers (Gomphrena globosa), which is known to have potential as a raw material for functional drinks due to its various health benefits. Traditionally, this plant has been used to treat aches and pains, malaria, bacterial infections and jaundice, urinary tract problems, high cholesterol, coughs, fever, diarrhea, liver disorders, and kidney disorders (Anaswara, Suresha, Balasubramanian, Sushma, & Jaseela, 2022; Tang et al., 2022However, the harvest of the Kenop Flower from the TOGA Showcase has not been optimally utilized due to limited public knowledge, especially regarding harvesting techniques, post-harvest, and innovation of Kenop Flower-based products.

Seeing this potential, the Tanjungan Village PKK Group has a strategic role to develop the use of medicinal plants, especially the Kenop Flower through training and mentoring. Based on this background, the problem formulation in this program is how to improve the knowledge and skills of the Tanjungan Village PKK Group in harvesting, processing, and utilizing medicinal plants, especially the Kenop Flower? The next problem is how the innovation of the Kenop Flower herbal tea can become one of the superior TOGA-based products that support family economic empowerment and local tourism attractions? Therefore, the objectives of this program are as follows: 1). Provide training and mentoring to the Tanjungan Village PKK Group in processing the Kenop Flower into herbal tea products, 2). Increase the capacity and independence of the PKK group in utilizing TOGA harvests productively and with economic value, and 3). Support the development of Tanjungan Ecotourism through innovative educational spots and medicinal plant-based products. In addition to improving the skills and independence of families in the use of TOGA, this program is also expected to provide added economic value and become part of a tourist attraction based on local community empowerment.

2. METHOD

This empowerment program is implemented through several stages of activities as follows:

a. Coordination and identification of needs

   The initial stage involved coordination between the support team, the village government, and the Tanjungan Village Family Welfare Movement (PKK) to agree on the format of the activity, the location of implementation, and the identification of needs and supporting facilities. This approach was used to facilitate communication between the two parties, thereby reaching an understanding of the existing problem and its resolution. Yulianti & Sulistyawati, 2021).

b. Training and mentoring

Training activities are carried out in a participatory manner (Prawira & Nugraha, 2021), includes: introduction to herbal tea; the health benefits of herbal tea; ingredients, tools, and methods for making herbal tea; and how to serve herbal tea. The mentoring materials include an introduction to the button flower plant and its health benefits, harvesting and post-harvest techniques for button flowers, the process of processing it into herbal tea (sorting, drying, packaging), training on sanitation and quality standards for processed herbal products, and hands-on practice and mentoring. The PKK group conducts hands-on practice in processing button flowers under the guidance of a mentoring team. This process includes production *batch small* batches, taste testing, and initial product packaging.

c. Making branding and product labels
   The activity continued with mentoring *branding* local, creating simple product names, labels, and packaging that match the aesthetics of herbal products and local wisdom.
d. Evaluation and sustainability planning
   Evaluation was conducted through observation and group discussions. Next, a plan was developed for the sustainability of product production and marketing, including for internal consumption, tourist souvenirs, and limited sales.

3. RESULTS AND DISCUSSION

3.1 Implementation of assistance activities for harvesting and post-harvesting of Kenop Flowers

The Village Empowerment Program (PDB) conducted in 2024 by a mentoring team from the University of Surabaya and UPN Veteran East Java for Tanjungan Village has succeeded in realizing a TOGA Showcase with 30 types of medicinal plants in it. Based on FGDs between the implementation team and partners, it was agreed that two plants would be developed into superior village products: Kenop Flowers and Miana Leaves. As a first step, Kenop Flowers were chosen to be developed into herbal tea products. In order to produce high-quality products, partners must have adequate knowledge and skills starting from harvesting, post-harvesting, and processing Kenop Flowers into herbal tea. Therefore, in this empowerment program, assistance is provided for the harvesting and post-harvest processes of Kenop Flowers.

Assistance with the harvesting process is provided by providing direct samples in the field, namely the TOGA Showcase. In brief, the harvesting is carried out according to the following procedure. The button flower is harvested when it has reached full bloom, characterized by a perfectly round shape and bright red-purple color. This activity is carried out in the morning, between 7:00 and 9:00 a.m., after the dew has dried but before the sun is too hot, so that the flower quality does not decrease due to excessive heat exposure. Flowers to be harvested are selected based on good physical condition, namely not damaged, not attacked by pests or diseases, and not wilted. The harvesting process is carried out by picking by hand. Flowers are picked carefully, usually leaving a small part of the stem about ± 0.5 cm long. Forcible pulling is not allowed to prevent damage to the plant. The harvest is then collected into a prepared clean container, namely a basket made of bamboo. Overcrowding is avoided to avoid stressing the flowers and making them less prone to damage. During the collection process, the flowers are kept in a shaded area and out of direct sunlight. Assistance activities for the Kenop Flower harvesting process are shown in Figure 1.

Figure 1. Assistance in the Kenop Flower harvesting process at the TOGA Showcase

The post-harvest process for button flowers includes sorting, washing, drying, and packaging. This is done to prevent wilting, color loss, or loss of active compounds that could affect the quality of the final product. This post-harvest process is supported by the creation of an educational video uploaded to YouTube (https://www.youtube.com/watch?v=gph43SoyFvM) and the creation of a video tutorial. Standard Operating Procedure(SOP) drying process. The use of educational videos in this mentoring activity has several advantages, including the ability to present material visually and audio simultaneously, thus facilitating understanding and improving participant retention. Information conveyed through videos tends to be more engaging and interactive, thereby increasing learning motivation and strengthening audience engagement. In addition, videos allow for a clear, sequential presentation of processes or practices, which is very effective in explaining technical or procedural steps. Another advantage is flexibility in time and place, as videos can be replayed at any time according to participant needs, making them an efficient and adaptive educational tool (Aisah, Ismail, & Margawati, 2021; Hajar, Handaria, Setyabudi, & Qurrotul, 2023).

Meanwhile, providing SOPs in mentoring activities provides several important benefits that support the success of the program. SOPs help ensure that each stage of the activity is carried out in a standardized, systematic, and consistent manner, so that the quality of implementation can be maintained even if carried out by different people. With SOPs, work processes become clearer, more focused, and easier to follow for mentored partners, thereby reducing errors, increasing time efficiency, and accelerating the process of knowledge transfer. Furthermore, SOPs also function as reference documents and documentation materials, facilitating the evaluation, replication, and development of similar programs in the future (Official & Sari, 2022; Subagio, Wongso, & Yoewono, 2022). In general, the post-harvest process of the Kenop Flower is shown in Figure 2.

3.2 Implementation of herbal tea making training activities

Training is a form of learning aimed at "employees" so that they acquire the knowledge and skills needed to carry out their work (Cahya, Rahmadani, Wijiningrum, & Swasti, 2021). Unlike formal education, which takes a long time to complete, training is an educational process that takes place over a short period of time and is carried out systematically and in a structured manner. This process is usually intended for implementers outside of management to learn technical skills with specific, limited objectives (Setiawan, Ekhsan, & Dhyan Parashakti, 2021). In implementing training,

various equipment is needed, such as equipment, aids, and activity scenario designs from the trainer. Equipment can be in the form of guidebooks, worksheets, lesson plans, or assignment books; aids can include demonstration tools and modules; while scenarios refer to learning designs that are arranged according to the time allocation for each session (Yudhatami, 2013).

Figure 2. Post-harvest process of Kenop Flowers

In this program, the training equipment prepared by the implementing team is in the form of *ballpoint and* notebooks, while the tools prepared are presentation materials in the form of PowerPoint *and* pre-test and post-test questions. In addition, equipment for direct practice is also prepared, including kitchen scales, a measuring machine of sealer, plastic jars, teaspoons and tablespoons, tea bags, *pouch* aluminum, *I can.*, a glass, and a water heater. Meanwhile, the training materials include button flowers, granulated sugar, and hot water.

The training was held at the Tanjungan Village Hall. Facilitated by a team of lecturers, the training was also assisted by students from the Faculty of Pharmacy, University of Surabaya, as part of the MBKM program to realize KPI 2, which provides students with experience in community service. The training participants consisted of 31 people with characteristics as listed in Table 1. The data shows that all participants were female, the majority aged between 31 and 50 years (84%), with a profession as a housewife (93.55%), and a high school education (45.16%).

Table 1. Characteristics of participants in herbal tea making training

No.	Characteristics	Frequency	Percentage (%)
1	Gender:		
	● Man	0	0
	● Woman	31	100
2	Age (years):		
	● 21-30	2	6,45
	● 31-40	13	41,94
	● 41-50	13	41,94

	• 51-60	3	9,68
	• 61-70	0	0
	• >70	0	0
3	Work:		
	• civil servant	1	3,23
	• Teacher/lecturer	0	0
	• Self-employed	1	3,23
	• Housewife	29	93,55
	• Other	0	0
4	Last education:		
	• SD	4	12,90
	• JUNIOR HIGH SCHOOL	11	35,48
	• SMA	14	45,16
	• Diploma	2	6,45
	• S1	0	0
	• Other	0	0

The training began with a pre-test to assess participants' initial knowledge of the topics to be discussed. Afterward, participants attended a one-hour training session using a lecture method supported by materials in the form of PowerPoint presentations. The material was delivered by a member of the mentoring team who has expertise in Phytopharmaceutical Technology. Documentation during the lecture session can be seen in Figure 3. After the material was completed, participants completed a post-test to evaluate their knowledge gains after the training. A comparison of the pre-test and post-test results is shown in Figure 4, which shows an increase in participants' knowledge scores from 50.71±17.48 to 69.09±16.73, or an increase of 36.25%.

Figure 3. Material delivery session in herbal tea making training

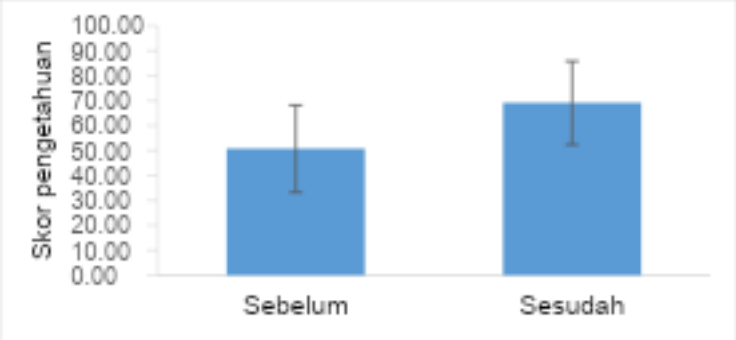

Figure 4. Comparison of knowledge scores before and after herbal tea making training

After the material session, we continued with a hands-on workshop on making Kenop Flower herbal tea. Briefly, the method for making the herbal tea, which was passed on to the partners, is as follows: first, the petals of the Kenop flower are removed from the stem, then weighed to 1 gram, and placed into a tea bag. The tea bag is then sealed using a machine of *sealer*. The tea bags are then placed into pouch aluminum, where each *pouch contains* 10 bags. To reduce moisture in the pouch, silica gel is added to each pouch. Documentation of the practical activities is shown in Figure 5.

Figure 5. Practice of making Kenop Flower herbal tea by the Tanjungan Village PKK Group

3.3 Kenop Flower herbal tea product

Herbal tea is also known as herbal *teas*. Tisane comes from the Greek πτισάνη (ptisanē), which means a drink made from pearl barley. Herbal tea is different from tea in general, where herbal tea made from one or a mixture of several plant ingredients, has a variety of flavors and aromas, does not contain caffeine, and has certain health benefits, for example for relaxation, increasing endurance, improving memory, etc. (Chao et al., 2017; Nguyen & Chuyen, 2020). One of the plants that can be used for herbal tea is the button flower.

Button Flower (*Gomphrena globosa*) is known to have various health benefits thanks to its content of active compounds such as flavonoids and phenolics which have antioxidant and anti-inflammatory properties (Tang et al., 2022). Traditionally, this flower is used to relieve coughs, improve breathing, lower blood pressure, and boost immunity. Furthermore, its extract also has potential as an antimicrobial, natural dye, and functional beverage ingredient such as refreshing, caffeine-free herbal tea (Anaswara et al., 2022). Some preliminary studies even show the potential of Button Flower in protecting nerve cells and inhibiting the growth of certain cancer cells (Sherif,

2021). The Kenop Flower herbal tea, an innovation of the Tanjungan Village PKK Group, can be seen in Figure 6.

Figure 6. Kenop Flower herbal tea, a product of the Tanjungan Village PKK Group

3.4 Obstacles and Solutions

The Bunga Kenop herbal tea produced by the Tanjungan Village Family Welfare Movement (PKK) group cannot currently be widely marketed due to the lack of a distribution permit (PIRT) for Home Industry Products. This lack of permits is a major obstacle to business development, as a distribution permit is a legal requirement needed to ensure product safety in the eyes of consumers and to open up wider distribution opportunities, including to souvenir shops, traditional markets, and other retail outlets of platform daring.

To address these challenges, further assistance will be directed at the PIRT distribution permit process, starting with fulfilling administrative requirements and providing food safety training, as well as preparing labels in accordance with applicable regulations. With structured assistance, it is hoped that PKK groups will be able to understand the licensing process and independently prepare the required documents. Furthermore, collaboration with the local Health Office or Industry and Trade Office will be facilitated to expedite the permit issuance process, allowing the button flower herbal tea product to be marketed legally and more competitively in the market.

3.5 Impact and sustainability plans

This mentoring program has had a positive impact on the Tanjungan Village Family Welfare Movement (PKK), including increased knowledge and skills in processing

medicinal plants into value-added products such as Bunga Kenop herbal tea. Furthermore, the training and provision of standard operating procedures (SOPs) have encouraged the group's independence in maintaining product quality and carrying out production processes hygienically and according to standards. The resulting products also have the potential to enhance local tourism as souvenirs typical of Tanjungan ecotourism.

To support the program's sustainability, mentoring will focus on institutional strengthening and market access, including facilitating PIRT distribution permits and developing packaging and promotional strategies. Moving forward, it is hoped that PKK groups will be able to operate their businesses independently and sustainably, with opportunities for partnerships with MSMEs, village cooperatives, and online sales platforms to expand market reach. The program is also designed to be replicable by other groups in surrounding villages with similar potential.

4. CONCLUSION

The Tanjungan Village Family Welfare Movement (PKK) empowerment program, which utilizes the innovative herbal tea "Bunga Kenop" (Flower of the Head) has successfully increased the community's capacity to utilize medicinal plants more productively and economically. This activity not only encourages the group's independence in processing the harvest of the TOGA Showcase but also strengthens the local ecotourism appeal through the development of superior local products. Although challenges remain, such as the lack of distribution permits, solutions through ongoing mentoring and licensing facilitation have been designed to encourage the program's sustainability. Going forward, this activity is expected to become a model for village community empowerment that integrates health, economics, and tourism.

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