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Empowering citizens in conservation of family medicinal plants through processing rosella flowers into tea

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ABSTRACT
The quality of health in Indonesia is included in the low category compared to other countries. Based on the results of the GHSI (Global Health Security Index) report, the average global health score is 38.9 points out of a score of 100 points. Meanwhile, Indonesia's global health security index ranks 13th compared to other G20 countries. One of the factors causing a country's low quality of health is caused by the level of a country's economy. This program aims to empower people in the fields of health, economy, and human resources by conserving family medicinal plants from roselle flowers that are processed into tea. The method used in this program is participatory, where environmental scanning is integral to empowering communities through building self-reliance with the power of resources and products. Program results are achieved from the fulfillment of success indicators prepared based on the objectives of the implementation of the program. There are nine main points in the indicators of success that can be achieved. In conclusion, the community empowerment program in Jatimalang Village, Klirong District, Kebumen Regency, has been built from the fulfillment of village-based SDGs and the awareness of the superiority of natural potential owned.

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ABSTRAK
Kualitas kesehatan di Indonesia termasuk dalam kategori rendah dibandingkan negara lain. Berdasarkan hasil laporan GHSI (Global Health Security Index)skor rata-rata kesehatan global adalah 38,9 poin dari skor 100 poin. Sedangkan indeks ketahanan kesehatan global Indonesia menempati peringkat ke-13 dibandingkan dengan negara G20 lainnya. Salah satu faktor penyebab rendahnya kualitas kesehatan suatu negara disebabkan oleh tingkat ekonomi suatu negara. Tujuan dari program ini adalah memberdayakan warga di bidang kesehatan, ekonomi, dan sumber daya manusia melalui konservasi tanaman obat keluarga dari bunga rosella yang diolah menjadi teh. Metode yang digunakan dalam program ini adalah partisipatif dimana environmental scanning yang merupakan bagian integral dari proses memberdayakan warga melalui membangun kemandirian dengan kekuatan sumber daya dan produk. Hasil program dicapai dari pemenuhan indikator keberhasilan yang disusun berdasarkan tujuan dari dilaksanakannya program tersebut. Terdapat sembilan poin utama dalam indikator keberhasilan yang dapat dicapai. Kesimpulan, program pemberdayaan warga di Desa Jatimalang, Kecamatan Klirong, Kabupaten Kebumen telah dibangun dari pemenuhan SDGs berbasis desa serta dari kesadaran keunggulan potensi alam yang dimiliki.
Kata Kunci: Bunga rosella; kesehatan; pemberdayaan warga; tanaman obat keluarga.

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INTRODUCTION

Jatimalang is one of the villages in Klirong Subdistrict, Kebumen Regency, Central Java. Geographically, Jatimalang Village has an area of 130.830 hectares with an elevation of 400 meters above sea level (quoted from the Kebumen Regency Communication and Information Office: https://jatimalang.kec-klirong.kebumenkab.go.id/index.php/web/artikel/8/32 Jatimalang Village consists of three RW and twelve RT, with a total population of 2,042 people. The residents of Jatimalang Village are mostly low-educated. As a result, their economic condition is also classified as underprivileged, with most of them working as farmers, tofu factory laborers, and traditional roselle flower tea sellers. Despite having vast agricultural land as a local resource, farmers primarily cultivate rice as a source of income. If we observe the surrounding environment, we can see that many wild roselle plants are growing, which could be used as a potential source of income for the residents.

Roselle plants belong to the family of medicinal plants. However, roselle is often only used as an ornamental plant. In addition, roselle is one of the medicinal plants that rarely has a cultivation center, as evidenced by the fact that in Kebumen Regency and its surroundings, there is no roselle cultivation center; hence, a roselle plant conservation program is needed. The cultivation of herbal plants is needed as a form of family medicinal resilience (Wulandari et al., 2021; Sucipto et al., 2020; Sepriani et al., 2021). The use of family medicinal plants is needed as a safe natural remedy for families (Hidayatullah et al., 2018; Septiani et al., 2020). The planting of medicinal plants serves as a form of conservation that can preserve community culture. According to Tanjungsari et al. (2011), conservation activities for family medicinal plants, especially roselle, can provide benefits in three aspects: economy, health, and, of course, the preservation of the roselle plant. Consider the health benefits of roselle, specifically its high antioxidant content in the flowers, which can counteract free radicals and neutralize toxins in the body's tissues and cells, as well as maintain liver organ health and combat bacteria entering the body (Heiriyani, 2021). Furthermore, Diah (2015) stated that cultivating roselle is more profitable compared to other types of crops previously planted by farmers, such as peanuts, upland rice, jicama, and corn. This is because roselle is more drought-resistant, has a high market value, and yields a substantial amount. The cultivation of roselle in Indonesia still has a perfect opportunity and prospect. This is based on suitable climate and soil conditions, supported by the still open market, both domestic and international (Yuliani & Wahyu, 2011).

Jatimalang Village has wild-growing roselle plants. The growth of wild roselle plants is a strong indication that the vegetation and environment in Jatimalang Village are suitable for conserving family medicinal plants, particularly roselle. The environmental conditions that support roselle cultivation present an opportunity to improve the livelihood of Jatimalang Village residents through roselle Toga plant conservation. The processing and conservation of roselle align with the desires and needs of the villagers. Based on direct discussions with representatives of Jatimalang Village residents, the villagers hope to establish a cultivation or conservation center for Toga to maximize land use and utilize all plants that can grow in the Jatimalang Village environment, such as roselle. The processing of roselle into herbal tea involves the participation of Jatimalang villagers, especially those who are members of the PKK and Karang Taruna organizations. The processing of roselle in Jatimalang Village can be developed as a local economic opportunity for the residents and also serve as a means to optimize their economic development. These efforts align with the achievement of village-based Sustainable Development Goals (SDGs), specifically those related to no poverty, good health and well-being, decent work and economic growth, and partnerships for the goals.

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Through the PPK Ormawa funding scheme, a community empowerment activity was carried out with support from the Directorate General of Higher Education, Research, and Technology. PPK Ormawa stands for Program Penguatan Kapasitas Organisasi Kemahasiswaan (Program to Strengthen Student Organization Capacity). This program aims to strengthen the capacity of student organizations through a series of mentoring processes provided by universities. The program is implemented as part of community service and empowerment initiatives. The Community Service activity carried out has the objective of implementing the Tri Dharma of Higher Education so that its values can be applied in the life of society and the state (Susilo et al., 2018). This program is designed to help student organizations enhance their management, governance, and leadership skills. Based on the results of direct discussions with representatives of Jatimalang Village residents, who hope to have a cultivation or conservation center for Toga to optimize land use and wish to utilize all plants that can grow in the environment of Jatimalang Village, such as roselle, we carried out a community empowerment activity in the conservation of family medicinal plants through processing roselle flowers into tea in Jatimalang Village, Klirong Subdistrict, Kebumen Regency. This program aims to empower residents in the fields of health, economy, and human resources by conserving family medicinal plants through the processing of roselle flowers into tea.

Literature Review

Family Medicinal Plants

Plants have long been a rich source of prophylactic and therapeutic agents for treating various diseases (Fadhli et al., 2023). Medicinal plants have been known by society since ancient times as remedies for relieving pain, healing, and preventing certain diseases (Anantarini et al., 2022). Family medicinal plants are essentially plants with medicinal properties that are grown in household yards managed by families (Putra et al., 2021). Family medicinal plants can also be defined as selected types of medicinal plants planted in home yards or residential environments, used for first aid or mild ailments, such as fever and cough (Kuntorini et al., 2023).

Family medicinal plants, commonly known as TOGA, have properties that serve as medicine and help substitute the role of conventional medicines (Az-Zahra et al., 2021). TOGA is typically used for treatment and improving health (Suhariyanti et al., 2021). Besides being used as medicine, family medicinal plants also have other benefits, such as adding to family nutrition (papaya, cucumber, spinach); as cooking spices or herbs (turmeric, aromatic ginger, ginger, lemongrass, bay leaves); and even for enhancing the beauty of the landscape (roses, jasmine, sunflowers, hibiscus, periwinkle, cat's whiskers) (Swandayani et al., 2021).

Benefits of Rosella Flowers

Roselle (Hibiscus sabdariffa) is a plant used by the community as a food and health beverage ingredient, such as in tea and other applications (Mardiah et al., 2009; Rahim et al., 2022). Roselle flowers can serve as a supplement to support the immune system due to their pharmacological activities, such as antimicrobial, antihypertensive, anticancer, hypocholesterolemic, and antioxidant effects (Hasanudin et al., 2023). The calyces of roselle flowers have antioxidant benefits, which can help protect the body from free radical attacks and thus enhance the immune system (Ambari et al., 2021).

Additionally, roselle is one of the herbal plants that contains a significant amount of vitamin C, which is beneficial for health (Sarjianto et al., 2023). Roselle can also be used as a natural or herbal remedy to reduce blood pressure in elderly individuals with hypertension (Kristiani & Yobel, 2022). With so many

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benefits from roselle flowers, if cultivated, processed, and consumed, roselle flowers can become one of the herbal medicines that support public health.

METHODS

The participatory method employed is environmental scanning, which is an integral part of empowering residents by building self-reliance through the utilization of resources and products (Parmin et al., 2022). The residents of Jatimalang Village have a strong spirit to harness their potential, but they still lack skilled resources. The environmental conditions and the spaciousness of their home yards are strengths in terms of natural resources. The stages of the activity include preparation, implementation, and evaluation. The preparation stage is carried out through: (1) coordination with village officials and target residents to prepare for the activity implementation; (2) preparing training materials for residents regarding the benefits and methods of utilizing roselle flower plants; (3) preparing residents' home yards and village land as cultivation areas for roselle plants; (4) preparing roselle plant seeds, and (5) preparing equipment for the conservation of family medicinal plants, especially roselle flowers. In brief, the program has six stages of implementation. The mapping table is as follows.

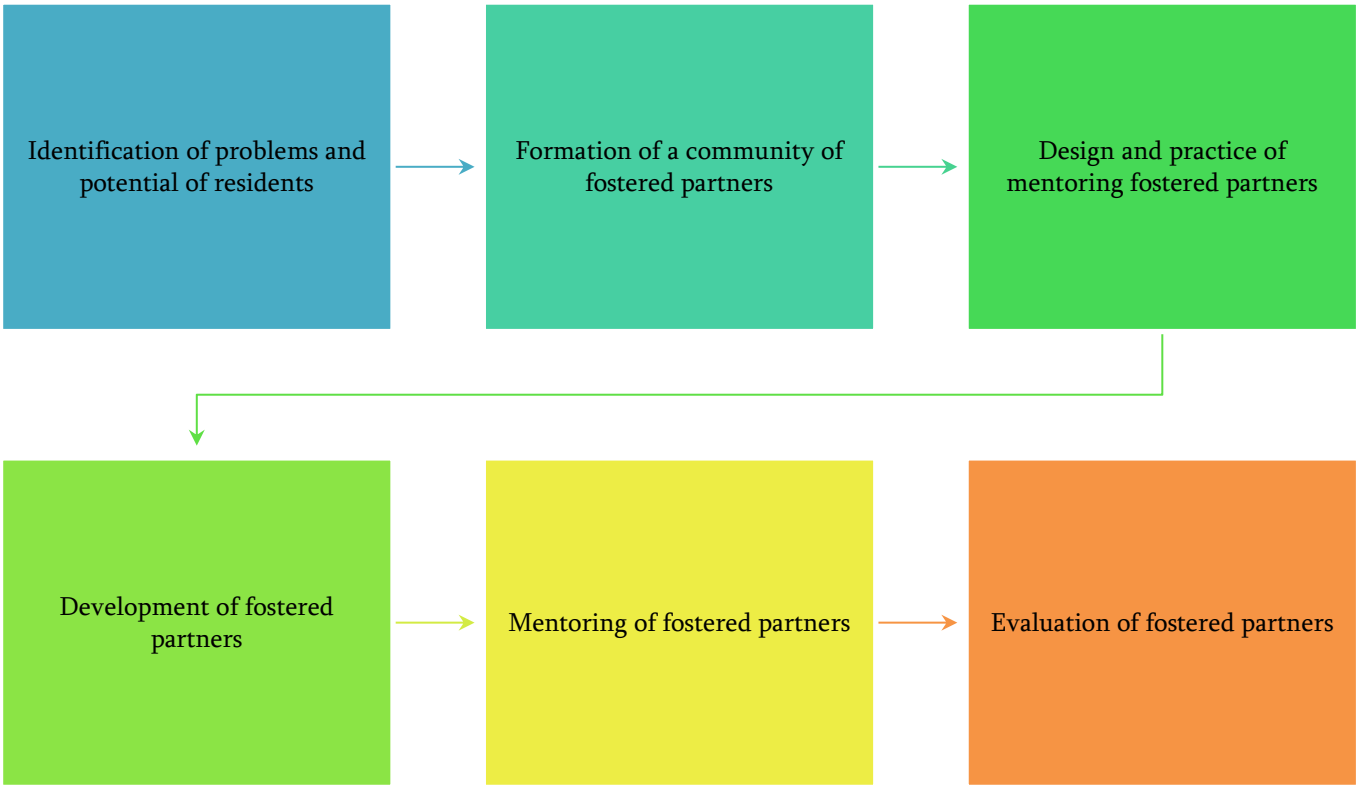

Figure 1. Mapping Program Implementation Stages
Source: Author's Documentation 2022

The community service activity was conducted in Jatimalang Village, Klirong Subdistrict, Kebumen Regency, with twelve community members as research subjects. This activity was conducted from July to November 2022. The data analysis used was descriptive statistics. Descriptive statistics is the primary step in any applied scientific investigation, providing a clear explanation and interpretation of the

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information collected during the experiment (Franzese & Iuliano, 2018; Libman, 2010). In line with Conner and Johnson (2017), descriptive statistics are measures of central tendency (mean, median, mode) used in research, evidence-based practice, and quality improvement. The data analysis was conducted by observing improvements based on the average. The focus of improvement was directed at planning and implementing the learning process.

RESULT AND DISCUSSION

Initial Observation of Activities

This activity served as an initial observation before the series of activities began. Observation is one of the empirical scientific activities based on field facts or texts, through sensory experience without any manipulation. Observation is also defined as a method of collecting research data or recording information based on what is observed in the field (Hasibuan et al., 2023). The purpose of observation is description; in qualitative research, it generates theories and hypotheses, while in quantitative research, it is used to test theories and hypotheses (Hasanah, 2017).

This initial observation activity was conducted on March 3, 2023, and was attended by the Head of Jatimalang Village along with representatives from the PPK and Karang Taruna. The purpose of this initial observation was to align the community's needs with our program. The observation activities were conducted in two locations: the Jatimalang Village Hall and a traditional herbal drink seller's establishment. The results of the observation showed that Jatimalang Village has two traditional herbal drink sellers. They still need to purchase raw materials for making herbal drinks from outside the village. In the 2010s, the people of Jatimalang Village cultivated roselle plants on a large scale. The observation results led to an agreement between the PPK LSP PGSD Kebumen team and the Jatimalang Village authorities to collaborate in implementing the community service program.

Figure 2. Initial Observation
Source: Author's Documentation 2022

Training Conducted in the Community

Training can be defined as an activity for human resource development (Tamsuri, 2022). Training is an activity designed to enhance the soft skills and knowledge of the community. Julifan (2015) states that the function of training enables human resources to bring out their potential. In this community service

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program, three training sessions were conducted: the first focused on the processing and maintenance of conservation land, the second on processing roselle flowers, and the third on digital marketing.

The land processing training was delivered by a speaker from the Agricultural Extension Agency of Klirong Subdistrict, presenting material on the production of liquid organic fertilizer (POC) and Nitrobacter. This training activity was held on Wednesday, September 27, 2023, and was attended by representatives from the conservation groups of PKK and KWT. The results of the fertilizer processing training, specifically POC and Nitrobacter, were immediately applied to the family medicinal plants in plots 1 and 2.

The second training, held on September 30, 2023, featured us from the PPK LSP PGSD Kebumen team as speakers on the production of roselle-based products. This training was attended by 25 participants from PKK, KWT, and Karang Taruna. The roselle products practiced during this session included roselle jam, tea, and syrup. The products made received a positive response from the training participants, with many even requesting the finished roselle products to enjoy at home. The attendees were also enthusiastic in observing and actively participating throughout the training session.

As a follow-up to the Roselle product processing training, our team conducted the final training session in the form of digital marketing training. This training aimed to provide the conservation group, especially the youth from Karang Taruna, with an understanding of how to market their products on a large scale. Held on Tuesday, October 10, 2023, with the presence of a digital marketing expert, the digital marketing training activity was successfully carried out.

Figure 3. Training Activities
Source: Author's Documentation 2022

Monitoring and Evaluation Activities

This activity was carried out regularly every week together with the village community. Monitoring is primarily intended to assess whether the project resources (inputs) are being implemented and used to produce the intended outputs. Meanwhile, evaluation is the process of assessing goal achievement and identifying performance issues (Rusdi & Trisnawarman, 2018). The evaluation of the training process and outcomes can be conducted through surveys and field observations (Chalimah et al., 2022).

The evaluation of this training was conducted through a community satisfaction survey facilitated by the Bina Desa Center UNS team, involving five respondents from Jatimalang Village. The data showed that the quality of the training conducted by our team received a “good” rating with an average score of 3.4. Meanwhile, other aspects, such as activity implementation, solutions, and program benefits, also received

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a score of 3.4, earning a “good” rating. The following is the complete data from the community satisfaction survey, one of the assessment tools used for monitoring and evaluating our program. Below is a summary of the satisfaction aspects measured:

Table 1. Tabel Survei Kepuasan Masyarakat

No	Unsur Kepuasan	Rata-Rata Skor	Kategori
1	Pelaksanaan Kegiatan	3,4	Baik
2	Komunikasi	3,2	Baik
3	Pemahaman Mahasiswa	3,2	Baik
4	Solusi	3,4	Baik
5	Kualitas Pelatihan	3,4	Baik
6	Partisipasi Masyarakat	3,2	Baik
7	Manfaat Program	3,4	Baik
8	Perubahan Desa	3,2	Baik
9	Keterlibatan Instansi Lain	3,2	Baik
10	Rancangan Keberlanjutan	3,4	Baik

Source: Bina Desa Center UNS 2022

Discussion

Family Medicinal Plants (TOGA) are essentially medicinal plants grown in home yards managed by families. They are planted to meet the family's needs for traditional medicines that can be prepared independently. TOGA can be planted in pots or the land around the house, and if the cultivated area is large enough, part of the harvest can be sold to increase family income. The parts of the plant that can be used as medicine include the leaves, bark, fruit, seeds, and roots. In addition to its medicinal use, TOGA also offers several other benefits, including serving as a nutritional supplement, cooking spice or herb, and adding aesthetic value (Parawansah et al., 2020).

Roselle agro-industrial processed products include: (1) ready-to-use products such as tea; (2) products made from roselle flowers and seeds in bulk form for industrial use, such as liquid and powder roselle extract. Liquid/powder roselle extract is made from 100% selected-quality roselle flowers. This extract can be used to make food or beverage ingredients, including fruit juice blends, syrup, natural coloring agents for food and beverages, as well as cosmetic ingredients. Roselle extract also contains many nutrients similar to dried roselle flowers, such as vitamins, minerals, antioxidants, flavor, aroma, and color. Liquid/powder roselle extract is highly suitable for industrial purposes; (3) Roselle Seed Coffee Powder— made from high-quality roselle seeds, rich in protein and minerals. Roselle seed coffee has a unique and delightful taste. We provide roselle seed coffee in large quantities for bulk orders. It is highly suitable for industrial needs; (4) Processed Fresh Roselle Flower Products— such as syrup, juice, salad, sauce, and also food coloring. (Charina, 2016).

The goal of this community service activity is to increase public knowledge about family medicinal plants and the processing of roselle flowers. The increase in public knowledge was obtained through the distribution of knowledge questionnaires on family medicinal plants and roselle flower processing before and after the program. The targeted respondents for the questionnaire were Karang Taruna members, RT heads, and PKK officials. This community service activity generated data indicating an increase in public awareness about family medicinal plants and the processing of roselle flowers.

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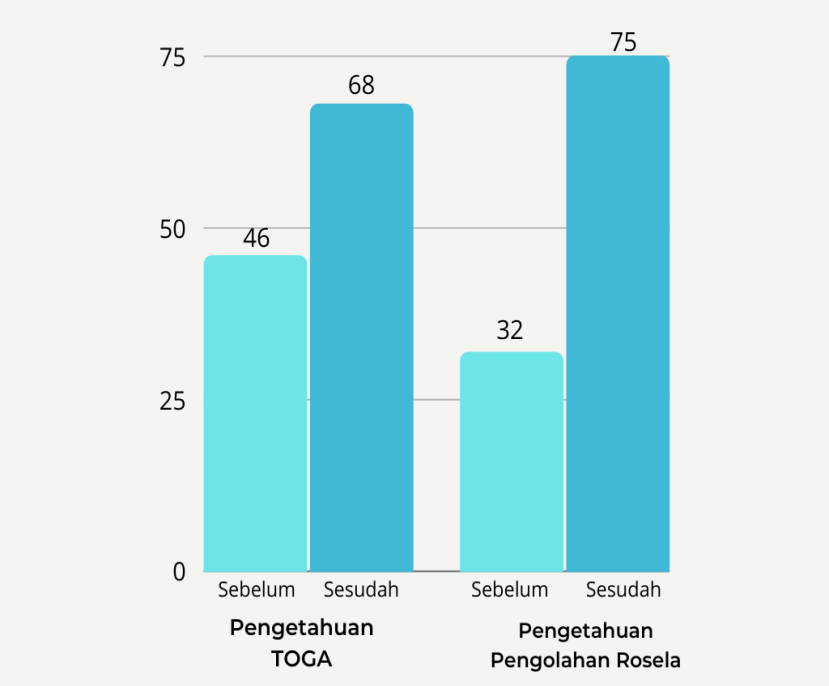

Figure 4. Peningkatan Pengetahuan TOGA dan Pengolahan Bunga Rosella Pada Masyarakat
Sumber: Dokumentasi Penulis 2022

Figure 4 above presents the research results, indicating an increase in public knowledge about family medicinal plants and the processing of roselle flowers. Public knowledge of TOGA, which initially stood at 46, increased to 68, and knowledge of roselle processing rose from 32 to 75. This increase aligns with the research findings of Harfiani et al. (2019), which stated that public knowledge or understanding of family medicinal plants increased from a score of 64.0 to 73.0.

CONCLUSION

Based on the results and discussion, it can be concluded that the implementation of the community service included initial observation, training, evaluation, and monitoring activities, focusing on strengthening partnerships and providing training on family medicinal plants and roselle flower processing. The initial observation activity aimed to gain a deeper understanding of the field. The training activities focused on community knowledge and understanding. The monitoring and evaluation focused on the program's progress. Furthermore, the results showed an increase in public knowledge of TOGA from 46% to 68%, and knowledge of roselle processing from 32% to 75%. The implementation of this community service provided benefits to the partner village, particularly in terms of knowledge about family medicinal plants and the processing of roselle flowers. If the program is carried out properly, it will have a positive impact on community welfare. It is recommended that the village community continue to develop innovations related to the processing of family medicinal plants in order to meet market demand, keep up with the times, and improve community welfare.

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AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author affirms that the data and content of the article are free from plagiarism.

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