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Warta Pengabdian Andalas

Jurnal Ilmiah Pengembangan dan Penerapan Ipteks

ISSN (Print) 0854-655X | ISSN (Online) 2797-1600

Community Empowerment in Rural Areas Through the Cultivation and Production of Traditional Medicines Based on Medicinal Plants in Batu Tanjung Village, Talawi, Sawahlunto City

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Submitted: August 19, 2025 Accepted: November 10, 2025 Published: December 27, 2025

ABSTRACT

The utilization of Family Medicinal Plants (TOGA) is a strategic effort to enhance community health self-reliance, reduce dependence on synthetic drugs, and preserve local biodiversity. In Nagari Batu Tanjung, Talawi District, Sawahlunto City, the potential for TOGA is high due to favorable geography and extensive backyard land. However, its use remains limited because of low herbal literacy, minimal organic cultivation skills, and the absence of a properly managed communal garden. This community service program aimed to empower residents through education, direct practice, and guidance in cultivating and processing medicinal plants. Activities included awareness sessions on TOGA's benefits, land preparation, planting of herbal seeds (ginger, turmeric, cardamom, sungkai, Java turmeric, aloe vera), and the establishment of a model TOGA garden. Based on pre- and post-test results from 40 participants, knowledge and cultivation skills improved significantly—from 40% to 95% of participants understanding proper TOGA cultivation. Active collaboration among residents, village officials, and students ensured the program's success. Through Q&A sessions and hands-on practice, the community gained practical skills suited to local conditions. The established TOGA garden now serves as a learning medium, a health-supporting initiative, and a foundation for developing herbal products that promote sustainable economic empowerment.

Keywords: empowerment, TOGA, cultivation, herbal garden

INTRODUCTION

One of the natural resource utilization that can help communities become self-sufficient in maintaining health is Family Medicinal Plants (Tanaman Obat Keluarga or TOGA). TOGA has been recognized since long ago as part of the valuable local wisdom. TOGA acts as a living pharmacy that gives a variety of medicinal plants. Their presence

DOI: https://doi.org/10.25077/jwa.32.4.446-454.2025

allows communities, especially in rural areas, to get herbal medicine ingredients directly. This supports self-medication practices and promotional efforts to maintain and improve health independently (Puspita FD, et al., 2023).

TOGA play a strategic role in improving community health independence through the utilization of natural resources available around residential areas. TOGA is useful for maintaining health and local biodiversity preservation, which will support ecosystem sustainability (Hidayat & Yusnita, 2021). TOGA has more advantages than synthetic drugs because it's accessible, cheap, and doesn't have significant side effects if used correctly (Fitriani et al., 2020). The World Health Organization (WHO, 2019) states that approximately 80 percent of people in developing countries continue to use traditional medicines, including medicinal plants, as part of their primary healthcare. Given this potential, TOGA cultivation can be used in community empowerment programs to improve quality of life and strengthen household economies through profitable herbal product processing.

Indonesia is home to many medicinal plants, yet most of them have not been used to their full potential (Dillasamola, et al., 2023). According to the Trade Assessment and Development Agency (2017), Indonesia has approximately 30,000 of the world's 40,000 medicinal plant species, with approximately 9,000 species having medicinal uses. Approximately 5% are utilized as phytopharmaceutical materials, and approximately 1,000 species have been used as raw materials for the herbal and traditional medicine industry (Agustina A, et al., 2023). On the other hand, the use of modern medicines and synthetic chemicals still dominates the medical system in Indonesia. Long-term use can lead to dependency, toxic effects, and economic burdens, especially in rural areas. This is due to low public literacy regarding the benefits of medicinal plants and limited structured cultivation activities, which result in many potential plants being underutilized, particularly in rural areas.

The development of Family Medicinal Plants not only provides health benefits but also plays a role in improving household food sustainability. Several types of herbal plants, such as ginger, turmeric, and Javanese ginger, not only possess pharmacological properties but can also be processed into functional food products that offer added value in local and regional markets (Herlina, et al., 2020). Research by Maulidya and Nugroho (2022) shows that solid training that combines cultivation knowldege, post-havest processes, and marketing strategy will increase family income up to 25% in six months. Therefore, the success of TOGA management is measured not only by the number of plants cultivated, but also by the community's ability to process the produce into competitive products.

Nagari Batu Tanjung, located in Talawi District, Sawahlunto City, is an area with extensive yard land and geographical conditions that are highly suitable for cultivating medicinal plants. However, the local community has not yet maximized this potential. Most residents work in agriculture, plantations, livestock farming, and the coal industry, while housewives are less involved in productive economic activities (Desa Batu Tanjung, Kecamatan Talawi, 2022). The absence of educational programs or specific assistance related to Family Medicinal Plants (TOGA) cultivation has resulted in medicinal plants being planted only sporadically, without adequate understanding of their health benefits or economic potential. In addition, low public awareness, limited skills in organic cultivation, and the lack of a communal TOGA garden have further hindered the optimal utilization of local natural resources. These conditions highlight the need for community empowerment initiatives to increase knowledge, skills, and independence in cultivating and processing medicinal plants sustainably.

One of the main challenges facing community partners in the village is a lack of awareness of the importance of using herbal plants into a healthy lifestyle. Moreover, another obstacle is the lack of ability to cultivate TOGA organically and in a structured

manner. This condition is worsened by the lack of TOGA gardens as well as the lack of cultivation method knowledge, fertilization, and the proper harvest method (Listyaningrum TH et al., 2024). Training and mentoring in organic cultivation of TOGA in the yard and communal areas is a solution to this problem. This activity is part of the TOGA 4S program, which involves planting and establishing TOGA model gardens as the initial step in intervention. Simple methods are used for planting, including raised bed systems, compost fertilization, and natural pest control. The types of plants cultivated include ginger (Zingiber officinale), turmeric (Curcuma longa), cardamom (Amomum compactum), sungkai (Peronema canescens), and aloe vera, which are known to have immunomodulatory and antioxidant properties (Dillasamola, et al., 2023).

The TOGA 4S empowerment strategy utilizes a participatory approach, involving local communities from planning to implementation. The purpose is not only to exchange knowledge but also to raise public awareness of the importance of utilizing easily accessible and environmentally friendly local plants to maintain health (Handayani, et al., 2022). By supporting the formation of TOGA cadre groups that will manage gardens and teach the community about cultivation, this program is expected to help communities become more independent in maintaining family health. Furthermore, they are expected to acquire practical skills for productive use of their yards. By processing medicinal plants into marketable herbal products, this intervention can also help develop household economies.

In conclusion, the community service program aims to strengthen the community's knowledge, practical skills, and independence in cultivating and utilizing Family Medicinal Plants (TOGA). The expected outcomes include not only improved health awareness but also the development of sustainable household-based herbal product enterprises that can enhance local economic resilience. This empowerment approach has been shown to effectively improve family self-sufficiency and economic independence through the utilization of TOGA (Sari & Rahmawati, 2022).

METHOD

Preparation Stage

The preparation phase began with coordination between the implementation team, village officials, and community representatives. A preliminary survey was conducted to identify suitable land and assess the community's readiness. The team also prepared the required materials, such as planting tools, herbal seeds, educational media, and documentation equipment. Coordination with KKN students was also carried out to organize their roles as field assistants and facilitators during the activities.

Educational Stage

Before the planting began, an educational session on the benefits and uses of herbal plants was conducted by Dr. Apt. Dwisari Dillasamola, M.Farm. The 45-minute session aimed to improve community knowledge about the role of medicinal plants in maintaining family health and supporting the TOGA program.

The educational process used a combination of lectures, demonstrations, and participatory discussions. Visual aids such as slides, posters, and plant samples were utilized to make the learning more interactive. Participants were encouraged to ask questions and share their experiences, creating a two-way learning environment. The materials covered the types of medicinal plants, their active compounds, and simple preparation methods such as herbal infusions or decoctions.

This stage successfully increased participants' understanding and enthusiasm, preparing them to participate in the next practical activity.

Land Preparation and Planting Stage

After the educational session, participants, together with KKN students and facilitators, began preparing the communal land designated for the TOGA garden. The activity started with cleaning weeds and organic waste, followed by tilling the soil until loose and ready for planting. Healthy, pest-free seedlings were then selected, including ginger (Zingiber officinale), turmeric (Curcuma domestica), cardamom (Amomum compactum), Java turmeric (Curcuma xanthorrhiza), sungkai (Peronema canescens), and aloe vera (Aloe barbadensis). Each plant was labeled clearly to identify its medicinal category.

Participants were guided in the correct planting technique, including determining planting distance, depth, and watering methods. The planting process also emphasized teamwork and environmental care to foster community ownership of the TOGA garden.

Closing Stage

The activity concluded with reflection and evaluation. Participants provided feedback on the educational content and planting activities. Facilitators summarized the learning outcomes and encouraged continuous maintenance of the TOGA garden. The session ended with a group photo as a symbol of collaboration and shared commitment. Follow-up plans were arranged to monitor plant growth and ensure sustainability of the program.

RESULTS AND DISCUSSION

This community service activity, combining educational sessions and hands-on practice of cultivating Family Medicinal Plants (TOGA), was held on July 28, 2025, in Batu Tanjung Village, Talawi District, Sawahlunto City. The program was designed as an integrated effort to increase public awareness of the importance of using herbal plants in everyday life. Focused not only on giving information, but this program also gives direct experience for the communities in processing and cultivating medicinal plants in their own yards and communal land. Through this approach, the community not only gains theoretical knowledge about the health benefits of various medicinal plants but also practical skills they can use in the future.



Figure 1. Delivery of material by Dr. apt. Dwisari Dillasamola, M.Farm

The program began with the delivery of educational materials on Family Medicinal Plants (TOGA). Figure 1 shows the presentation of the materials and activity plan at the Batu Tanjung Village Hall, attended by housewives, health cadres, village officials, youth, and KKN students. The material was delivered by Dr. apt. Dwisari Dillasamola, M.Farm., which discussed various aspects of TOGA, including the introduction to plant types, active compound content, pharmacological benefits, cultivation methods suited to soil conditions and local climate, and development opportunities to produce economically valuable herbal products. For example, ginger (Zingiber officinale) contains gingerol and has anti-

inflammatory and immunomodulatory effects, while turmeric (Curcuma longa) contains curcumin, which has potential as an antioxidant and hepatoprotector.

However, during the educational session, several constraints were encountered. Some participants had limited prior knowledge of medicinal plants, which required the facilitator to simplify scientific explanations into more practical and relatable examples. In addition, limited time reduced the opportunity for in-depth discussion, and some participants found it challenging to understand Latin plant names and chemical compound terminology. Despite these obstacles, the session was conducted interactively, allowing participants to share their experiences and raise questions about the challenges they faced in cultivating herbal plants. This interactive approach helped foster enthusiasm and motivation among the community to begin applying herbal cultivation practices at home.

The educational material also served as an essential foundation before the practical session, as it enhanced participants' understanding of the principles of organic herbal cultivation and its associated health benefits. According to Fisher-Maltese and Zimmerman (2015), garden-based learning that is preceded by structured educational sessions can significantly improve participant engagement and comprehension, particularly when supported by visual media and hands-on activities. This finding aligns with the outcomes of this program, where theory-based learning effectively prepared participants for the subsequent practical stages of TOGA cultivation.

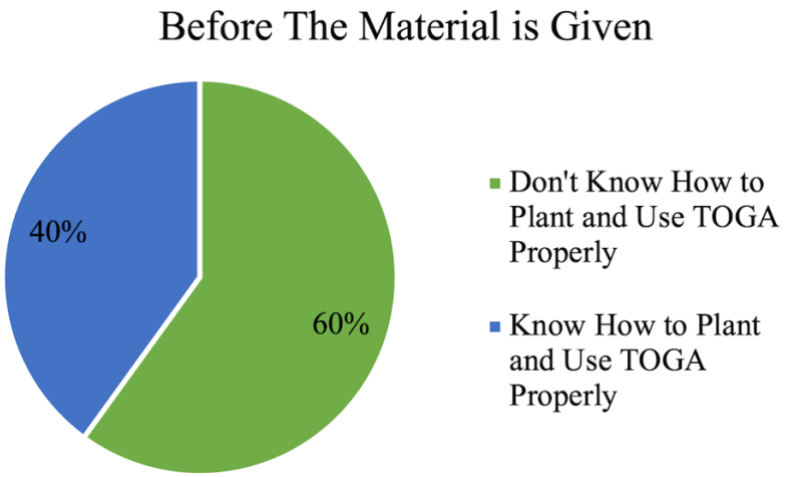


Figure 2. Pie chart pre-training questionnaire

The pre-test results in Figure 2 shows that only 40% of participants had a basic understanding of TOGA and its benefit as a traditional drug. Most of the participants knew about TOGA generally but had not known about the proper cultivation method and the specific benefits of each plant. There were many participants who didn't know about common herbal plants that can be found around their home that have potential as immunomodulators and disease preventatives. These results align with the findings of Lestari & Andayani (2020) that rural communities tend not to understand the specific benefits of TOGA despite frequently growing them. This pre-test data was used as a basis for evaluating the program's effectiveness. Low herbal literacy can be caused by the lack of information they have, the dominance of modern drugs, and minimal cultivation training.

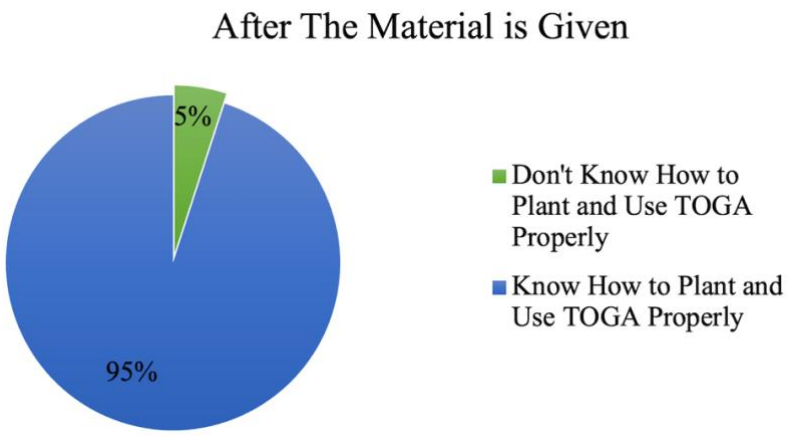


Figure 3. Pie chart post-training questionnaire

Based on the pre-test and post-test results involving 40 participants, there was a significant improvement in the community's understanding and skills regarding TOGA (Family Medicinal Plants). Before the material was given, only 40% of participants knew how to plant and use TOGA properly, while 60% did not. After the educational session, the percentage of participants who understood how to properly plant and use TOGA increased to 95%, leaving only 5% who still lacked understanding. This demonstrates that the program was highly effective in increasing participants' knowledge and cultivation skills. The active collaboration between residents, village officials, and students played a key role in achieving these successful outcomes.This increase also indicates the success of the initial stages of the program, even though the sustainability effect depends on their own practice concistency. Regular monitoring after the training is recommended to ensure the knowledge is truly applied.



Figure 4. Gift-giving and group photo

Giving rewards to active participants is a simple but effective way to keep people engaged. According to Herzberg's motivation theory, rewards serve as a trigger that can strengthen participants' commitment to the program. A study by Fatmawati & Nurmala (2020) also showed that non-financial incentives can increase participation in empowerment activities by up to 30%. Furthermore, group photos build a sense of togetherness and group identity that will strengthen community social networking.

Group photos become documentation as activity evidence as well as publicity to inspire other regions. A limitation that emerged was that program success should not be measured solely by participation during the activity, but also by the sustainability of implementation after the event.



Figure 5. Making a TOGA field

The TOGA (herbal medicine) field was created through collaborative efforts involving the community, students, academics, and village officials, as seen in Figure 5. The process began with weed removal, soil loosening, and planting herbal seedlings. The seeds were grouped by types and arranged in tiers. Organic methods without chemical pesticide implementation were crucial, because they align with the trend of environmentally friendly sustainable agriculture (Rahman & Yuliani, 2022). This shared land will be the center of cultivation practice learning, which can be replicated in residents' yards. The community participation in developing the shared garden not only increases the success of the cultivation method but also strengthens the utilization of this program. By being directly involved, starting from the preparation stage to planting, the community gains experience that can build the skill of organic herbal farming. Thus, the TOGA garden is not just a physical facility, but also a symbol of collaboration, independence, and food and health security at the village level

CONCLUSION

The Family Medicinal Plant (TOGA) planting activity in Batu Tanjung Village has had a significant positive impact on the local community. Based on the pre-test and post-test results involving 40 participants, there was a clear improvement in community knowledge and practical skills regarding TOGA cultivation. Before the educational session, only 40% of participants understood how to properly plant and use TOGA, while 60% lacked sufficient knowledge. After the session, the percentage of participants with adequate understanding increased to 95%, leaving only 5% who still needed further guidance.

Through outreach activities, Q&A sessions, and hands-on field practice, residents not only gained theoretical understanding but also mastered practical techniques such as soil preparation, plant spacing, and organic pest management. The active participation of village officials, students, and community members contributed greatly to the success of the program. As a tangible result, one communal TOGA demonstration garden was successfully established and is now actively used as a community learning center.

This garden has become a symbol of cooperation and a sustainable learning tool for future generations. To maintain program continuity, ongoing support from the village government is essential—particularly through land maintenance initiatives and advanced training in herbal product processing. Furthermore, transforming harvested plants into marketable herbal products will ensure that the program not only improves public health but also provides new economic opportunities for the community.

ACKNOWLEDGMENT

Thank you to the Institute for Research and Community Service of Andalas University for funding the Integrated Community Partnership Program with Student Activities (PKM-TKM) Batch II for the 2025 Fiscal Year, with RKAT number 24/UN16.19/PM.03.03/PKM-TKM/2025 as well as the community and the Batu Tanjung Talawi Village, Sawahlunto City for their participation and enthusiasm.

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