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The Role of Family Medicinal Plant Education (TOGA) in the Development of Living Pharmacies to Support the Availability of Emergency Medicines in Pilubang Village

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The availability of emergency medicines in remote areas with limited healthcare access is a crucial issue. The development of Family Medicinal Plants (TOGA) through the concept of a living pharmacy presents a strategy to achieve community independence in providing traditional medicines. This community service activity aims to increase the knowledge, skills, and awareness of the Pilubang Village community in planting, caring for, and utilizing medicinal plants. Implementation methods include interactive counseling on plant types and benefits, practical demonstrations of planting techniques, and assistance in making products such as instant ginger drinks and aloe vera ointments. Evaluation results show a significant increase in participant understanding, the formation of a village living pharmacy management group, and the availability of a variety of ready-to-use medicinal plants for family first aid. This program has proven effective in strengthening community health independence and can serve as a model for sustainable TOGA management at the village level.
Keywords: Family medicinal plants; emergency medicine; health independence; Pilubang Village

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1. Introduction

Pilubang Village in Harau District, Lima Puluh Kota Regency, West Sumatra, is an area facing vulnerabilities in healthcare access, particularly the availability of emergency medication. According to data from the Central Statistics Agency (BPS) of Lima Puluh Kota Regency in 2022, this village is inhabited by 1,125 people covering an area of 10.80 km². The geographical factor that makes it a remote area is its distance of approximately 12 kilometers from the Harau District Center and approximately 35 kilometers from the Regency Capital in Sarilamak. This distance results in a travel time of more than 30 minutes to primary healthcare facilities, which meets the criteria for underdeveloped areas according to Regulation of the Minister of Villages, Disadvantaged Regions, and Transmigration of the Republic of Indonesia No. 7 of 2021. This situation further emphasizes the urgency of developing independent healthcare solutions, such as the use of TOGA (Toba Intake Test), to address the challenge of limited access to emergency medication in the community. One of the main problems faced is limited access to healthcare facilities, which makes it difficult for the community to deal with health emergencies (Fatharani, 2024). As stated in the West Sumatra Provincial Health Office Performance Report (2022), areas with difficult topography, such as villages in Lima Puluh Kota Regency, still experience challenges in the distribution of health logistics, including essential medicines. This situation has the potential to exacerbate health emergencies, as communities in areas like Pilubang Village are heavily dependent on supplies from health facilities in the city center, which require significant travel time.

The issue of dependence on external emergency drug supplies further undermines public health resilience in Pilubang Village. This dependency forces communities to wait for assistance or drug distribution from outside the area, which can take considerable time. This leads to potentially increased health risks for communities unable to obtain immediate medical attention in emergency situations. Therefore, it is crucial to find local solutions that can support the fulfillment of emergency drug needs in a more independent and sustainable manner. As noted by Rahmawati et al. (2019), community empowerment programs based on local resources, such as family medicinal plants (TOGA), can be an effective alternative to address this problem.

The selection of TOGA as a locally-based solution to increase the availability of emergency drugs in Pilubang Village is a promising step. These family medicinal plants can be planted and managed by local communities to meet emergency health needs, such as treating minor injuries, fevers, or other health problems. Puspitasari et al. (2021) revealed that medicinal plants have great potential as a source of self-medication, which is not only cost-effective but also leverages local wisdom. Through education on how to grow and utilize medicinal plants, TOGA (Tobacco Plants) can help communities obtain emergency medication without relying on limited external supplies.

The TOGA education program is a key factor in community empowerment in Nagari Pilubang. The medicinal plant cultivation education program has proven effective not only in transferring technical gardening knowledge but, more importantly, in building collective awareness for family health independence. The study underscores that understanding the use of local biodiversity is a crucial foundation for building community health resilience, particularly in areas with limited access (Kurniawati & Pratama, 2021). With intensive education programs, communities can be trained to manage and utilize medicinal plants in their daily lives, as well as develop living pharmacies as a long-term solution for their health resilience. This aligns with the findings of Rahmawati et al. (2019), which showed that community empowerment through TOGA training can improve public health knowledge while reducing dependence on out-of-town medical facilities.

The objective of this study was to investigate how TOGA education can improve the availability of emergency medication in Pilubang Village. This study aimed to identify the impact of TOGA education on the management of living pharmacies, as well as the challenges and opportunities for further developing the TOGA program to support community health resilience. Considering TOGA's significant potential as an alternative to self-medication, it is important to understand the extent to which this education can be effectively implemented in the context of Pilubang Village and how the results can inspire the implementation of similar models in other areas with similar conditions.

In theoretical studies, several theories underlie the use of TOGA in the development of community-based living pharmacies. Sari and Rasyid (2019) explain that a living pharmacy is a form of plant-based medicine management managed by the community to support their health resilience. Furthermore, Sucipto et al. (2020) suggest that family medicinal plants can be an alternative solution to address emergency medication shortages, especially in areas with limited medical facilities. Health education involving the use of TOGA plays a crucial role in introducing the concept of self-medication based on family medicinal plants to communities in rural areas, as reflected in the research of Sari and Andjasmara (2023). Such educational programs not only educate the community on how to grow and utilize medicinal plants but also raise their awareness of the importance of maintaining health naturally and independently.

2. Method

This community service program uses a participatory approach that actively involves the community at every stage. Activities focused on implementing Family Medicinal Plant (TOGA) education and managing a

living pharmacy in Pilubang Village, using a case study design to understand the use of TOGA as a source of emergency medicine in the local context. In line with Sugiyono (2023), a case study approach was applied to gain a deeper understanding of the phenomena occurring in the community, while direct interaction with residents ensured relevant and contextual data.

Data collection was conducted through in-depth interviews with the community and stakeholders, observations of TOGA cultivation and use activities, and focus group discussions (FGDs) to explore community perceptions, experiences, and challenges in managing a living pharmacy. Data were analyzed thematically using qualitative software to identify TOGA utilization patterns and program effectiveness. Sugiyono (2023) emphasized that data collection through various methods strengthens a comprehensive understanding of social phenomena.

The program began with preparations from May 30 to July 2, 2025, including designing the living pharmacy concept, selecting seeds, and determining the optimal location. Counseling and outreach took place from July 3–6, 2025, at residents' homes to obtain land use permits. Demonstrations and hands-on practice took place from July 8–11, 2025, covering planting media preparation, seeding, and collaborative planting with the community. On July 12, 2025, a living pharmacy management group was formed, equipped with information boards on plant properties. This was followed by a program evaluation, highlighting the limitations of plant varieties and land area, while also providing guidance for sustainable program management.

Through a participatory approach and case studies, this community service not only transferred knowledge about traditional medicine but also empowered the community to manage community-based living pharmacies, thus becoming a sustainable and contextual source of emergency medicine, in accordance with the principles of community development outlined by Sugiyono (2023).

3. Results and Disccusion

Increasing Community Knowledge about Toga

To measure the program's effectiveness, community knowledge levels were measured before (pre-test) and after (post-test) the intervention. Scores were measured on a scale of 0-100.

Table 1. Pre-test and post-test community knowledge levels about Toga

No	Aspects	Average Pre Test	Average Post Test
1.	Identifying types of medicinal plants	45	85
2.	Knowing the specific benefits and properties of plants	50	88
3.	Understanding cultivation and care techniques for medicinal plants	35	80
4.	Knowing how to process them into medicines/herbs	30	75
5.	Awareness of the economic benefits of medicinal plants	40	78
	Average	40	81,2

Based on the data in the table above, it can be concluded that there was a significant increase in community knowledge about medicinal plants (TOGA) after the education and training program. This is evidenced by the average overall score of 41.2 points, from 40 (low category) in the pre-test to 81.2 (high category) in the post-test. The highest increase occurred in cultivation and care techniques, as well as processing methods, indicating that the program succeeded not only in enhancing theoretical knowledge but also in improving the community's practical understanding. Therefore, the program was effective in achieving its goal of increasing the capacity of the Pilubang Village community to utilize TOGA for family health and well-being.

The Family Medicinal Plant (TOGA) education program has proven effective in improving public health literacy. The participatory intervention significantly increased participants' understanding of the identification, cultivation, and use of medicinal plants for daily health care (Sari & Pratama, 2023). Similar results were found during the program's implementation in Pilubang Village. The community demonstrated positive behavioral changes, marked by increased awareness of TOGA's potential as an accessible and sustainable form of self-medication. After participating in a series of training sessions covering cultivation techniques, plant types, and methods for processing and utilizing them, the community's knowledge of medicinal plants (TOGA) significantly improved. Observations during the program confirmed an increased understanding of the community in utilizing home gardens to support family health.

This community service program demonstrated that TOGA education in Pilubang Village was highly effective in increasing community knowledge about family medicinal plants. These results align with the findings of Fitriatien et al. (2017), who revealed that the TOGA education program not only increased student knowledge but also fostered awareness of medicinal plant-based health. In Pilubang Village, after participating in the training program, the community demonstrated a better understanding of the benefits of TOGA and how to plant and care for medicinal plants for self-medication.

Specifically, after participating in the training, residents became more aware of the potential of medicinal plants as a source of emergency medicine. This increased their involvement in managing the TOGA-based living pharmacy that was beginning to develop in the village. This awareness was also reflected in increased community participation in caring for and utilizing medicinal plants to support their families' health.

Figure 1. Family Medicinal Plant (TOGA) Production

Management of a TOGA-Based Living Pharmacy

Based on community service implementation in Pilubang Village, it can be reported that the TOGA-based living pharmacy management program has successfully fostered community independence. Local residents have begun collectively cultivating various types of medicinal plants that are easy to grow and care for. This demonstrates an increased awareness of the importance of using medicinal plants in everyday life. The diversity of plants in this living pharmacy also enriches community knowledge about easily accessible natural medicine alternatives, thereby reducing dependence on chemical drugs. The program's focus on sustainability is also beginning to yield results, with communities beginning to view planting and caring for TOGA as an integral part of a healthy lifestyle that can be maintained long-term.

This success aligns with the findings of Sari and Rasyid (2019), who stated that TOGA-based living pharmacy management plays a crucial role in increasing community independence in the field of medicine. Furthermore, Sucipto et al. (2020) emphasized that the TOGA cultivation movement not only serves to increase health awareness but also serves as a form of community self-empowerment in managing the

natural resources around them. Thus, the results achieved in Pilubang Village reinforce empirical evidence from previous reviewers regarding the positive impact of the TOGA program.

Utilization of TOGA and Its Role in Emergency Medicine

Based on the results of the community service program, it was observed that the people of Pilubang Village have begun actively utilizing various types of medicinal plants introduced during the training, such as betel leaf as an antiseptic for minor wounds, turmeric for digestive disorders, and Javanese ginger to boost immunity. This utilization indicates increased health literacy and independence in family medicine. Community confidence in the practical and safe solutions from these medicinal plants has also grown, reducing absolute dependence on chemical drugs, especially for treating daily health problems.

These field findings reinforce research by Kurniawati & Saputra (2022), which concluded that training-based interventions for the identification and utilization of local medicinal plants significantly improved the community's ability to self-medicate for mild to moderate health conditions. Furthermore, as confirmed by Darmawan et al. (2023), in the context of areas with limited healthcare access, self-reliance through the use of traditional herbal medicines (TOGA) is not only a health strategy but also a form of community health resilience that is crucial for ensuring sustainable basic healthcare.

TOGA provides a significant alternative solution to address the problem of limited access to emergency medicines in remote areas, such as Pilubang Village. Based on data obtained from the community and direct observations, medicinal plants managed through the living pharmacy in Pilubang Village have successfully reduced dependence on hard-to-reach commercial medicines.

This aligns with the explanation from the Lima Puluh Kota Regency Central Statistics Agency (2019), which noted that areas like Pilubang Village often face difficulties in obtaining emergency medicine supplies quickly and on time. Sari and Rasyid (2019) also emphasized that TOGA can be an effective solution for addressing emergency conditions such as minor injuries, fever, and digestive disorders. The use of medicinal plants managed through this living pharmacy proves that the people of Pilubang Village no longer need to rely entirely on medicines from outside the area, which often arrive late. This provides a major advantage in improving health resilience, as communities can now address most health problems using the resources available around them.

Figure 2. Group Photo of the Community in the Development of a Herbal Medicine-Based Living Pharmacy

Challenges in Sustainable Herbal Medicine Management

Although the management of a herbal medicine-based living pharmacy in Pilubang Village has shown promising results, several challenges remain, particularly related to the sustainability of this program. One major challenge is limited resources, both in terms of land and skills in caring for medicinal plants. Some

families in Pilubang Village still do not fully understand how to properly care for medicinal plants, resulting in some plants not growing optimally.

In line with the findings of Pratiwi & Jaya (2023), the sustainability of a community empowerment program depends not only on initial training but also on ongoing and intensive mentoring, particularly in mastering modern cultivation techniques to increase medicinal plant productivity. Ongoing educational programs are also crucial to strengthen community knowledge about the types of medicinal plants that can be used in emergency medicine. Furthermore, the sustainability of herbal medicine management requires support from the government and social institutions that can provide facilities, resources, and additional training to the community, as suggested by Sucipto et al. (2020).

Successful Implementation of TOGA and Its Impact on Community Health Resilience

The results of this community service program support the theory of community empowerment in health education, which states that managing local resources, such as medicinal plants, can improve community health resilience. As explained by Sari and Andjasmara (2023), the success of the TOGA program depends on the community's ability to manage and utilize medicinal plants as part of their daily lives. This is evident in Nagari Pilubang, where a TOGA-based living pharmacy has helped increase community independence in meeting their emergency medical needs.

This community service program aligns with Sijabat (2025), who emphasized the importance of community-based education in improving community health resilience without relying on the formal health system. The TOGA education program implemented in Nagari Pilubang not only increases community knowledge but also empowers them to manage their own health, which in turn improves health resilience at the community level.

Institutional Support for the Sustainability of the TOGA Program

The sustainability of the TOGA program in Nagari Pilubang is highly dependent on institutional support, both from the local government and non-governmental organizations concerned with public health. Sucipto et al. (2020) explained that programs like this require ongoing support to ensure that communities have access to sufficient training, facilities, and resources to effectively manage living pharmacies.

The government and social institutions need to play an active role in providing technical assistance, funding, and outreach to ensure effective and sustainable TOGA management. Without this support, the TOGA program risks long-term failure due to limited resources and community knowledge. Therefore, the involvement of the government and relevant institutions is crucial in maintaining the sustainability and effectiveness of this program, ensuring it can provide maximum benefits to the health of the Pilubang Village community.

4. Conclusion

This community service program demonstrates that TOGA education in Nagari Pilubang has successfully increased community knowledge about family medicinal plants and increased their involvement in managing TOGA-based living pharmacies. This program has successfully shifted community perceptions, from dependence on chemical drugs to utilizing natural resources around them. People are now more aware of the potential of medicinal plants as easily accessible self-medication solutions. Furthermore, the use of TOGA in emergency medicine has also expanded, with people starting to use medicinal plants to treat conditions such as minor injuries, fevers, and digestive disorders. This program helps reduce dependence on commercial medicines, which are often difficult to access, especially in remote areas like Nagari Pilubang. Although this program has shown positive results, the main challenge faced is the sustainability of TOGA-

based living pharmacies. Limited resources and knowledge in sustainable medicinal plant management are obstacles that need to be overcome for this program to continue. Therefore, support from the government and social institutions is essential to ensure the program's sustainability in the future.

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