Capacity Building Of Residents In Utilizing Family Medicinal Plants As An Alternative To Self-Medication

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Abstract.

The utilization of Family Medicinal Plants (TOGA) as an alternative for self-medication has the potential to improve community health and well-being. This community service program aimed to enhance the capacity of residents in Penyengat Rendah Village in utilizing TOGA. The program involved training, mentoring, and the provision of simple technologies to support the effective cultivation and processing of medicinal plants. The results showed a significant increase in residents' knowledge and skills, with the average score increasing from 48 in the pre-test to 90 in the post-test ($p < 0.001$). The effect size ($d = 2.3$) indicated a substantial impact of the intervention on participants' knowledge improvement. Regression analysis revealed that the pre-test score only explained 10.71% of the post-test score variance, suggesting the influence of other factors on learning outcomes. The application of relevant technologies, such as drying racks and digital education platforms, contributed to the program's effectiveness. Through active community participation and appropriate technology, this program has the potential to become a sustainable health solution and economic resource. Further development of the program is recommended, including advanced processing techniques, the formation of TOGA communities, and collaboration with local markets to enhance the economic value of TOGA products.

Keywords: *Family Medicinal Plants (TOGA); Medicinal Plant Processing; Training; and Mentoring.*

I. INTRODUCTION

Penyengat Rendah Village is one of the villages in Jambi City. Based on the results of interviews with several residents in the low Penyengat village on February 27, 2024, it was found that the community still did not know about the use of land / yard to be used in planting family medicinal plants and did not know how to utilize family medicinal plants. Many yards are not utilized and planted with ornamental plants. Whereas one of the characteristics of community culture in developing countries is that traditional elements are still dominant in everyday life (Susanti et al., 2024). This situation is supported by biodiversity gathered in various types of ecosystems whose utilization has experienced a long history as part of culture. (Sama'Iradat Tito et al., 2021). One of these activities is the use of medicinal plants as medicinal ingredients by various ethnic groups or groups of people living in the interior, even in the smallest unit in society, namely the family(Dewi & Prasetyo, 2023) .Plants have been an important source of medicine for thousands of years. The use of plants for healing is the oldest form of medicine in the world (Hazin et al., 2023). Every culture in the world has a distinctive traditional medicine system and in each region there are various types of plants that can be used as medicines (Wijayanto et al., 2024). The early history of why plants are used as medicine is difficult to trace, however, there is an opinion that a plant is used as medicine based on physical signs (shape, color, and taste) that exist in plants or are on parts of the plant, and these signs are believed to be related to the signs of the cause of the disease to be treated.

Traditional medicine is a finished medicine or concoction of natural ingredients derived from plants, animals, minerals, galenic preparations or a mixture of these ingredients that have traditionally been used for treatment based on experience. In fact, the portion of natural medicinal materials derived from plants is greater than those derived from animals or minerals, so the designation Traditional Medicine (TM) is almost always synonymous with Medicinal Plants (TM) because most TM comes from TM(Mardliyah et al., 2023).TOGA is a family medicinal plant, which was formerly referred to as "Living Pharmacy". TOGA is a selection of medicinal plants that can be planted in the yard or home environment. The selected medicinal

plants are usually plants that can be used for first aid for minor illnesses such as fever and cough3. The presence of medicinal plants in the home environment is very important, especially for families who do not have easy access to medical services such as clinics, health centers or hospitals (Hutasuhut et al., 2021). TOGA can be cultivated in pots or on land around the house on a small and medium scale, which can then be distributed to the community to support the improvement of public health, and at the same time can be an additional family income.

Indonesia's natural conditions allow many types of medicinal plants that are useful for health to thrive in its various regions. The types of plants that can be cultivated for family medicinal plants are the types of plants that meet the criteria such as: mentioned in the book on the utilization of medicinal plants, commonly used as medicine in residential areas, grow and live well in residential areas, can be used for other purposes, for example: fruits, and cooking spices, endangered plant species, and wild plant species (Septiandika et al., 2023).Planting medicinal plants in the yard in addition to medicine, can also be arranged properly as a yard decoration. The yard will look beautiful and the residents can also get the medicines needed to maintain health. Medicinal plants that are often planted in the yard are: betel, turmeric, ginger, temulawak, hibiscus, god's leaf, sambiloto, beluntas, guava, belimbing wuluh, knob flower, cloves, pomegranate, lime, cat whiskers, mangosteen, and tomatoes. The utilization of TOGA is generally for the treatment of family health problems according to common symptoms such as fever, heat, cough, abdominal pain, and itching. When a family member is sick, TOGA can be used as an alternative to traditional medicine that is the easiest to find, cheap and has much lower side effects than chemical drugs. By understanding the benefits, properties and types of certain plants, medicinal plants become the family's choice in choosing safe natural medicines (Chayati et al., 2021).

Some factors that allow for poor processing of medicinal plants include: lack of community knowledge, limited books or literature sources owned by the community, and lack of socialization from the government and related agencies about processing medicinal plants and their benefits (Oktavia et al., 2023). Therefore, this service activity is to empower the community in utilizing vacant land in the yard to be used in planting family medicine so that it can be used in self-medication at home.

II. METHODS

The method used is a quantitative design with an evaluative method to assess the effectiveness of the Family Medicinal Plants (TOGA) training program. This design aims to measure the increase in knowledge and skills of residents after participating in the program through data analysis before and after training. The main data was collected through pre-test and post-test questionnaires to measure changes in participants' knowledge and skills. The questionnaire contained items that measured understanding related to the utilization and cultivation of TOGA. Descriptive analysis was conducted to understand the data distribution of pre-test and post-test results, as well as the demographic characteristics of respondents. Inferential analysis used paired t-test to test the significance of differences in pre-test and post-test scores, which will provide an overview of the increase in knowledge and skills of residents.Simple Linear Regression Analysis, this analysis is used to see the effect of the initial score (pre-test) on the final score (post-test). This analysis also makes it possible to explore the contribution of other variables that might affect the final outcome.Data were analyzed using statistical software such as SPSS or R to calculate t-test, correlation, and regression values. Statistical results are presented in tables and graphs to facilitate data interpretation.

III. RESULTS AND DISCUSSION

As a step to evaluate the success of the Family Medicinal Plants (TOGA) training program, this section will present the results of data analysis that has been collected through questionnaires. These results provide an overview of the increase in knowledge and skills of Penyengat Rendah villagers in utilizing TOGA as an alternative to self-medication. The analysis also includes an evaluation of the effectiveness of the simple technology applied in the training.

a. Differences in Knowledge Before and After the Service

After the implementation of related community service activities, the results shown in table 1 are as follows

Tabel 1. Differences in knowledge conditions after and before the service activity

	nilai pre test	nilai post test
Mean	48	90
Std. Deviation	18.81	10.26
Minimum	20	80
Maximum	100	100
95% Confidence interval of Mean	39.2 - 56.8	85.2 - 94.8
Mean ± Std.	48 ± 18.81	90 ± 10.26

In the pre-test score, before the service activity, the average score of the participants was 48. In the post-test score, the average rose significantly to 90. That is, after the service activity, the average score of the participants increased to 90. The standard deviation for the pre-test score was 18.81, indicating considerable variation among the participants' pre-test values. The standard deviation for the post-test score was 10.26, indicating a smaller variation among the participants' post-test values. This indicates that after the intervention, the participants' values were more consistent

Figure1. Graph of the difference in knowledge before and after community service activities

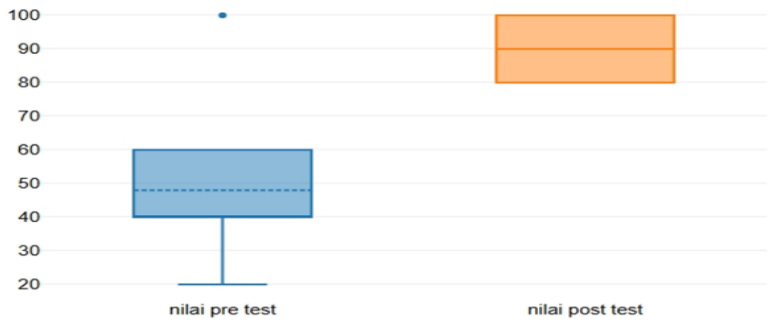
From this data description, we can conclude that there was a significant increase in the participants' scores after the service activity. The mean score increased from 48 to 90, with a smaller standard deviation after the treatment, indicating a more consistent and significant improvement among participants. The 95% confidence interval also supports the conclusion that this improvement is significant. The significant difference from the minimum score indicates the success of the intervention or treatment, where no participant's score was below 80 after the training or treatment.

b. Results of Data Analysis of the Effect of Service Activities on Increasing Residents' Knowledge

After conducting a T-test test to see the effect of the results of service activities on increasing residents' knowledge in utilizing toga plants, the results are shown in Table 2.

Tabel 2 . t-Test for paired samples

	t	df	p	Cohen's d
nilai pre test - nilai post test	-10.3	19	<.001	2.3



Based on the data presented, it can be concluded that the pre-test scores were lower (M = 48, SD = 18.81) than the post-test scores (M = 90, SD = 10.26). The results of the t-test for paired samples showed that this difference was statistically significant, t(19) = -10.3 P < 0.001, with a 95% confidence interval for the mean difference of [-50.54, -33.46]. These results indicate that the difference between the pre-test and post-test scores did not occur by chance, so the null hypothesis was rejected. In addition, the effect size d = 2.3 indicates that there was a very large effect of the treatment or intervention given

3.4. Regression analysis

After conducting the test, the service team further analyzed the impact of the results of the service activities by analyzing regression. Linear regression analysis is carried out to determine the effect of the pre-test value variable on the post-test value variable. These results can be seen in table 3, 4 and table 5.

Tabel 3 . Model Summary

R	R^2	Adjusted R^2	Standard error of the estimate
0.33	0.11	0.06	9.96

The R value of 0.1071 indicates that the pre-test score variable explains 10.71% of the post-test score variable variance.

Table 4. ANOVA Test

Model	df	F	p
Regression	1	2.16	.157

The value of F = 2.16, p = 0.157, indicates that the model run is not statistically significant because p > 0.05. Thus, we cannot conclude that the pre-test score variable significantly affects the post-test score variable.

Table 5. Regression model (Coefficients)

	Unstandardized Coefficients	Standardized Coefficients				95% confidence interval for B	
Model	B	Beta	Standard error	t	p	lower bound	upper bound
(Constant)	81.43		6.24	13.04	<.001	68.31	94.54
nilai pre test	0.18	0.33	0.12	1.47	.159	-0.08	0.43

From the data analysis, it can be concluded that the regression model with the pre-test score variable only explains 10.71% of the variance in post-test scores, which indicates that there are other variables that may be more influential on post-test scores. Model Significance: The ANOVA analysis shows that the regression model is not significant (F = 2.16, p = 0.157). Therefore, we cannot conclude that the pre test score significantly affects the post test score. The regression value states that for every one unit increase in the pre test score, the post test score increases by 0.18 units, but this increase is not statistically significant (p = 0.159). Based on the p-value of the pre test score coefficient being greater than 0.05, we cannot reject the null hypothesis. This implies that the change in the pre-test score has no significant effect on the post-test score in this model. Thus, based on the results of this analysis, the pre test score does not show a significant effect on the post test score in the given sample.

Discussion

The results of the community service activities in Kelurahan Penyengat Rendah showed a significant increase in the knowledge and skills of residents in utilizing Family Medicinal Plants (TOGA) for self-medication. This section will discuss the implications of the findings, the effectiveness of the intervention, as well as further development areas for the community. The increase in average score from 48 to 90 signifies a significant jump in participants' understanding and skills. The increase in post-test scores, followed by a decrease in standard deviation, indicates a more even increase in understanding among participants. This implies that the training program was effective in conveying essential knowledge and practices about TOGA, as well as making participants more confident in utilizing medicinal plants for personal health needs.The absence of scores below 80 after the training also indicates the success of the program in raising participants' understanding to an adequate level. This indicates that the teaching methods and TOGA content delivered were relevant to the needs and cultural context of the participants, which strengthens the argument that practice-based training with a local cultural context can have a major positive impact on community learning outcomes.The results of the t-test for paired samples with a significant difference (t(19) = -10.3, p < 0.001) between the pre-test and post-test scores indicate that this improvement was not random, but a direct result of the intervention. In addition, the effect size (d = 2.3) indicates that the effect of the training on participants' knowledge improvement was substantial.

This suggests that the training materials and delivery methods were well suited to the learning needs of the participants.Regression analysis showed that the pre-test scores only explained 10.71% of the variance in the post-test results, indicating that there were other variables affecting the training outcomes. The ANOVA results for the regression model were also not significant ($F = 2.16$, $p = 0.157$), indicating that the pre-test scores did not significantly affect the post-test results. This finding implies that the improvement in post-test scores was due to the training provided rather than the participants' prior knowledge.Given the low predictive power of the pre-test scores, future training programs may need to consider other factors, such as participants' motivation, previous experience with TOGA, or socio-economic factors that may affect learning outcomes. In addition, qualitative insights regarding participants' views on the benefits of TOGA in their daily lives may also help tailor trainings that are more relevant to community needs (Mistriani et al., 2023).Overall, this community service program has demonstrated a successful model in improving residents' knowledge and skills in the utilization of TOGA. The findings suggest that while prior knowledge is important, intervention or training has a crucial role in achieving significant learning outcomes. Future research can explore additional factors and the long-term impact of TOGA education on people's health behavior, so that similar programs can make a meaningful contribution to empowering people's health at the community level.

IV. CONCLUSION

The following is the conclusion of the community service activity on the utilization of Family Medicinal Plants (TOGA) in Penyengat Rendah Village:

1. The community service activity succeeded in significantly increasing the knowledge and skills of residents in the utilization of TOGA, as indicated by an increase in the average score from 48 to 90 in the post-test.
2. Statistical analysis showed a significant difference between pre-test and post-test scores ($t(19) = -10.3$, $p < 0.001$), with a large effect size ($d = 2.3$), indicating the effectiveness of the training program.
3. The increase in knowledge was more attributable to the training provided than the participants' prior knowledge, based on the results of the regression analysis.
4. The program successfully introduced simple technologies and innovations in TOGA cultivation and processing, increasing residents' self-reliance in medicine.
5. The active participation of the community and the relevance of the technology to local needs contributed to the success of the program.
6. The program has the potential to become an independent health solution and a sustainable economic source for the community.

For future program development, it is recommended to:

1. Expand the scope of training materials, including advanced processing techniques of TOGA.
2. Establish a TOGA community for program sustainability.
3. Develop partnerships with external parties for long-term support.
4. Conduct periodic monitoring and evaluation for program adjustment.
5. Integrate entrepreneurship training to increase the economic value of TOGA.
6. Develop technologies and innovations that are more in line with local needs.

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REFERENCES

[1] Chayati, N., Kurniawan, M. F., & Relawati, A. (2021). Peningkatan Daya Imun Keluarga Melalui Toga Berbasis Kegiatan Pkk Desa Krebet. *Selaparang: **Jurnal Pengabdian Masyarakat Berkemajuan***, *5*(1), 991–996.

[2] Dewi, W. K., & Prasetyo, A. (2023). Edukasi Pemanfaatan Tanaman Obat Keluarga (Toga) Sebagai Peningkat Sistem Imun Tubuh Pada Masa Pandemi Covid-19 Di Kelurahan Palasari Kecamatan Legok Tangerang. ***Capacitarea: Jurnal Pengabdian Kepada Masyarakat***, *3*(01), 26–31.

[3] Hazin, M., Setiawan, A. C., & Rahmawati, N. W. D. (2023). Pemberdayaan Masyarakat Dalam Mengembangkan Sentra Tanaman Obat Keluarga (Toga) Dengan Model Abcd Di Desa Jemundo. ***Trimas: Jurnal Inovasi Dan Pengabdian Kepada Masyarakat***, *3*(2), 27–35.

[4] Hutasuhut, J., Hermanto, B., & Tiara, S. (2021). Pemberdayaan Ibu-Ibu Rumah Tangga Pada Era New Normal Melalui Pemanfaatan Pekarangan Rumah Dengan Tanaman Obat Keluarga (Toga) Di Desa Saentis Kec. Percut Sei Tuan Kab. Deli Serdang. *Prosiding Seminar Nasional Hasil Pengabdian*, *4*(1), 164–169.

[5] Mardliyah, S., Riyanto, Y., & Soedjarwo, S. (2023). Pemanfaatan Tanaman Toga Sebagai Minuman Kesehatan Tradisional Bagi Perempuan Di Desa Dukuhmojo. *Absyara: Jurnal Pengabdian Pada Masyarakat*, *4*(1), 1–10.

[6] Mistriani, N., Mansur, A., Tutik, T., & Octafian, R. (2023). Green Economy Program: Mempersiapkan Perempuan Wirausaha Melalui Pemanfaatan Tanaman Obat Biodiversitas Sebagai Wisata Edukasi. ***Jmm (Jurnal Masyarakat Mandiri)***, *7*(6), 5791–5803.

[7] Oktavia, A. I., Wuryandari, W., Safah, L., & Fidyasari, A. (2023). Pelatihan Formulasi Minuman Kekinian Berbahan Tanaman Obat Pada Kelompok Asuhan Mandiri Tanaman Obat Kota Malang. *Tri Dharma Mandiri: Diseminasi Dan Hilirisasi Riset Kepada Masyarakat (Jurnal Pengabdian Kepada Masyarakat)*, *3*(1), 22–30.

[8] Sama'iradat Tito, N. L. I., Nora, F. L., Ilma, H., Setyowati, D. A., Nielna, N. M., Septianing, E., Oktaviani, E., Wd, D. K. S., Hikmah, L. N., & Islamya, N. A. A. (2021). Kegiatan Penanaman Toga Di Bumdes Oleh Kandidat Sarjana Mengabdi Tematik Guna Menumbuhkan Kepedulian Kesehatan Masyarakat. *Konferensi Nasional Pengabdian Kepada Masyarakat Kopemas 2021*.

[9] Septiandika, V., Maulaya, N. I., & Maula, U. A. I. (2023). Sosialisasi Pembuatan Jamu Tradisional Sebagai Upaya Pelestarian Budaya Dan Penguatan Jiwa Kewirausahaan Pada Masyarakat Di Kabupaten Probolinggo. ***Comserva: Jurnal Penelitian Dan Pengabdian Masyarakat***, *3*(5), 1719–1727.

[10] Susanti, L. D., Azzahra, N. S., Ansania, A., Larasati, E. T., Triliyani, I., Khoiriyah, M., Asih, M., Kurniawati, M., Yusuf, M. F. B., & Hikmah, S. (2024). Budidaya Tanaman Obat Keluarga Sebagai Upaya Pemberdayaan Masyarakat Di Desa Tanggulangin. ***Dedikasi: Jurnal Pengabdian Masyarakat***, *6*(2), 145–160.

[11] Wijayanto, A., Wulan, N. A. N., Elvina, A., Barus, L. A. B., Pramesty, N., Annisa, Q., Nuraini, P. F., Sutariya, M. F., Indriani, L., & Agustian, A. T. (2024). Pelaksanaan Program Pengabdian Di Baru Ilir Tentang Umkm, Imunisasi Polio, Edukasi Pendidikan Dan Toga. *Berbakti: **Jurnal Pengabdian Kepada Masyarakat***, *2*(2), 204–213.