

## Enhancing children's role as agents of change in the utilization of household medicinal plants

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### ABSTRACT

The utilization of household medicinal plants (in Indonesia known as TOGA) as a form of local wisdom holds great potential for improving public health. However, its use as an alternative traditional treatment remains suboptimal, especially among the younger generation. TOGA not only serves as cooking ingredients but also offers natural and independent health benefits. Therefore, this empowerment activity aims to enhance students' knowledge and awareness of the benefits of TOGA through educational counseling and practical garden-making activities. The program was conducted on October 13-14, 2024, at SD Negeri 21 Rumbia, involving 52 students from grades 3, 4, and 6. The methods used included lectures, leaflet distribution, an interactive game called "Guess the Picture", Q&A sessions, and hands-on planting of six types of TOGA plants: ginger, lemongrass, galangal, turmeric, basil, and celery. The evaluation was carried out using pre-tests and post-tests with five questions designed to measure students' knowledge improvement. The results showed a significant increase ( $p < 0.05$ ) in students' knowledge, with the percentage of those classified as having sufficient knowledge rising from 11.5% to 26.9%. In addition to enhancing knowledge, the hands-on TOGA planting activity provided students with practical experience that reinforced their understanding of the health benefits of medicinal plants. With active student involvement and support from the school, this program is expected to contribute to public health improvement through the sustainable use of TOGA.

### ABSTRAK

Pemanfaatan tanaman obat keluarga (TOGA) sebagai salah satu kearifan lokal memiliki potensi besar untuk meningkatkan kesehatan masyarakat. Namun, pemanfaatannya sebagai alternatif pengobatan tradisional masih belum optimal, terutama di kalangan generasi muda. TOGA tidak hanya berfungsi sebagai bahan rempah atau masakan, tetapi juga dapat dimanfaatkan untuk menjaga kesehatan secara alami dan mandiri. Oleh karena itu, kegiatan pemberdayaan ini bertujuan untuk meningkatkan pengetahuan dan kesadaran siswa terhadap manfaat TOGA melalui kegiatan penyuluhan dan praktik pembuatan taman TOGA. Kegiatan dilaksanakan pada 13-14 Oktober 2024 di SD Negeri 21 Rumbia, melibatkan 52 siswa dari kelas 3, 4, dan 6. Metode yang digunakan meliputi ceramah, pembagian leaflet, permainan interaktif "Tebak Gambar", tanya jawab, serta praktik langsung menanam enam jenis tanaman TOGA, yaitu jahe, serai, lengkuas, kunyit, kemangi, dan seledri. Evaluasi dilakukan menggunakan pre-test dan post-test dengan lima instrumen pertanyaan untuk mengukur peningkatan pengetahuan siswa. Hasil menunjukkan adanya peningkatan signifikan ( $p < 0,05$ ) dalam pengetahuan siswa, dengan persentase kategori pengetahuan cukup, meningkat dari 11,5% menjadi 26,9%. Selain peningkatan pengetahuan, praktik penanaman TOGA juga memberikan pengalaman langsung yang memperkuat pemahaman siswa tentang manfaat kesehatan dari tanaman obat keluarga. Dengan keterlibatan aktif siswa dan dukungan dari pihak sekolah, program ini diharapkan mampu berkontribusi pada peningkatan kesehatan masyarakat melalui pemanfaatan TOGA secara berkelanjutan.

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## INTRODUCTION

The use of medicines plays an important role in society, whether taking medicines on their own initiative or because of a doctor's prescription due to illness. Situations of inappropriate drug use often occur. Examples are poisoning, overdose, and death, one of which is caused by the lack of public awareness of the drugs used (Aditya et al., 2024). Medicines are useful for treating various diseases, but when they are no longer needed, it is important to dispose of them in an appropriate manner to prevent harm to others. Therefore, understanding and practicing how to handle unneeded medicines is essential. Ignorance, especially in this regard, can result in harmful environmental pollution, directly jeopardizing the health of current and future generations (Aditya et al., 2024).

According to the Indonesian Pharmacists Association, 47.5% of children take medicine without being accompanied by their parents, 11.5% of children buy medicine at home without their parents' knowledge, 35.6% of children throw medicine carelessly, and 14.7% of children surveyed still keep medicine as a game tool (Ani Kristiyani & Sarah Puspita Admaja, 2021). Early health care and health education initiatives have begun to be empowered, especially at the elementary school level. This is consistent with the WHO Global School Health Initiative campaign which has been in existence since 1995 and aims to implement and highlight health promotion initiatives at local, national, regional and international levels. WHO's 1995 policy on healthy schools is implemented by these schools through Health Promotion initiatives (Andriana & Putri, 2020).

Indonesian people are very good at local wisdom, one of which is Household herbal plants (TOGA). Many plant species found in the environment have qualities that make them useful as alternative therapies for various medical conditions. Although people are increasingly aware of TOGA, there are still many people who need to know about it, especially the younger generation (Wirasisya et al., 2019).

The benefits and uses of medicinal plants are still not widely known in many places, such as Kampung Beru Hamlet, Bontomanai Village, Rumbia Subdistrict, Jeneponto Regency, causing the non-optimal utilization of its potential. Out of 82 households, 30 households (55.8%) have not used family herbal medicine, based on the data collection we conducted in PBL I. The lack of government guidance and ignorance of the benefits of TOGA in the community were the main causes.

This shows a lack of information in the community, especially the younger generation, who should be able to utilize family medicinal plants to become agents of change in maintaining health. Teaching elementary school students about the importance of using household medicinal plants to maintain their health naturally can be a calculated first step in fostering awareness and understanding at a young age. SD Negeri 21 Rumbia, where this activity was held, is one of the schools located in an area with considerable biodiversity potential but has not been maximally utilized by the local community and students. Therefore, interventions are needed to increase their understanding of family medicinal plants, including how to cultivate, maintain, and utilize these plants regularly (Angraeni, 2020).

Previous research has shown the benefits of introducing and educating people about family medicinal plants. These benefits include increasing community awareness of health issues and presenting the idea of a "living pharmacy" that can be used by every family for minor medical needs at home (Jannah et al., 2023). They asserted that utilizing vacant land for TOGA cultivation also contributes to the community's need for cheaper and safer natural remedies, which is especially important in areas that have poor access to medical services. Students who take part in hands-on activities, including planting and caring for TOGA, not only gain theoretical information but also practical experience that can help them better understand the benefits of TOGA.

Through counseling, demonstrations, and activities to create a TOGA garden at SD Negeri 21 Rumbia, the main objective of this community service project is to increase students' awareness of family medicinal plants. In addition, by utilizing medicinal plants found in the environment, this activity seeks to increase students' understanding of the value of maintaining health independently and organically. It is hoped that by introducing and utilizing TOGA from an early age, students will be able to apply the information in their daily lives and become agents of change who understand the value

of natural health (Role et al., 2020).

The extension program and demonstration of the use of household medicinal plants (TOGA) at SD Negeri 21 Rumbia are expected to close the existing knowledge gap and improve the health of local residents and students. Through the use of family medicinal plants in schools, this program is also believed to be a model of community empowerment.

## METHODS

This community service activity was carried out by providing counseling material on the utilization of TOGA and then making a TOGA garden at SD Negeri 21 Rumbia, Kampung Beru Hamlet, Bontomanai Village, Rumbia District, Jeneponto Regency. The method of activities carried out is the lecture method combined with distributing leaflets/brochures followed by questions and answers. To assess the level of understanding of the respondents related to the material presented, the speaker distributed questionnaires containing assessment instruments related to the success of the activities filled in by respondents who participated in this activity. The stages began with preparation. The preparation stage is a community empowerment program planning which includes: coordination with local stakeholders at the empowerment location, determining the timing of activities, determining the targets and targets of activity participants, and planning empowerment materials.

Then the counseling stage on the examples and benefits of family medicinal plants was carried out on October 13, 2024. Before providing empowerment material, a pre-test was conducted to find out whether participants knew and understood the usefulness of TOGA which can be used as herbal medicine. Furthermore, after providing empowerment material followed by an evaluation conducted by a series of post-tests. The post-test is used to determine the benchmark for the success of this counseling. The targets of this counseling activity are students of SD Negeri 21 Rumbia grades 3, 4, and 6. The purpose of this counseling activity is to provide information related to the benefits of Family Medicinal Plants (TOGA) to elementary school children. The success indicators of this activity are students who are present at the time of counseling as many as 52 students (100%) and there is an increase in knowledge in students related to the benefits of family medicinal plants. After the data was collected, it was analyzed using IBM SPSS Statistics 22.

Then the final stage is planting family medicinal plants. This planting was carried out on the existing land at SD Negeri 21 Rumbia. The implementation of planting family medicinal plants was attended by SD Negeri 21 Rumbia students, especially students in grades 3, 4, and 6. This activity was carried out on October 14, 2024. The making of this family medicinal plant garden aims to make it easier to get the family medicinal plants needed. The success indicators of this activity are the location of the TOGA Garden and there are six types of plants planted.

## RESULTS AND DISCUSSION

Figure 1 shows that the counseling on the utilization of TOGA and making TOGA gardens for ginger, lemongrass, galangal, turmeric, basil, and celery involved 52 participants. This counseling was conducted using a questionnaire to measure the participants' knowledge level. This instrument consists of 5 questions related to the utilization of TOGA and each question has a score of 20 if correct. The assets used are physical assets in the form of schools by communicating with the principal of SD Negeri 21 Rumbia regarding the empowerment that we do. The instruments we use include educational materials on the examples and benefits of family medicinal plants. The TOGA utilization counseling program carried out at SD Negeri 21 Rumbia, Kampung Beru Hamlet, showed an increase in student knowledge about family medicinal plants.

**Table 1.** Distribution of Respondents' Knowledge Before and After Counseling

Knowledge Score	N	Min.	Maks.	Mean+SD	Wilcoxon Test
Before	52	20	100	50.38+17.485	0.000
After	52	0	100	67.69+27.484	

Figure 1. Counseling Process of TOGA Utilization



Based on Table 1, before counseling, 88.5% of respondents had knowledge in the category of "less," and only 11.5% were in the category of "sufficient." After counseling, there was an increase in the percentage of "sufficient" knowledge to 26.9%, while the percentage of "deficient" knowledge decreased to 73.1%. This represents an increase of 15.4% in the knowledge of respondents categorized as "sufficient." Statistical test results showed that there was a significant increase in respondents' knowledge after counseling. With a p-value <0.05, this result supports the hypothesis that the TOGA counseling and demonstration is effective in improving students' knowledge.

Extension of TOGA utilization at SD Negeri 21 Rumbia showed positive results in increasing students' knowledge about family medicinal plants. Before the intervention, the majority of students had limited knowledge about the benefits and uses of medicinal plants. After counseling, there was a significant increase in understanding, as seen from the increase in the percentage of students with "sufficient knowledge."

Indonesia is known to have very high biodiversity, including various types of medicinal plants that have the potential to be developed (Wirasisya, 2018). Family medicinal plants (TOGA) are not only useful as traditional medicines, but also as a source of nutrition, cooking spices, and disease prevention efforts (Anggraeni & Suryanti, 2020). The introduction of TOGA to students through this counseling aims to build their independence in utilizing local natural resources as a natural medicine solution. The types of plants introduced in the counseling, such as lemongrass, ginger, celery, galangal, turmeric, and basil, were chosen because they are easily found in the school environment and have beneficial properties. For example, ginger (*Zingiber officinale*) is known to contain gingerol and zingeron, which provide antioxidant effects that protect cells from oxidative damage (Sari & Nasuha, 2021). Lemongrass (*Cymbopogon citratus*) also contains antioxidants that protect cells from oxidative damage, and has anti-inflammatory properties that can help reduce inflammation and pain (Istighfaroh, 2024).

This counseling utilized active learning methods, including the use of leaflet media and the game "Guess the Picture," which encouraged student engagement and participation. The leaflet media presents information in a concise and easy-to-understand manner, in line with research by Khaerani et al. (2020) that the use of media in health education can improve knowledge and attitudes towards health. Interactive games have also proven effective in creating a fun learning atmosphere and encouraging student participation (Fitriastutik, 2018). Overall, this extension intervention succeeded in increasing students' knowledge about the utilization of TOGA, proving that an educational approach involving interactive activities and visual media can have a positive impact on learning. The increase in students' understanding is expected to encourage them to be more active in utilizing medicinal plants in their daily lives and support environment-based health efforts.

The implementation of a physical intervention in the form of making a Family Medicinal Plant Garden (TOGA) at SD Negeri 21 Rumbia on October 15, 2024 aims to increase students' knowledge and awareness of the benefits of medicinal plants. This activity involved students in grades 3, 4, and 6, with the support of teachers and the school principal as key stakeholders. The process of creating the

garden included several stages, from planning to maintenance, which encouraged students' active involvement in gardening practices and learning about natural health (see [Figure 2](#)). TOGA Garden Creation Process:

1. **Planning and Preparation:** This initial stage was carried out by involving students in determining the location of the garden, selecting the types of medicinal plants, and preparing the tools and materials needed.
2. **Introduction and Counseling:** Students were educated about the importance of medicinal plants, equipped with information about the benefits of plants such as ginger, turmeric, and lemongrass. This education aims to increase students' understanding of natural plant-based health.
3. **Joint Planting:** The planting activity involves students directly, giving them practical experience in farming and the importance of protecting the environment.
4. **Maintenance:** Students are organized to perform routine maintenance such as watering, fertilizing, and weed removal, ensuring the sustainability of the garden.
5. **School Community Empowerment:** Teacher involvement in guiding students strengthens the sustainability of the project, facilitating an ongoing learning process.



**Figure 2.** Planting process of TOGA

The intervention of making a TOGA garden at SD Negeri 21 Rumbia proved to be relevant to the research of Jannah et al. (2023), which states that the use of vacant land for planting medicinal plants can have a positive impact on public health, especially in areas with limited access to health facilities. With the concept of a "living pharmacy," the garden is an easily accessible and inexpensive source of natural medicine for the school community. Planting plants such as ginger, celery, lemongrass, galangal, turmeric and basil in the school environment offers diverse health benefits. Ginger, for example, has strong anti-inflammatory and antioxidant properties, while lemongrass is known for its antibacterial and antioxidant properties (Dewi & Rahmawati, 2021; Sari & Nasuha, 2021). The introduction of these plants through practical experiences strengthens students' knowledge and integrates health learning in daily life.

Puspitasari & Sutoyo's research (2021) shows that the cultivation of medicinal plants in schools acts as an effective environmental learning medium. The implementation of the TOGA garden at SD Negeri 21 Rumbia not only teaches students the importance of land utilization, but also instills an understanding of sustainability and care for the environment. Sari & Andjasmara (2023) emphasize that practice-based activities, such as planting, help students practice what they learn, increase active engagement, and strengthen their memories.

In addition to health and educational benefits, TOGA gardens also have potential social and economic impacts. The program can increase the school community's awareness of the importance of medicinal plants and provide opportunities to develop herbal products that can improve the economic welfare of the community (Lestari, 2023). In the long term, the existence of this garden can

inspire the surrounding community to develop similar activities in their homes, supporting a healthy and independent lifestyle.

Household herbal plants have been utilized across cultures for centuries, serving various medicinal and therapeutic purposes. The significance of these plants is underscored by their historical use in traditional medicine, where they have been integral to healthcare practices, particularly in rural and developing regions. Over 60% of the global population relies on herbal remedies for health issues, with many modern pharmaceuticals derived from these natural sources (Jaradat & Zaid, 2019). The resurgence of interest in herbal medicine is evident, particularly during health crises such as the COVID-19 pandemic, where traditional remedies have been explored for their potential efficacy against viral infections (Shinde et al., 2022).

The therapeutic applications of household herbal plants are diverse. For instance, they are commonly employed to address respiratory ailments, digestive issues, and chronic conditions such as obesity and diabetes (Hawash et al., 2024). Specific plants like *Origanum vulgare* and *Hypericum perforatum* have demonstrated antimicrobial properties, making them valuable in treating infections (Bahmani et al., 2019). Additionally, herbal blends have been assessed for their safety and effectiveness, highlighting the need for quality control in herbal medicine to mitigate potential adverse effects (Hawash et al., 2024).

Moreover, the cultural significance of herbal plants cannot be overlooked. They often embody traditional knowledge passed down through generations, influencing dietary practices and health beliefs within communities (Gautam et al., 2023). The accessibility and affordability of these plants make them a preferred choice for many households, particularly in regions where modern healthcare may be less accessible (Umata et al., 2021). This reliance on herbal medicine is further supported by the belief in their safety and effectiveness, which is often rooted in cultural practices (Rahmawati et al., 2024).

The integration of herbal plants into daily life also extends to their use in preventive health measures. For example, during the COVID-19 pandemic, many individuals turned to herbal remedies to boost immunity and overall health, reflecting a shift towards more holistic health approaches (Mediastari et al., 2022). Furthermore, the establishment of herbal gardens has been promoted as a means to ensure sustainable access to these plants, fostering both health and economic benefits for communities (Bhatt et al., 2023).

## CONCLUSION

Based on the results of community empowerment activities carried out at SD Negeri 21 Rumbia, it can be concluded that the counseling program and making TOGA gardens have a significant positive impact. The results of statistical analysis showed an increase in students' knowledge of TOGA, with an increase in the percentage of "sufficient" knowledge by 15.4% after counseling. The success of this program is supported by interactive learning methods involving leaflet media and games, as well as practical implementation through the making of TOGA gardens with six types of plants, namely ginger, lemongrass, galangal, turmeric, basil, and celery. Creating a TOGA garden in the school environment not only provides practical experience for students in farming, but also serves as an easily accessible source of natural medicine. This program successfully integrates aspects of education, health, and environmental preservation, and becomes the basis for developing independence in the use of medicinal plants. The sustainability of this program is supported by the active involvement of students and support from the school, which has the potential to have a long-term impact on the health and welfare of the surrounding community.

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