ABDIMAS: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang
Vol.11(1) February 2026, 98-106
p-ISSN: 2721-138X e-ISSN: 2548-7159
http://jurnal.unmer.ac.id/index.php/jpkm

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MALANG

TOGA HATI: Improving community knowledge and behavior for hypertension prevention

Nita Pujianti[1], Ayu Riana Sari Azwari[1], Mohammad Bakhriansyah[2], Endah Labati[3], Muhammad Fahriza Firdaus[4], Renia Nor Azzahra[4], Isma Azizah[4], Riniarti[4]

[1]Department of Administration and Health Policy, Faculty of Medicine and Health Sciences, [2]Medicine Undergraduate Program, Faculty of Medicine and Health Sciences, [3]Public Health Master's Program, Faculty of Medicine and Health Sciences, [4]Department of Public Health, Faculty of Medicine and Health Sciences, Faculty of Medicine and Health Sciences, Lambung Mangkurat University
Jl. A. Yani Km. 36 Banjarbaru, South Kalimantan, 70714, Indonesia
Jl. Veteran No. 128 Banjarmasin, South Kalimantan, 70232, Indonesia

ARTICLE INFO:

Received: 2025-11-25
Revised: 2026-01-14
Accepted: 2026-02-12
Published: 2026-04-30

Keywords:

Community empowerment, Healthy lifestyle, Herbal education, Hypertension prevention, Medicinal plants (TOGA)

ABSTRACT

Hypertension is one of the leading causes of premature mortality and remains a public health concern. High salt intake, insufficient physical activity, and the underutilization of medicinal plants (TOGA) contribute to the high prevalence of hypertension in West Mandikapau Village, Banjar Regency. This community service program aimed to improve knowledge and preventive measures related to hypertension through health education and medicinal plants utilization. Activities involved health cadres, PKK members, village officials, and local residents through hypertension education, healthy lifestyle promotion, demonstrations on processing medicinal plants such as celery, turmeric, ginger, and lemongrass, and the distribution of medicinal plant seeds for household cultivation. The program applied a participatory community-based approach involving PKK members as partners. The results showed improvements in participants' knowledge, attitudes, and behaviors regarding hypertension prevention. The mean knowledge score increased from 72.6 to 96.2, the attitude score increased from 4.2 to 4.9, and the behavior score increased from 4.2 to 4.6. In addition, 78 percent of participants replicated household-level medicinal plants cultivation after the program. The integration of healthy lifestyle education and household-level medicinal plants utilization strengthened community participation, practical skills, and community self-reliance in sustainable hypertension prevention.

How to cite: Pujianti, N., Azwari, A. R. S., Bakhriansyah, M., Labati, E., Firdaus, M. F., Azzahra, R. N., Azizah, I., & Riniarti. (2026). TOGA HATI: Improving community knowledge and behavior for hypertension prevention. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang, 11*(1), 98-106. https://doi.org/10.26905/abdimas.v11i1.16436

1. INTRODUCTION

Hypertension is one of the leading causes of premature mortality and increases the risk of cardiovascular disease, stroke, and kidney failure (Najihah & Fadilah, 2025). Statistically, the World Health Organization (WHO) estimated that the global prevalence of hypertension was 33 percent, with Southeast Asia region ranking fifth with a prevalence of 32.4 percent (World Health Organization, 2023). Data from the 2023 Indonesian Health Survey (SKI) indicate that the prevalence of hypertension in Indonesia among those aged 18 years and older was 30.8 percent. It was also noted by the SKI data that the prevalence of hypertension begins to affect younger age groups, with 10.7 percent of people

✉ Corresponding Author: **Nita Pujianti:** Tel. +62 0511-4772747 | E-mail: nitapujianti@ulm.ac.id

in the 18-24 age group and 17.4 percent of people in the 25-34 age group being affected (Kementerian Kesehatan Republik Indonesia, 2023). Lifestyle factors such as high salt intake, insufficient physical activity, obesity, and stress contribute to the increasing prevalence of hypertension (Efroliza et al., 2025). Therefore, applying preventive measures by focusing on healthier lifestyle modification and raising community awareness are essential.

Banjar Regency, as part of South Kalimantan, also faces the problem of hypertension. The proportion of hypertension sufferers who received health services in Banjar Regency in 2023 was 85.1 percent (Dinas Kesehatan Provinsi Kalimantan Selatan, 2023). The proportion increased to 91.9 percent in 2024 (Dinas Kesehatan Provinsi Kalimantan Selatan, 2024). Moreover, based on the 2018 Basic Health Research (Riskesdas), the prevalence of hypertension in South Kalimantan Province was 44.1 percent of the population aged e"18 years (Kementerian Kesehatan Republik Indonesia, 2018). This figure shows declining pattern when compared the 2023 SKI data, where the prevalence of hypertension in the population aged e"18 years was 35.8 percent. Despite the slight decrease compared to previous years, this figure remains in the category that requires serious attention (Kementerian Kesehatan Republik Indonesia, 2023).

The prevalence of hypertension at the Karang Intan 2 Public Health Centre (Puskesmas Karang Intan 2), particularly in West Mandikapau Village, has increased annually. According to the data from 2024, 71 people in West Mandikapau Village were diagnosed with hypertension with the largest proportion accounted for the women aged 45–54 (35 percent) and 55–59 (16 percent) years. This figure shows notable impression given the village's total population (Puskesmas Karang Intan, 2024), indicating that hypertension remains a major health challenge at the local level.

According to the situation explained, hypertension become one of the top priority health issues in this region that requires immediate attention through a community-based approach. The results of the initial survey to the community showed that the lifestyle of the residents of West Mandikapau Village continue to undertake lifestyle behaviors that increase the risk of hypertension. High salt intake, insufficient physical activity, and minimal health education are the main factors for the high number of hypertension cases. In addition, limited access to continuous health education and the underutilization of locally available medicinal plants also contributed to the persistence of unhealthy lifestyle behaviors within the community.

Health education and promotive-preventive approaches are important to improve community awareness and encourage healthier behaviors, including towards hypertension (Efroliza et al., 2025; Najihah & Fadilah, 2025). Therefore, lifestyle-based interventions and raising awareness are necessary, particularly in riverside communities with limited facilities and information access. Beyond behavioral interventions, community-based approaches utilizing local resources can strengthen hypertension prevention efforts. Such approaches encourage community ownership and long-term behavioral change.

In addition to lifestyle approaches, medicinal plants (TOGA) can also be used as an alternative treatment for hypertension. According to SKI 2023 data, approximately 5.2 percent of South Kalimantan residents with hypertension had used traditional medicine (Kementerian Kesehatan Republik Indonesia, 2023). Research by Situmorang et al. (2023) showed that medicinal plants are effective in lowering blood pressure, particularly when integrated with an interprofessional educational approach (Situmorang et al., 2023). However, residents of West Mandikapau Village have not optimally utilized medicinal plants, despite the significant potential of their home gardens. This emphasizes the need for community empowerment-based interventions through medicinal plants utilization and increased awareness of early detection as a promotive and preventive strategy in controlling hypertension. Based on these conditions, the community requires educational and practical interventions to improve knowledge,

strengthen preventive behavior, and optimize the utilization of medicinal plants (TOGA) for hypertension prevention.

The active involvement of local women's groups (TP-PKK) is also essential to ensure the sustainability and participation of the community in these initiatives. This collaborative approach is expected to build a sustainable model for hypertension prevention in rural communities. Therefore, this program aimed to enhance community knowledge and behavior regarding hypertension prevention through education and the utilization of medicinal plants (TOGA).

2. METHODS

This program employed a participatory community-based using an educational and demonstrative approach to facilitate behavioral change and community empowerment. The activities aimed to encourage early detection and behavioral change for hypertension prevention, as well as to empower the community through the utilization of medicinal plants (TOGA). The program was implemented in Mandikapau Barat Village, Karang Intan District, Banjar Regency, South Kalimantan in collaboration with the Tim Penggerak PKK (TP-PKK) as the main partner in mobilizing community participation.

Preparation Stage

The preparation stage included initial observation and coordination with community partners. Observations indicated that community members had not yet optimally utilized medicinal plants (TOGA) for health purposes, particularly for hypertension prevention. Based on this need, an intervention program combining health education and practical demonstrations was designed. Educational materials, modules, posters, and herbal demonstration tools were prepared prior to implementation.

Implementation Stage

The program was conducted over two sessions, there are: (1) Health education session that conducted on 8 August 2025 and attended by 50 participants, including PKK members, village officials, residents, and cadres of Posbindu, a community-based health program focused on the early detection, prevention, and monitoring of Non-Communicable Diseases (NCDs). The session focused on hypertension education with the theme "Herbal and Lifestyle Approaches to Reduce the Risk of Hypertension." The activity began with a pre-test to assess initial knowledge, followed by the delivery of educational materials using PowerPoint presentations, modules, and posters. The materials covered the definition, classification, signs and symptoms, risk factors, prevention, and management of hypertension, as well as healthy lifestyle practices and the utilization of herbal plants. The session was conducted interactively through discussions and question-and-answer activities. At the end of the session, a post-test and blood pressure measurements were conducted; (2) Demonstration of herbal processing and community plant distribution that conducted on 10 August 2025 and attended by 40 participants. This session focused on practical skills through the demonstration of herbal processing using locally available plants such as celery, turmeric, curcumin, red ginger, lemongrass, and honey. Participants were guided on how to prepare herbal drinks in a hygienic and simple manner. The session was interactive, allowing participants to ask questions and directly observe the preparation process. As a follow-up activity, medicinal plant seedlings such as celery and ginger were distributed to participants to encourage household-level cultivation of medicinal plants.

Evaluation Stage

Evaluation was conducted through a comparison of pre-test and post-test results to assess changes in participants' knowledge and understanding. In addition, behavioral changes were observed based on participants' ability to apply the information provided, particularly in adopting healthy lifestyles and utilizing herbal plants. The indicators of program success included improvement in participants' knowledge and understanding of hypertension prevention, participants' ability to practice herbal processing independently, increased utilization of medicinal plants (TOGA) at the household level, and active participation and engagement of the community during program implementation.

3. RESULTS AND DISCUSSION

Results

Health education

The community education program on hypertension prevention involved 50 participants, including Posbindu cadres, member of the village PKK team, village officials, and residents of West Mandikapau Village. Participants showed active engagement and enthusiasm throughout the educational sessions.

Figure 1. Health education

Table 1. Distribution and frequency of respondent characteristics

Characteristics	Frequencies (n)	Percentages (%)
Gender		
Male	8	16
Female	42	84
Total	**50**	**100**

Table 2. Knowledge results before and after hypertension education

Categories	Pre-test		Post-test	
	n	%	n	%
Knowledge				
Poor	23	46	0	0
Good	27	54	50	100
Attitude				
Negative	3	6	0	0
Positive	47	94	50	100
Behavior				
Risky	4	8	1	2
No Risk	46	92	49	98
Total	**50**	**100**	**50**	**100**

Figure 1 presents the health education activities conducted by the community service team. The session focused on hypertension definition, classification, signs and symptoms, risk factors, treatment, prevention through healthy lifestyles, and herbal utilization. The characteristics of participants are presented in Table 1, where female participants (84 percent) outnumbered male participants (16 percent). While the distribution of participants' pre-test and post-test scores is presented in Table 2.

Based on table 2, before the education program 54 percent of respondents demonstrated good knowledge of hypertension prevention, while 46 percent had poor knowledge. Following the intervention, all respondents (100 percent) achieved a good level of knowledge. The mean pre-test score was 72.6, increasing to 96.2 in the post-test.

Similarly, before education, 94 percent of respondents initially showed positive attitudes toward hypertension prevention, and all participants (100 percent) displayed positive attitudes after the education. The mean attitude score increased from 4.2 to 4.9. Regarding behavior, 92 percent of respondents initially exhibited non-risk behaviors before education, which increased to 98 percent after the program. The mean behavior score improved from 4.2 to 4.6.

Demonstration of herbal processing and community plant distribution

Following the educational intervention, a second activity was conducted to strengthen practical application through hands-on learning.

Figure 2. Demonstration of herbal processing

Figure 3. Plant distribution

Figure 2 illustrates the process of preparing herbal medicines from selected plants with antihypertensive properties. The herbs used include celery, turmeric, curcumin, red ginger, lemongrass and honey. Participants were actively engaged throughout the demonstration, showing enthusiasm and curiosity, actively asking questions when anything was unclear. This resulted in an interactive session

between team and the participants. PKK members and Posbindu cadres also assisted in mobilizing participants and facilitating community involvement during the activities. Participants demonstrated the ability to identify, process, and utilize local herbal plants during the activity. Participants demonstrated interest in cultivating medicinal plants independently at the household level.

Figure 3 presents the distribution of medicinal plant seedlings to the community as part of the follow-up activity after the herbal processing demonstration. Medicinal plant seedlings, particularly ginger and celery, were distributed to encourage household-level medicinal plants cultivation. Participants were encouraged to cultivate the plants in their yards and use them as part of daily health maintenance practices. A total of 39 participants (78 percent) successfully replicated TOGA cultivation in their household environments, exceeding the initial target of more than 50 percent. Several participants reported that they had started planting the distributed medicinal plants in their household yards following the program. Most participants who replicated the activity were residents of RT 2, Mandikapau Barat Village. Participants were involved not only as recipients of information but also as implementers of household-level medicinal plants cultivation activities. Overall, the program activities demonstrated active community participation in educational and practical activities related to hypertension prevention and the utilization of medicinal plants.

Discussion

The educational activities conducted in West Mandikapau Village encouraged improvements in participants' knowledge, attitudes, and behaviors towards hypertension prevention efforts. The quality in knowledge scores 54 percent prior to the intervention, increased to 100 percent after the program, indicates that the educational approach was effective in improving participants' understanding of hypertension and healthy lifestyle practices. Health knowledge plays an important role in shaping preventive behavior and supporting community independence in hypertension control (Efroliza et al., 2025). This finding is consistent with previous studies showing that community-based educational interventions can improve health literacy and preventive behavior related to hypertension (Mahyuni et al., 2024). Similar findings were also reported in the SERASI educational program for elderly participants, which demonstrated improvements in hypertension knowledge after educational intervention (Azzahra & Muthmainnah, 2025).

The improvement in participants' attitudes and behaviors was also reflected in their active engagement during discussions, question-and-answer sessions, and follow-up activities. Participants demonstrated willingness to apply the information provided during the program, particularly in adopting healthier lifestyles and participating in household-level medicinal plants cultivation. Educational interventions are known to strengthen motivation and readiness to adopt preventive, healthy behaviors (Sinaga et al., 2025). Positive attitudes toward preventive behavior can also be influenced by proper approaches and taking account into community engagement (Dinita & Maliya, 2024).

Behavioral changes observed in this program indicate that participants were able to apply knowledge into practical actions. The increase in non-risk behavior scores after the intervention reflects the important role of knowledge and attitudes in shaping health-related behavior (Sudirman & Sintia, 2024). The participatory educational approach used during the program also contributed to improving participants' engagement in hypertension prevention activities. Previous studies have also shown that hypertension education can encourage preventive behavioral changes, including improvements in dietary patterns and physical activity (Wulandari et al., 2025). Health education programs focusing on clean and healthy lifestyle behaviors (PHBS) have also been proven to improve knowledge and behavior among individuals with hypertension (Sonhaji et al., 2023).

The herbal processing demonstration provided practical learning experiences by introducing participants to the utilization of locally available medicinal plants such as celery, turmeric, ginger, and lemongrass. Through hands-on activities, participants were able to directly observe and practice the preparation of herbal remedies for hypertension prevention. Practical demonstrations are important in strengthening participants' understanding and encouraging the application of knowledge in everyday life (Widyarani & Kustanti, 2024). The use of herbal plants as complementary community-based health approaches has also been widely recognized in prior studies (Ramadani & Ramadhan, 2025). In addition, locally available herbal ingredients can support healthy practices within households and promote community utilization of traditional medicine (Nayoan et al., 2025).

The high level of medicinal plants adoption, where 78 percent of participants replicated medicinal plant cultivation at home, demonstrates that the program was not only understood conceptually but also implemented in daily life. Several participants reported that they had started planting the distributed medicinal plants in their household yards following the program. This finding reflects the community's willingness to adopt and sustain the intervention through household-based health practices. Community-based interventions are known to support self-management and long-term behavioral change in hypertension prevention (Azami-Aghdash et al., 2025).

From a community empowerment perspective, the active involvement of PKK members and Posbindu cadres played an important role in mobilizing participants and facilitating community engagement throughout the program. Their involvement reflects a participatory approach in which community members not merely participating, but also act as local facilitators of health promotion activities. Community participation is an essential component in strengthening collective action and improving community health outcomes (Syamsuriah et al., 2025).

However, several challenges were identified during program implementation, including differences in participants' initial knowledge levels, varied levels of engagement, and limited prior experience in utilizing medicinal plants for health purposes. These conditions indicate that behavioral change may be further influenced by individual readiness and contextual factors within the community (Syamsuriah et al., 2025).

In terms of sustainability, the program demonstrates strong potential for long-term community implementation. The ability of participants to independently cultivate and utilize medicinal plants reflects an early stage of community self-reliance in hypertension prevention and household-based health management. Strengthening collaboration with local stakeholders and continuing community-based educational activities may further support the sustainability and long-term impact of the program (Azami-Aghdash et al., 2025).

4. CONCLUSION AND RECOMMENDATIONS

The community service program, implemented through health education, herbal processing demonstrations, and the distribution of medicinal plant seedlings, effectively improved participants' knowledge, attitudes, and behaviors related to hypertension prevention. Beyond individual-level improvements, the program also strengthened community capacity through the active involvement of PKK members and Posbindu cadres as local facilitators in promoting hypertension prevention activities. The high level of household medicinal plants adoption demonstrated the community's ability to independently cultivate and utilize medicinal plants for health maintenance using locally available resources. These findings indicate that the program not only improved individual awareness but also fostered community empowerment, reflected in increased community participation, self-reliance, and the sustainability of hypertension prevention efforts at both household and community levels.

To ensure the sustainability and broader impact of this community service program, several recommendations are proposed. First, continuous health education and mentoring by local health workers and community health cadres are essential to maintain and reinforce community awareness and behavior related to hypertension prevention. Second, collaboration with local stakeholders, including the village government, health centers, and PKK organizations, should be strengthened to support the integration of medicinal plants utilization into routine community activities. This includes promoting household-level cultivation of medicinal plants and incorporating herbal-based practices into daily health behaviors. Third, this program can be replicated in other communities with similar characteristics, particularly in rural or riverside areas, by adapting the educational materials and implementation strategies to local contexts. Finally, periodic monitoring and evaluation at the community level are recommended to ensure the continuity of behavioral changes and the optimal utilization of medicinal plants (TOGA) as a preventive approach to hypertension.

ACKNOWLEDGEMENTS

The authors would like to extend their gratitude to: Lambung Mangkurat University; village officials; the West Mandikapau village community; the Karang Intan 2 Health Center; and all the other unmentioned individuals and organizations who contributed to the research. This study was funded by Lambung Mangkurat University through its community service grant program.

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