Ta'awun: Jurnal Pengabdian Kepada Masyarakat
Volume 06, Issue. 02 August 2026, Pages. 408-419

E-ISSN: 2774-941X
P-ISSN: 2774-9150

DOI: https://doi.org/10.37850/taawun.v6i02.1375
https://journal.faibillfath.ac.id/index.php/taawun

COMMUNITY EMPOWERMENT THROUGH COMPLEMENTARY THERAPY-BASED EDUCATION USING KENCUR BOILED WATER SOAK AND FOOT MASSAGE TO REDUCE EDEMA AMONG SECOND-TRIMESTER PREGNANT WOMEN

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Received 6 June 2026; Received in revised form 20 June 2026; Accepted 9 July 2026

Abstrak

Kegiatan pengabdian kepada masyarakat ini bertujuan untuk memberdayakan ibu hamil trimester II dalam mengelola edema secara mandiri melalui edukasi berbasis terapi komplementer menggunakan rendaman air rebusan kencur (*Kaempferia galanga*) dan pijat kaki. Mitra kegiatan menghadapi keterbatasan pengetahuan dan keterampilan mengenai terapi komplementer yang aman untuk mengurangi edema selama kehamilan. Oleh karena itu, dipilih metode penyuluhan kesehatan, diskusi interaktif, demonstrasi, praktik terbimbing, serta evaluasi melalui *pre-test*, *post-test*, dan observasi keterampilan. Kegiatan dilaksanakan di Praktik Mandiri Bidan Eliza Bestari pada tahun 2026 dengan melibatkan 20 ibu hamil trimester II yang dipilih menggunakan teknik *convenience sampling*. Hasil kegiatan menunjukkan peningkatan yang cukup besar pada pengetahuan peserta, ditandai dengan meningkatnya proporsi kategori pengetahuan baik dari 20,0% menjadi 80,0%. Selain itu, kemampuan praktik peserta juga mengalami perbaikan yang bermakna secara praktis, dimana 95,0% mampu menyiapkan air rebusan kencur dengan benar, 100,0% melakukan rendam kaki sesuai prosedur, dan 90,0% mempraktikkan pijat kaki dengan tepat. Program ini meningkatkan kapasitas dan kepercayaan diri ibu hamil dalam menerapkan terapi komplementer secara mandiri serta berpotensi mendukung praktik antenatal care berbasis komunitas melalui pendampingan berkelanjutan oleh bidan.

Kata kunci: Terapi Komplementer, Pemberdayaan Ibu Hamil, Edukasi Berbasis Masyarakat, Pelayanan Antenatal.

Abstract

This community service program aimed to empower second-trimester pregnant women to independently manage edema through complementary therapy-based education using Kaempferia galanga (kencur) boiled water foot soak and foot massage. The community partner faced limited knowledge and practical skills regarding safe complementary therapies for managing pregnancy-related edema. Therefore, health education, interactive discussions, demonstrations, guided practice, and evaluations using pre-test, post-test, and skills observation were implemented to enhance participants' knowledge and self-care capacity. The program was conducted at Eliza Bestari Independent Midwifery Practice in 2026 and involved 20 second-trimester pregnant women selected through convenience sampling. The results showed a substantial increase in participants' knowledge, with the proportion of women categorized as having good knowledge increasing from 20.0% before the intervention to 80.0% afterward. Participants also demonstrated considerable improvement in practical skills, with 95.0% correctly preparing the Kaempferia galanga boiled water, 100.0% performing the warm foot soak according to the recommended procedure, and 90.0%

correctly applying the foot massage technique. The program enhanced participants' capacity and confidence to independently apply complementary therapies and has the potential to support community-based antenatal care through continuous assistance from midwives.

***Keywords**: Complementary Therapy, Maternal Empowerment, Community-Based Education, Antenatal Care.*

INTRODUCTION

Pregnancy is a physiological condition accompanied by anatomical, hormonal, and circulatory changes that may cause various discomforts, one of the most common being lower extremity edema. Although edema is generally considered a normal adaptation during pregnancy, persistent swelling may reduce maternal comfort, limit daily activities, impair mobility, and negatively affect quality of life. If not managed appropriately, prolonged edema may also increase maternal anxiety and reduce adherence to healthy pregnancy practices (Nuraliffa, N., 2025).

A preliminary needs assessment conducted at Eliza Bestari Independent Midwifery Practice revealed that lower extremity edema is one of the most frequent complaints among second-trimester pregnant women attending routine antenatal care. Based on observations and interviews with the attending midwife, many pregnant women perceived edema as an unavoidable consequence of pregnancy and relied primarily on rest without knowing evidence-based complementary approaches that could be safely practiced at home. Health education regarding complementary therapy for edema management had not previously been provided in a structured manner, resulting in limited knowledge and practical skills among pregnant women in performing independent self-care(Gynecologists, 2023).

Non-pharmacological interventions are recommended as the first-line approach for managing physiological edema during pregnancy because they are safe, inexpensive, and feasible to implement at the community level. Among these interventions, foot massage has been shown to improve venous return, stimulate lymphatic drainage, enhance peripheral circulation, and reduce lower extremity swelling(Midwives., 2024)(Indonesia, 2023). Likewise, warm foot soaking using boiled water containing kencur (Kaempferia galanga), a medicinal plant widely available in Indonesia, has attracted increasing attention because of its anti-inflammatory and antioxidant properties. Bioactive compounds such as ethyl p-methoxycinnamate have been reported to contribute to improved peripheral circulation and reduced inflammatory responses. Recent studies have demonstrated that the combination of foot massage and warm kencur foot soaking effectively alleviates pregnancy-related edema while improving maternal comfort(Organization, 2024).

Although the effectiveness of these complementary therapies has been widely reported, most previous studies have focused on evaluating clinical outcomes rather than strengthening pregnant women's capacity to independently implement the interventions. Consequently, knowledge translation into community practice remains limited. This community service program introduces a community empowerment model based on complementary therapy education, integrating interactive health education, hands-on demonstrations, guided practice, educational leaflets, and direct mentoring by midwives. This approach not only transfers knowledge but also develops practical skills and self-efficacy, enabling pregnant women to independently perform complementary therapy as part of routine antenatal self-care.

Based on the identified needs, a community service program entitled "Community Empowerment Through Complementary Therapy-Based Education Using Kaempferia galanga Boiled Water Foot Soak and Foot Massage to Reduce Edema Among Second-Trimester Pregnant Women at Eliza Bestari Independent Midwifery Practice" was implemented. The program aimed to improve participants' knowledge, practical skills, and self-confidence in managing pregnancy-related edema through safe, affordable, culturally acceptable, and evidence-based complementary therapies while supporting the integration of community-based self-care into antenatal services..

METHOD

This community service program adopted a community empowerment approach through complementary therapy-based education and practical training to enhance the knowledge, practical skills, and self-care capacity of second-trimester pregnant women in managing physiological edema. The activity was conducted at Eliza Bestari Independent Midwifery Practice (PMB Eliza Bestari) in 2026.

Prior to implementation, a needs assessment was conducted through direct observation during antenatal care services and interviews with the coordinating midwife. The assessment revealed that lower extremity edema was one of the most common complaints among second-trimester pregnant women. Most participants considered edema a normal condition of pregnancy and had limited knowledge regarding safe complementary therapies that could be practiced independently at home. Furthermore, no structured educational program or practical training on complementary edema management had previously been implemented at the midwifery practice. These findings became the basis for designing the community empowerment program.

The implementation was coordinated with the head midwife of PMB Eliza Bestari to determine the schedule, participant recruitment, educational materials, facilities, and follow-up mentoring. All second-trimester pregnant women attending antenatal care during the activity period who agreed to participate were included in the program. A total of 20 pregnant women participated in the community service activity.

Educational materials were developed based on national antenatal care guidelines, complementary therapy literature, and recent scientific evidence regarding the use of Kaempferia galanga boiled water foot soaking and foot massage for pregnancy-related edema. The educational package consisted of PowerPoint presentations, illustrated leaflets, practical guidelines, and demonstration videos. The knowledge questionnaire and observation checklist were reviewed by experts consisting of a midwifery lecturer and a clinical midwife to ensure content validity and clarity before implementation.

The community service activity consisted of four sequential stages. Stage 1: Preparation. Coordination with community partners was conducted, followed by

preparation of educational media, demonstration equipment, pre-test and post-test questionnaires, observation checklists, and logistical arrangements. Stage 2: Baseline assessment. Participants completed a pre-test consisting of 10–15 multiple-choice questions assessing knowledge of pregnancy-related edema, risk factors, prevention, and complementary management strategies. Initial discussions were also conducted to identify participants' previous experiences and self-care practices.

Stage 3: Community empowerment intervention. Educational sessions were delivered by a multidisciplinary community service team consisting of midwifery lecturers and practicing midwives. The intervention included interactive lectures, group discussions, question-and-answer sessions, live demonstrations, and guided hands-on practice. Participants learned the preparation of Kaempferia galanga boiled water, the correct warm foot-soaking procedure, and standardized foot massage techniques. Each participant practiced every procedure under direct supervision until able to perform the techniques correctly. Educational sessions lasted approximately 60 minutes, followed by 60 minutes of practical training and mentoring.

Stage 4: Evaluation and follow-up. Immediately after the intervention, participants completed a post-test using the same questionnaire. Practical skills were assessed using an observation checklist during the demonstration session. To encourage sustainability, participants received educational leaflets and practical guidelines for home use. Midwives also encouraged participants to continue practicing the complementary therapy independently and reinforced the messages during subsequent antenatal care visits through routine monitoring and counseling. Data were analyzed descriptively using frequencies, percentages, mean scores, and comparisons between pre-test and post-test results. Practical skills were summarized descriptively based on observation scores and presented in tables and narrative form.

RESULTS AND DISCUSSION

Implementation of the Community Empowerment Program

The community service program was successfully implemented at Eliza Bestari Independent Midwifery Practice and involved 20 second-trimester pregnant women who attended routine antenatal care services. The activity was conducted through four sequential stages consisting of needs identification, health education, practical training, and evaluation. Before the educational session, participants were invited to share their experiences regarding lower extremity edema during pregnancy. Most participants stated that swollen feet were considered a normal condition requiring only rest and that they had never received structured education regarding complementary therapies that could be safely performed at home.

The educational session was delivered using interactive lectures supported by PowerPoint presentations, illustrated leaflets, and open discussions. Participants actively asked questions regarding the causes of edema, the safety of complementary therapies during pregnancy, and the correct techniques for preparing *Kaempferia galanga* boiled water. This interaction created a participatory learning atmosphere and enabled facilitators to directly address misconceptions identified during the initial discussion.

The practical session was conducted through live demonstrations followed by guided practice. Each participant prepared the *Kaempferia galanga* boiled water, performed warm foot soaking, and practiced standardized foot massage techniques under direct supervision from the community service team. Some participants initially experienced difficulty in applying the correct massage pressure and sequence of movements. These challenges were addressed through individual mentoring and repeated demonstrations until participants were able to perform each step independently. This participatory approach encouraged active learning and increased participants' confidence in applying complementary therapies at home.

Participant Characteristics

Most participants were between 20–35 years old, representing the productive reproductive age group. The majority were multigravida mothers and had previously experienced mild lower extremity edema during pregnancy based on Table 1.

Table 1. Characteristics of Participants

Characteristics	Frequency (n)	Percentage (%)
Age		
< 20 years	2	10.0
20–35 years	15	75.0
> 35 years	3	15.0
Education Level		
Elementary School	2	10.0
Junior High School	4	20.0
Senior High School	10	50.0
College/University	4	20.0
Occupation		
Housewife	12	60.0
Private Employee	4	20.0
Self-employed	3	15.0
Civil Servant	1	5.0
Parity Status		
Primigravida	8	40.0
Multigravida	12	60.0
Gestational Age		
13–20 weeks	9	45.0
21–27 weeks	11	55.0

The participants were predominantly aged 20–35 years (75.0%), had completed senior high school education (50.0%), were housewives (60.0%), and were multigravida (60.0%). More than half were between 21 and 27 weeks of gestation, a period during which pregnancy-related edema commonly begins to appear. These characteristics indicate that the program reached pregnant women who were at an appropriate stage to benefit from early education and self-management strategies.

Changes in Participants' Knowledge

The educational intervention resulted in a substantial improvement in participants' understanding of pregnancy-related edema and complementary management strategies. Before the intervention, discussions revealed that many participants were unfamiliar with the physiological mechanisms of edema and believed that swelling could only be relieved through rest. Following the educational and practical sessions, participants demonstrated improved comprehension regarding the causes of edema, preventive measures, and the appropriate application of *Kaempferia galanga* boiled water foot soaking combined with foot massage based on Table 2.

Table 2. Changes in Participants Knowledge

Knowledge Level	Pre-test n (%)	Post-test n (%)
Good	4 (20.0)	16 (80.0)
Moderate	10 (50.0)	4 (20.0)
Poor	6 (30.0)	0 (0.0)
Total	20 (100)	20 (100)

Similarly, participants' practical competencies improved considerably after supervised training. Nearly all participants were able to correctly prepare the herbal foot soak, perform warm foot soaking according to the recommended procedure, and demonstrate the standardized foot massage techniques independently.

Improvement in Practical Skills

During the practical training session, participants were taught how to prepare kencur boiled water, perform warm foot soaking, and apply appropriate foot massage techniques. Initially, only a few participants were familiar with these procedures. Following demonstrations and supervised practice, most participants were able to perform the intervention independently and correctly based on Table 3.

Table 3. Improvement in Practical Skills

Skill Assessment Indicator	Able Before Training n (%)	Able After Training n (%)
Preparing kencur boiled water correctly	3 (15.0)	19 (95.0)
Performing warm foot soaking procedures	5 (25.0)	20 (100.0)
Applying foot massage techniques correctly	2 (10.0)	18 (90.0)

These findings indicate that combining health education with hands-on practice effectively transformed theoretical knowledge into practical self-care skills. Continuous guidance during demonstrations enabled participants to gain confidence in independently performing complementary therapy at home.

Participant Responses to the Program

Participants responded enthusiastically throughout the activity. Interactive discussions encouraged them to share previous experiences in managing edema and exchange practical solutions with fellow participants. During the evaluation session, many participants expressed that they had become more confident in using complementary therapies because they had directly practiced the procedures under professional supervision based on Table 4.

Table 4. Participants' Responses to the Community Service Program

Response Indicator	Frequency (n)	Percentage (%)
Educational materials were easy to understand	19	95.0
Practical demonstrations increased confidence in managing edema independently	18	90.0
Satisfied with the overall program	20	100.0
Intend to continue practicing kencur foot soaking and foot massage regularly	18	90.0
Felt more relaxed after the practical session	17	85.0
Experienced reduced foot discomfort after the intervention	16	80.0

In addition to increased knowledge and practical skills, the program strengthened participants' self-efficacy and willingness to adopt healthy behaviors. Most participants committed to continuing the therapy independently at home and agreed to discuss their experiences during subsequent antenatal care visits. Midwives also expressed their commitment to reinforcing the educational messages and monitoring participants' adherence during routine antenatal consultations.

Program Achievement

The community service program successfully achieved all predetermined empowerment indicators based on Table 5.

Table 5. Program Achievement Indicators

Achievement Indicator	Target	Achievement Result	Status
Participant attendance	≥ 80% of registered participants	20 of 20 participants attended (100%)	Achieved
Active participation during education and training sessions	≥ 80% of participants actively engaged	19 of 20 participants actively participated (95%)	Achieved
Improvement in participants' knowledge	Increase in post-test scores compared to pre-test scores	Good knowledge increased from 20.0% to 80.0%	Achieved

Achievement Indicator	Target	Achievement Result	Status
Ability to prepare kencur boiled water correctly	≥ 80% of participants competent	19 of 20 participants (95.0%) competent	Achieved
Ability to perform warm foot soaking procedures correctly	≥ 80% of participants competent	20 of 20 participants (100%) competent	Achieved
Ability to perform foot massage techniques correctly	≥ 80% of participants competent	18 of 20 participants (90.0%) competent	Achieved
Participant satisfaction with the program	≥ 80% satisfied	20 of 20 participants satisfied (100%)	Achieved

Attendance reached 100%, and participants actively engaged throughout both educational and practical sessions. The program not only improved knowledge and practical competencies but also strengthened participants' confidence, self-care capacity, and commitment to implementing complementary therapy as part of routine antenatal care. These outcomes demonstrate that the community empowerment approach extended beyond knowledge transfer by encouraging sustainable behavioral change supported by continuous mentoring from midwives.

Discussion

The community service program demonstrated that a complementary therapy-based educational approach effectively strengthened pregnant women's knowledge, practical skills, and self-confidence in managing physiological edema during pregnancy. Beyond increasing knowledge scores, the intervention encouraged participants to actively practice complementary therapies and enhanced their capacity to independently perform self-care at home. These findings indicate that the program achieved its primary objective of empowering pregnant women rather than merely delivering health information (Organization, 2024).

One important factor contributing to the program's success was the use of a participatory educational approach. Unlike conventional health education that primarily relies on one-way information delivery, this program integrated interactive discussions, live demonstrations, guided practice, and direct mentoring. Such an approach is consistent with adult learning theory, which emphasizes that adults learn more effectively when educational activities are directly relevant to their daily experiences and when they actively participate in problem-solving and practical exercises (De-La-Iglesia, C., Magni, E., Botello-Hermosa, A., & Guerra-Martín, 2024). Through repeated demonstrations and immediate feedback from facilitators, participants were able to transform theoretical knowledge into practical competencies that could be applied independently during pregnancy. This finding supports current evidence that experiential learning significantly improves self-management behaviors among pregnant women receiving antenatal education

(Yang, J. M., Li, Z. Q., Ye, H., Wu, Y. L., Long, Y., Zhong, Y. B., Luo, Y., & Wang, 2024).

The considerable improvement in participants' practical skills also reflects the importance of combining education with competency-based training. Prior to the intervention, many participants believed that lower extremity edema was an unavoidable consequence of pregnancy and were unaware of safe complementary therapies that could be implemented at home. After participating in the demonstrations, almost all participants successfully prepared *Kaempferia galanga* boiled water, performed warm foot soaking, and applied standardized foot massage techniques correctly (Menek, M. Y., & Kaya, 2024)(Sari NP, Yuliana R, 2025). This improvement suggests that practical demonstrations reduce barriers to adopting new health behaviors by increasing both technical competence and self-efficacy. According to community empowerment principles, increased confidence is a key determinant of sustained behavioral change because individuals are more likely to continue health practices when they feel capable of performing them independently (Novelia, S., Rukmaini, & Caka, 2022)(Lubis, B., Wulandari, S., & Hayati, 2024).

The positive responses expressed by participants further indicate that the intervention was acceptable within the local sociocultural context. The use of Kaempferia galanga, a medicinal plant that is widely available and traditionally used in Indonesian households, made the intervention culturally familiar, affordable, and feasible for routine home practice. Integrating locally available resources into health promotion activities not only increases community acceptance but also enhances program sustainability because participants can continue the practice without requiring expensive equipment or continuous external support (Rahmawati D, Handayani S, 2024)(Sari NP, Yuliana R, 2025). This characteristic represents one of the strengths of community-based complementary therapy interventions in primary maternal healthcare (Suryati, 2024)(Warisantika, I., & Tridiyawati, 2025).

Another important contribution of this program lies in its collaborative implementation with midwives at Eliza Bestari Independent Midwifery Practice. The involvement of practicing midwives throughout education, demonstrations, and follow-up counseling strengthened the continuity of the intervention beyond the community service activity itself (Midwives., 2024). Participants were encouraged to discuss their experiences during subsequent antenatal care visits, allowing midwives to reinforce educational messages and monitor participants' adherence to complementary therapy practices. This collaborative strategy illustrates how community empowerment can be integrated into routine antenatal care, thereby supporting sustainable maternal health promotion rather than a single educational event (Gynecologists., 2023)(Organization., 2023).

From a broader public health perspective, this program contributes to strengthening maternal self-care capacity through community-based health promotion. Empowering pregnant women with practical knowledge and skills enables them to become active participants in maintaining their own health during

pregnancy. Such empowerment aligns with the principles of health promotion, which emphasize increasing individuals' ability to control and improve their health through education, supportive environments, and community participation(Green, L. W., & Kreuter, 2022)(Nutbeam, 2021). Therefore, the outcomes of this program extend beyond immediate improvements in knowledge and practical skills by fostering greater independence, confidence, and readiness to adopt healthy behaviors throughout pregnancy (Fund, 2023)(Obstetrics, 2023).

Despite these positive outcomes, this community service program had several limitations. The activity involved a relatively small number of participants from a single independent midwifery practice, and evaluation focused primarily on immediate changes following the intervention. Long-term monitoring of participants' adherence to complementary therapy and the sustainability of behavioral changes was beyond the scope of the current program (Nuraliffa M, Yulistanti Y, Rahmawati WR, 2025). Future community service initiatives should incorporate longer follow-up periods, involve broader community participation, and establish stronger collaboration with primary healthcare centers to evaluate the long-term impact of complementary therapy education on maternal health outcomes (Organization., 2022).

Overall, this community service program demonstrates that community empowerment through complementary therapy-based education is a feasible and effective strategy for improving pregnant women's knowledge, practical competencies, self-confidence, and self-care behaviors in managing pregnancy-related edema. The integration of culturally appropriate complementary therapies, participatory learning methods, and continuous support from midwives provides a sustainable model that can be replicated in other community-based antenatal care settings.

CONCLUSIONS AND SUGGESTIONS

This community service program successfully strengthened the capacity of second-trimester pregnant women to independently manage pregnancy-related edema through complementary therapy-based education integrating *Kaempferia galanga* boiled water foot soaking and foot massage. Beyond improving participants' knowledge and practical skills, the program enhanced their confidence and self-care capacity in applying safe, affordable, and culturally appropriate complementary therapies as part of daily pregnancy care. The collaborative involvement of midwives throughout the educational and mentoring process also supported the integration of complementary therapy into community-based antenatal care, demonstrating that a participatory empowerment approach can promote sustainable maternal health practices.

To ensure the continuity and broader impact of the program, complementary therapy education should be integrated into routine antenatal care services and

Pregnant Women Classes, supported by the development of standardized educational modules, practical guidelines, and audiovisual learning materials to facilitate independent practice at home. Furthermore, the involvement of community health volunteers and family members is recommended to strengthen continuous support for pregnant women, while replication of this empowerment model in other independent midwifery practices and primary healthcare facilities is encouraged to expand the implementation of evidence-based complementary therapies and improve maternal health outcomes at the community level.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to Eliza Bestari Independent Midwifery Practice for providing support, facilities, and cooperation throughout the implementation of this community service program. Special appreciation is extended to all second-trimester pregnant women who participated actively in the educational and practical training activities. The authors also thank the community service team, colleagues, and all parties who contributed to the success of this program. Their valuable support and participation were instrumental in achieving the objectives of this activity.

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