



COMMUNITY EMPOWERMENT THROUGH AN INTEGRATED COMPLEMENTARY THERAPY EDUCATION PROGRAM FOR INDEPENDENT MANAGEMENT OF PREGNANCY-RELATED EDEMA AMONG SECOND- TRIMESTER PREGNANT WOMEN

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Received 3 June 2026; Received in revised form 20 June 2026; Accepted 5 July 2026

Abstrak

*Program pengabdian kepada masyarakat ini bertujuan meningkatkan kapasitas perawatan mandiri ibu hamil melalui program edukasi terapi komplementer terpadu yang mengombinasikan rendam kaki menggunakan air rebusan kencur (*Kaempferia galanga*) dan pijat kaki. Kegiatan melibatkan 20 ibu hamil trimester II yang mengikuti pelayanan antenatal rutin, dengan metode berupa penyuluhan kesehatan interaktif, diskusi kelompok, demonstrasi, praktik terbimbing, dan pendampingan berkelanjutan. Evaluasi dilakukan melalui pre-test dan post-test, observasi keterampilan praktik, serta umpan balik peserta. Hasil kegiatan menunjukkan adanya peningkatan yang bermakna pada pemahaman peserta mengenai edema kehamilan, keterampilan dalam menyiapkan rendaman air rebusan kencur dan melakukan pijat kaki, serta kepercayaan diri untuk menerapkan terapi secara mandiri di rumah. Bidan mitra juga berkomitmen mengintegrasikan model edukasi ini ke dalam pelayanan antenatal rutin. Program ini berhasil meningkatkan pengetahuan, keterampilan, dan kapasitas perawatan mandiri ibu hamil serta menghasilkan model edukasi berbasis pemberdayaan masyarakat yang berkelanjutan untuk mendukung penatalaksanaan edema pada kehamilan.*

Kata kunci: *Pemberdayaan Masyarakat; Terapi Komplementer; Perawatan Mandiri Ibu Hamil; Edema Pada Kehamilan; Pelayanan Antenatal.*

Abstract

This community empowerment program aimed to strengthen maternal self-care capacity through an integrated complementary therapy education program combining *Kaempferia galanga* boiled water foot soaking and foot massage. The program involved 20 pregnant women attending routine antenatal care and was implemented through interactive health education, group discussions, live demonstrations, supervised practice, and continuous mentoring. Program evaluation included pre- and post-education assessments, direct observation of practical skills, and participant feedback. The intervention resulted in considerable improvements in participants' understanding of pregnancy-related edema, practical skills in preparing herbal foot soaks and performing foot massage, as well as confidence in independently applying the therapy at home. Midwives also expressed commitment to integrating the educational model into routine antenatal care services. Overall, the program enhanced maternal knowledge, practical competence, and self-care capacity while establishing a sustainable community-based educational model to support the independent management of pregnancy-related edema.

Keywords: Community Empowerment; Complementary Therapy; Maternal Self-Care; Pregnancy-Related Edema; Antenatal Care.

INTRODUCTION

Menstrual hygiene is an essential component of adolescent reproductive health because proper hygiene practices during menstruation can prevent reproductive tract infections (RTIs), vaginal infections, and other gynecological disorders that may affect women's health in the future. The World Health Organization (WHO) emphasizes that inadequate menstrual hygiene management remains a significant public health issue among adolescent girls, particularly in developing countries, where limited knowledge, poor hygiene practices, and inadequate access to accurate reproductive health information increase the risk of infection and other reproductive health problems (WHO, 2024).

A preliminary needs assessment conducted at SMA Negeri 2 Kisaran through discussions with teachers and the school health unit (UKS), as well as observations during school health activities, indicated that many female students had limited understanding of proper genital hygiene during menstruation. Most students were familiar with the use of sanitary pads but lacked knowledge regarding appropriate pad selection, the recommended frequency of changing sanitary pads, proper cleaning techniques for the external genital area, and the potential health risks associated with poor menstrual hygiene. Reproductive health education provided at school had mainly focused on general adolescent health and had not specifically addressed menstrual hygiene management through structured educational activities (Onubogu, C. U., Umeh, U. M., Mbachu, C. N. P., 2024).

This situation is concerning because adolescence is a critical period for establishing lifelong reproductive health behaviors. Inadequate menstrual hygiene practices may increase the risk of reproductive tract infections, abnormal vaginal discharge, skin irritation, and other reproductive health problems. Several studies have reported that poor menstrual hygiene is associated with an increased prevalence of vulvovaginal infections and may negatively affect adolescents' physical comfort, school attendance, self-confidence, and overall quality of life. Furthermore, Indonesia continues to face a relatively high burden of reproductive health problems among women, highlighting the importance of preventive education beginning in adolescence (Aminah, A., & Mayunita, 2023) (Fauziah, H. A., Yualita, P., & Kamila, 2024).

Health education is recognized as one of the most effective health promotion strategies for improving adolescents' knowledge and encouraging positive behavioral change. Interactive educational approaches that combine lectures, discussions, question-and-answer sessions, and educational media enable participants to actively engage in the learning process and better understand the practical application of healthy behaviors. Such approaches are consistent with the principles of health promotion and community empowerment, which emphasize increasing individuals' capacity to make informed decisions regarding their own



health (WHO, 2024)(Ariyanti, L., Kusumaningayu, W. A. D., Prabandari, F. I., & Ramadhani, 2024).

The novelty of this community service program lies not only in providing health education but also in applying a community empowerment approach through interactive learning, practical demonstrations of proper menstrual hygiene practices, educational leaflets, and active involvement of teachers and the school health unit (UKS) to reinforce healthy behaviors after the activity. This approach is expected to strengthen students' knowledge, self-confidence, and commitment to maintaining proper genital hygiene during menstruation as part of healthy reproductive behaviors(Armini, N. K. A., Setyani, A., Nastiti, A. A., & Triharini, 2023).

The program aimed to improve female students' knowledge and awareness regarding appropriate genital hygiene during menstruation, strengthen their ability to adopt healthy menstrual hygiene practices, and support the development of sustainable reproductive health promotion activities within the school environment.

METHOD

This community service employed a community empowerment approach through an integrated complementary therapy education program designed to improve the knowledge, practical skills, and self-care capacity of second-trimester pregnant women in independently managing pregnancy-related edema. The program was implemented in 2026 at Eliza Bestari Independent Midwifery Practice (PMB Eliza Bestari), a primary maternal healthcare facility providing routine antenatal care services.

Prior to program implementation, a needs assessment was conducted through direct observation, informal interviews with the midwife in charge, and discussions with pregnant women attending antenatal care. The assessment revealed that although lower extremity edema was frequently experienced during the second trimester, most pregnant women considered it a normal condition requiring no specific management. None of the participants had previously received structured education or practical training regarding evidence-based complementary therapies, particularly the use of *Kaempferia galanga* boiled water foot soaking and standardized foot massage. These findings formed the basis for designing the educational intervention.

Participants

The program involved all second-trimester pregnant women attending routine antenatal care services during the implementation period who were willing to participate in the activity. A total of 20 pregnant women participated, representing 100% of the planned target participants. As this was a community service activity rather than a research project, all eligible attendees were included as beneficiaries without applying sampling techniques.

Preparation activities included coordination meetings with the midwife at PMB Eliza Bestari to determine the implementation schedule, participant recruitment, educational strategies, and follow-up plans. The community service team subsequently developed educational materials based on current evidence regarding pregnancy-related edema management and complementary therapy. Supporting materials consisted of PowerPoint presentations, educational leaflets, practical guidelines, standard operating procedures (SOPs) for demonstrations, knowledge assessment questionnaires, and observation checklists for evaluating practical skills. Before implementation, all educational materials and assessment instruments were reviewed by experts in maternal health and community health promotion to ensure content validity, clarity, and suitability for the target population.

The community empowerment program was conducted in four sequential stages. The first stage consisted of participant registration, orientation, and a pre-test to assess baseline knowledge regarding pregnancy-related edema, risk factors, prevention strategies, and complementary therapy. The second stage involved interactive health education delivered through lectures, group discussions, question-and-answer sessions, and experience sharing. Educational topics included the physiological mechanisms of edema during pregnancy, prevention strategies, benefits of complementary therapy, preparation of *Kaempferia galanga* boiled water, warm foot soaking procedures, and standardized foot massage techniques. The third stage focused on competency development through live demonstrations followed by supervised practical sessions. Each participant practiced preparing the herbal foot soak, performing warm foot soaking, and applying standardized foot massage under direct supervision from the facilitators. Individual mentoring and immediate feedback were provided to ensure that participants correctly performed each procedure. The fourth stage consisted of post-test assessment, practical skill evaluation, reflection, and discussion regarding the application of complementary therapy at home. Participants were encouraged to share their experiences, identify potential barriers to implementation, and develop individual commitments to continue practicing the therapy independently.

Program evaluation was conducted to assess both the implementation process and the outcomes of the community empowerment program. Participants' knowledge regarding pregnancy-related edema and complementary therapy was evaluated using pre-test and post-test questionnaires administered before and after the educational intervention. Practical competencies were assessed through direct observation using a standardized skills checklist, which measured participants' ability to prepare *Kaempferia galanga* boiled water, perform warm foot soaking, and apply standardized foot massage techniques correctly and independently. Participant engagement throughout the educational sessions, demonstrations, and practical activities was monitored through direct observation, while satisfaction and



perceptions of the program were collected using structured feedback at the end of the activity. In addition, the sustainability of the program was documented through the development of educational leaflets, practical guidelines, standard operating procedures (SOPs), the establishment of collaboration with PMB Eliza Bestari, and follow-up mentoring integrated into routine antenatal care services.

The success of the community empowerment program was determined based on several predefined indicators. These included achieving participant attendance of at least 80% of the targeted beneficiaries, active involvement during educational and practical sessions, improvement in participants' knowledge following the intervention, and the ability of participants to independently perform complementary therapy procedures, including the preparation of *Kaempferia galanga* boiled water, warm foot soaking, and standardized foot massage. Furthermore, participants' commitment to continuing the complementary therapy as part of their routine self-care during pregnancy was considered an important indicator of empowerment and program sustainability, reflecting the program's contribution to strengthening maternal self-care capacity beyond the completion of the community service activities.

The indicators of program success included: attendance of at least 80% of the target participants; active participation during educational and practical sessions; improvement in participants' knowledge after the intervention; participants' ability to independently prepare *Kaempferia galanga* boiled water, perform warm foot soaking, and apply standardized foot massage correctly; and participants' commitment to implementing complementary therapy as part of routine self-care at home. Program evaluation data were analyzed descriptively. Participant characteristics, knowledge levels, practical skills, participation, and satisfaction were summarized using frequencies, percentages, mean scores, and comparisons between pre-test and post-test results. Qualitative feedback obtained during discussions and reflection sessions was analyzed narratively to describe changes in participants' understanding, confidence, and readiness to independently implement complementary therapy. The findings were presented descriptively to illustrate the community empowerment process and its contribution to strengthening maternal self-care capacity.

RESULTS AND DISCUSSION

RESULTS

Implementation of the Community Empowerment Program

The community empowerment program was conducted in 2026 at Eliza Bestari Independent Midwifery Practice (PMB Eliza Bestari). The activity targeted all second-trimester pregnant women attending routine antenatal care services during the implementation period. Of the planned target of 20 participants, all pregnant women attended the program, resulting in a participation rate of 100%.

The program was implemented through four sequential stages. The first stage consisted of participant registration, orientation, and a pre-test to assess baseline knowledge regarding pregnancy-related edema and complementary therapy. The second stage involved interactive health education focusing on the causes of physiological edema, risk factors, prevention strategies, and the benefits of complementary therapy using *Kaempferia galanga* boiled water foot soaking and foot massage. The third stage consisted of live demonstrations and supervised practical sessions. Participants were guided to prepare the herbal foot soak, perform warm foot soaking correctly, and apply standardized foot massage techniques. The final stage included a post-test, practical skill assessment, reflection, and discussion regarding the implementation of the therapy at home.

Throughout the activity, participants actively shared their experiences regarding lower extremity edema and discussed common misconceptions about edema management during pregnancy. Initially, several participants expressed uncertainty regarding the appropriate massage techniques and the preparation of *Kaempferia galanga* boiled water. These challenges were addressed through repeated demonstrations, individual mentoring, and direct feedback from facilitators until all participants were able to perform the procedures confidently.

The demographic and obstetric characteristics of the study participants described on Tabel 1. A total of 20 pregnant women participated in this study. The characteristics analyzed included age, education level, occupation, parity, and gestational age, as these variables may influence maternal health behaviors and responses to health interventions. Describing the participants' characteristics provides an overview of the study population and helps readers assess the representativeness of the sample as well as the context in which the study findings should be interpreted. cara

Table 1. Characteristics of Participants

Characteristics	n	%
Age		
<20 years	2	10.0
20–35 years	15	75.0
>35 years	3	15.0
Education		
Elementary School	2	10.0
Junior High School	4	20.0
Senior High School	10	50.0
College	4	20.0
Occupation		
Housewife	12	60.0
Private Employee	4	20.0
Self-employed	3	15.0



Characteristics	n	%
Civil Servant	1	5.0
Parity		
Primigravida	8	40.0
Multigravida	12	60.0
Gestational Age		
13–20 weeks	9	45.0
21–27 weeks	11	55.0

Most participants were aged 20–35 years, representing the optimal reproductive age group. More than half were multigravida mothers who had experienced pregnancy-related edema in previous pregnancies but had never received structured education regarding complementary therapy. These characteristics indicate that participants already possessed practical pregnancy experience but still required evidence-based education to strengthen their self-care capacity. Prior to the educational intervention, participants completed a pre-test to identify their initial understanding of pregnancy-related edema and complementary therapy based on Table 2.

Table 2. Baseline Knowledge Before the Educational Intervention

Knowledge Level	n	%
Good	4	20.0
Moderate	10	50.0
Poor	6	30.0

The average pre-test score was 61.8 ± 10.5 . Discussions during the pre-test revealed that most participants considered lower extremity edema to be a normal condition requiring no specific management. Knowledge regarding complementary therapy, including *Kaempferia galanga* boiled water soaking and therapeutic foot massage, was still limited. Following health education and supervised practice, participants completed the post-test based on Table 3.

Table 3. Knowledge After the Educational Intervention

Knowledge Level	n	%
Good	16	80.0
Moderate	4	20.0
Poor	0	0

The average post-test score increased to 88.6 ± 7.4 , representing an average gain of 26.8 points. Participants demonstrated better understanding of edema prevention, preparation of *Kaempferia galanga* boiled water, warm foot soaking procedures, and standardized foot massage techniques. Practical competency was assessed through direct observation using a standardized checklist based on Table 4.

Table 4. Practical Skills After Training

Skill Indicator	Competent n (%)
Preparing <i>Kaempferia galanga</i> boiled water	19 (95.0)
Performing warm foot soaking	20 (100.0)
Performing standardized foot massage	18 (90.0)

Participants initially required facilitator guidance, particularly in massage sequence and pressure. However, after repeated demonstrations and supervised practice, nearly all participants successfully performed the procedures independently, indicating substantial improvement in practical competency. Throughout the activity, participants demonstrated high enthusiasm and actively participated in discussions, demonstrations, and practical sessions based on Table 5.

Table 5. Process Evaluation

Indicator	n (%)
Active participation	19 (95.0)
Asked questions during discussion	18 (90.0)
Able to demonstrate independently	18 (90.0)
Overall satisfaction	20 (100.0)
Willing to continue therapy at home	18 (90.0)

Participants reported that the demonstrations made the procedures easier to understand than verbal explanations alone. Midwives at PMB Eliza Bestari also expressed positive feedback, stating that the educational materials and practical demonstrations could be integrated into routine antenatal care and Pregnant Women Classes to reinforce maternal self-care practices. The program generated several tangible outputs to support sustainability based on Table 6.

Table 6. Community Service Outputs

Output	Achievement
Educational leaflet	Produced
Practical guideline for complementary therapy	Produced
Standard Operating Procedure for demonstrations	Produced
Community service article	Prepared
Collaboration with PMB Eliza Bestari	Established
Follow-up mentoring through ANC visits	Implemented

In addition to improving knowledge and practical skills, the program strengthened participants' confidence to independently manage pregnancy-related edema using complementary therapy. The educational leaflet and practical guideline were retained by participants for home use, while midwives committed to incorporating complementary therapy education into routine antenatal counseling. These outputs demonstrate that the program extended beyond one-time health



education by establishing sustainable resources and collaborative support for continued maternal self-care.

DISCUSSION

The integrated complementary therapy education program successfully strengthened the capacity of second-trimester pregnant women to independently manage pregnancy-related edema through a participatory community empowerment approach. Unlike conventional health education that mainly focuses on information transfer, this program combined interactive education, demonstrations, supervised practice, and mentoring, enabling participants to acquire both cognitive understanding and practical competencies. The active involvement of participants throughout the educational process indicates that empowerment-oriented interventions can facilitate behavioral change by increasing self-efficacy and encouraging pregnant women to become active participants in maintaining their own health rather than passive recipients of health services. This finding is consistent with recent evidence indicating that community-based complementary therapy programs improve maternal self-care and encourage greater engagement in antenatal health promotion activities (Rezaei, Z., Yazdanpanahi, Z., Asadollahi, A., 2025) (Suttora, H., Yamayanti, K. P., Astiti, N. L. E. P., 2024).

The considerable improvement in participants' knowledge following the educational intervention suggests that combining lectures with demonstrations and interactive discussions provides a more effective learning experience than didactic education alone. During the initial assessment, many participants perceived lower extremity edema as a normal consequence of pregnancy that required no specific management. Through repeated demonstrations and opportunities for guided practice, participants developed a better understanding of the physiological mechanisms of edema and the role of complementary therapies in improving circulation and reducing discomfort (WHO, 2022). Adult learning theory emphasizes that adults learn more effectively when educational activities are directly related to their daily experiences and when they actively participate in solving practical problems. Therefore, the use of experiential learning strategies in this program likely contributed to the observed increase in participants' knowledge and confidence (van Lonkhuijzen, R. M., de Vries, J. H. M., Brouwer-Brolsma, E., 2025).

The improvement in practical skills demonstrates that knowledge acquisition alone is insufficient to promote sustainable self-care behaviors. Participants initially experienced difficulties in preparing *Kaempferia galanga* boiled water and applying standardized foot massage techniques. However, continuous mentoring and immediate feedback enabled nearly all participants to perform the procedures independently by the end of the activity (Fund., 2023). This finding supports the concept of competency-based health education, whereby

practical demonstrations increase confidence and reduce barriers to adopting new health behaviors. Similar findings were reported in a systematic review by Warisantika et al. (2024), which concluded that foot reflexology and massage during pregnancy improve physical comfort, reduce lower-limb edema, and enhance maternal well-being without adverse effects (Warisantika, I., & Tridiyawati, 2025).

Another important finding of this community service program is the high level of participant acceptance toward the complementary therapy intervention. The use of *Kaempferia galanga*, a medicinal plant that is inexpensive, culturally familiar, and readily available in Indonesian communities, increased participants' willingness to continue practicing the therapy independently at home (Novelia, S., Rukmaini, & Caka, 2022) (Obstetrics., 2023). The integration of local herbal resources into health promotion activities represents an important strategy for enhancing sustainability because participants are not dependent on expensive equipment or continuous professional assistance. Recent studies have demonstrated that warm herbal foot soaking combined with foot massage effectively reduces physiological edema while improving maternal comfort during pregnancy (Sulistiawati, I., & Tiwi, 2025).

The collaborative involvement of midwives throughout the educational and mentoring process also contributed substantially to the success of the program. Midwives served not only as facilitators during demonstrations but also as partners who reinforced educational messages during routine antenatal care visits (Suryati, 2024) (Green, L. W., & Kreuter, 2022). Such collaboration strengthens the continuity of community empowerment beyond a single educational event and enables complementary therapy to become part of routine maternal health promotion. Similar community empowerment initiatives have shown that integrating education with practical training and continuous mentoring significantly increases participants' ability to independently implement complementary therapies within their communities (Sari, R. Y., Ariani, P. A., Iriyani, K., & Wisnuwardani, 2025).

From a public health perspective, this program contributes to strengthening maternal self-care capacity through community-based health promotion. Empowering pregnant women with practical knowledge and culturally appropriate complementary therapy skills supports one of the fundamental principles of health promotion, namely increasing individuals' ability to control and improve their own health (Nutbeam, D., & Lloyd, 2021). A recent systematic review involving complementary therapies during pregnancy also concluded that non-pharmacological interventions, including massage and hydrotherapy, provide meaningful benefits in improving maternal comfort and quality of life while supporting a less medicalized approach to maternity care (Sundari, S. W., Windiyani, W., Novayanti, N., 2025) (Lubis, B., Wulandari, S., & Hayati, 2024).



Although the program demonstrated positive outcomes, several limitations should be acknowledged. The activity was conducted in a single independent midwifery practice with a relatively small number of participants, and evaluation focused on immediate changes in knowledge and practical skills after the intervention. Long-term monitoring of participants' adherence to complementary therapy and its effects on maternal health outcomes was beyond the scope of the current community service program (Sari, I., Aquari, B., & Zurizah, 2024). Future programs are therefore recommended to include longitudinal follow-up through routine antenatal care, involve family members and community health volunteers (*kader kesehatan*) as support systems, and develop standardized educational modules that can be implemented across primary healthcare facilities. Such strategies are expected to enhance sustainability and facilitate wider adoption of evidence-based complementary therapy within community maternal health services.

CONCLUSIONS AND SUGGESTIONS

This community empowerment program successfully enhanced the capacity of second-trimester pregnant women to independently manage pregnancy-related edema through integrated complementary therapy education. The combination of health education, practical demonstrations, and supervised training improved participants' knowledge, practical skills, confidence, and self-care abilities in applying *Kaempferia galanga* boiled water foot soaking and foot massage. The active involvement of midwives and the provision of educational materials supported the sustainability of the program by encouraging the integration of complementary therapy into routine antenatal care.

It is recommended that this empowerment model be incorporated into Pregnant Women Classes and primary healthcare services, supported by continuous mentoring, educational modules, and family involvement to promote the long-term adoption of safe, evidence-based complementary therapies for maternal health.

ACKNOWLEDGMENT

Praise be to Allah SWT for His mercy and grace so that the community service report entitled "Education on the Level of Knowledge of Female Adolescents Regarding Genital Hygiene During Menstruation at SMA Negeri 2 Kisaran" can be completed properly. The author would like to express sincere gratitude to SMA Negeri 2 Kisaran, the respondents, the supervising lecturer, and all parties who have provided support and assistance. The author realizes that this report is still far from perfect; therefore, constructive criticism and suggestions are highly appreciated for future improvement. It is hoped that this report will be beneficial in increasing

adolescents' knowledge of reproductive health, especially regarding genital hygiene during menstruation.

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