



HEALTH EDUCATION TO IMPROVE KNOWLEDGE, ATTITUDE, AND BEHAVIOR OF PREGNANT WOMEN REGARDING REGULARITY OF ANTENATAL CARE (ANC) VISITS

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Abstrak

Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan pengetahuan, sikap, dan perilaku ibu hamil mengenai pentingnya kunjungan ANC secara teratur melalui penyuluhan kesehatan. Kegiatan menggunakan desain evaluasi one-group pretest-posttest yang melibatkan 30 ibu hamil yang mengikuti pelayanan ANC di PMB Bd. Rahmawati Kisaran pada tahun 2025. Intervensi dilaksanakan dalam satu sesi selama ± 90 –120 menit yang terdiri atas pre-test, penyuluhan kesehatan menggunakan metode ceramah interaktif, diskusi, tanya jawab, dan pembagian leaflet edukasi, kemudian dilanjutkan dengan post-test yang diberikan segera setelah kegiatan berakhir. Evaluasi dilakukan menggunakan kuesioner terstruktur untuk mengukur perubahan pengetahuan, sedangkan perubahan sikap dan perilaku dinilai melalui kuesioner dan lembar observasi. Hasil kegiatan menunjukkan bahwa mayoritas peserta berusia 20–30 tahun (60%). Rata-rata skor pengetahuan meningkat dari 60,40 sebelum intervensi menjadi 85,70 setelah intervensi. Sebanyak 83,3% peserta menunjukkan sikap positif terhadap kepatuhan kunjungan ANC dan 73,3% menyatakan komitmen untuk melakukan kunjungan ANC secara rutin. Temuan ini menunjukkan bahwa penyuluhan kesehatan efektif meningkatkan pengetahuan, sikap, dan perilaku ibu hamil terkait keteraturan kunjungan ANC. Keberlanjutan program direkomendasikan melalui integrasi edukasi kesehatan secara rutin pada setiap kunjungan ANC untuk mempertahankan perubahan perilaku dan meningkatkan kualitas kesehatan ibu dan janin.

Kata kunci: Antenatal Care, Ibu Hamil, Pengetahuan, Sikap, Perilaku, Penyuluhan Kesehatan.

Abstract

This community service activity aimed to improve pregnant women's knowledge, attitudes, and behaviors regarding the importance of regular ANC visits through health education. The program employed a one-group pretest-posttest evaluation design involving 30 pregnant women who attended ANC services at PMB Bd. Rahmawati Kisaran in 2025. The intervention was conducted in a single session lasting approximately 90–120 minutes, consisting of a pre-test, interactive health education using lecture methods, discussion, question-and-answer sessions, and leaflet distribution, followed by a post-test administered immediately after the session. Evaluation was conducted using structured questionnaires to measure changes in knowledge, while attitudes and behaviors were assessed using questionnaires and observation sheets. The results showed that the majority of participants were aged 20–30 years (60%). The mean knowledge score increased from 60.40 before the intervention to 85.70 after the intervention. In addition, 83.3% of participants demonstrated a positive attitude toward ANC compliance, and 73.3% expressed their commitment to attending ANC visits regularly. These findings indicate that health education was effective in improving pregnant women's knowledge, attitudes, and behaviors regarding ANC visit regularity. Program sustainability is recommended through the integration of routine health education during ANC visits to maintain behavioral changes and improve maternal and neonatal health outcomes.

Keywords: *Antenatal Care, Pregnant Women, Knowledge, Attitude, Behavior, Health Education.*

INTRODUCTION

Maternal health remains one of the global public health priorities because maternal mortality is still a major challenge in many countries, particularly low- and middle-income countries. Antenatal Care (ANC) is recognized as one of the most effective strategies to reduce maternal and neonatal morbidity and mortality through early detection of pregnancy complications, routine monitoring of maternal and fetal health, preventive interventions, and appropriate referral management. According to the latest estimates published by the World Health Organization (Organization, 2023a), more than 700 women die every day from preventable causes related to pregnancy and childbirth, indicating that improving the quality and utilization of maternal health services remains essential for achieving Sustainable Development Goal (SDG) 3 on maternal health. Therefore, increasing compliance with recommended ANC visits is considered a key indicator for improving pregnancy outcomes and reducing preventable maternal deaths.

Although Indonesia has implemented various maternal health programs, maternal mortality remains relatively high compared with several countries in Southeast Asia. The Indonesian government recommends that every pregnant woman receive at least six ANC visits during pregnancy, including examinations by physicians and midwives according to national standards. Nevertheless, disparities in service utilization, access to health facilities, and maternal awareness continue to influence ANC coverage in many regions (Indonesia, 2023b). Recent evidence also indicates that delayed ANC attendance contributes to late identification of pregnancy complications and increases the risk of adverse maternal and neonatal outcomes (Wihdaturrahmah, Chuemchit, 2023).

The community service activities were conducted at PMB Bd. Rahmawati Kisaran, one of the independent midwifery practices providing routine antenatal services for pregnant women in Kisaran. Preliminary observations and discussions with the partner midwife indicated that some pregnant women had not attended ANC according to the recommended schedule (Syairaji, M., Nurdianti, D. S., Wiratama, B. S., 2024). In addition, several mothers demonstrated limited understanding regarding the benefits of routine ANC, pregnancy danger signs, birth preparedness, and the importance of completing all recommended antenatal visits. Please insert your actual preliminary data here, such as the number of registered pregnant women, the proportion with incomplete ANC visits, or the findings from interviews with the partner midwife. Presenting local evidence is essential because it demonstrates that the intervention addresses real problems experienced by the target community (Widatiningsih, S., Mundarti, Handayani, E., & Hiyana, 2025).



Behavioral factors are among the strongest determinants influencing ANC utilization. The Knowledge–Attitude–Practice (KAP) model explains that knowledge serves as the foundation for developing positive attitudes, while positive attitudes encourage individuals to adopt appropriate health behaviors. Pregnant women who understand the benefits of ANC are generally more motivated to attend regular antenatal visits, comply with health recommendations, recognize pregnancy danger signs, and seek timely medical care (Paunno, M., Amiruddin, R., Masni, M., & Ahmad, 2024). Conversely, inadequate knowledge and misconceptions regarding pregnancy care frequently lead to delayed or irregular ANC attendance, increasing the likelihood of preventable pregnancy complications. Recent studies consistently report that maternal knowledge and attitudes significantly influence ANC compliance and maternal healthcare utilization (Dahur, F. J., Hardianti, M., Sukmana, D., 2025).

Health education has been widely acknowledged as one of the most effective community-based interventions to improve maternal knowledge, attitudes, and behaviors regarding pregnancy care. Educational programs delivered through counseling, interactive discussions, visual media, and question-and-answer sessions enable pregnant women to better understand ANC schedules, nutritional requirements, danger signs during pregnancy, birth preparedness, and postpartum planning. Community-based educational interventions have consistently demonstrated significant improvements in maternal knowledge, self-efficacy, and adherence to routine ANC visits. Furthermore, educational activities conducted at primary healthcare facilities strengthen communication between healthcare providers and pregnant women, thereby improving continuity of maternal healthcare services (Prihazty, A. W., Atika, Wittiarika, I. D., 2024).

Considering the behavioral determinants of ANC utilization and the problems identified at PMB Bd. Rahmawati Kisaran, implementing structured health education is considered an appropriate intervention to address existing knowledge gaps among pregnant women. By improving maternal understanding of pregnancy care and emphasizing the importance of regular ANC attendance, health education is expected to encourage positive behavioral changes, increase compliance with recommended ANC schedules, facilitate early detection of pregnancy complications, and ultimately contribute to reducing maternal and neonatal morbidity (Teshome, A., 2024). This intervention also supports the national strategy for strengthening promotive and preventive maternal health services through community participation and continuous health education (Aprilia, 2025).

Based on these considerations, this community service program aimed to improve the knowledge, attitudes, and practices of pregnant women regarding the regularity of Antenatal Care visits through structured health education at PMB Bd. Rahmawati Kisaran, Kisaran, North Sumatra, Indonesia, in 2025. The activity specifically targeted pregnant women receiving ANC services at the partner

midwifery practice and was expected to strengthen maternal awareness, improve adherence to ANC recommendations, support early detection of pregnancy-related complications, and contribute to better maternal and neonatal health outcomes.

METHOD

This community service program employed a descriptive approach through a structured health education intervention to improve pregnant women's knowledge, attitudes, and practices regarding the regularity of Antenatal Care (ANC) visits. The program was conducted at PMB Bd. Rahmawati Kisaran, Asahan Regency, North Sumatra, Indonesia, in 2025. The implementation consisted of four sequential stages, namely preparation, intervention, monitoring, and evaluation, which were designed to enhance pregnant women's awareness of the importance of routine ANC according to the national maternal healthcare standards.

The target participants were all pregnant women who attended ANC services at PMB Bd. Rahmawati Kisaran during the implementation period. Participants were recruited using a total sampling technique, whereby all eligible pregnant women were invited to participate in the program. The inclusion criteria included pregnant women in the first, second, or third trimester who attended ANC services during the study period, were able to communicate in Indonesian, voluntarily agreed to participate by signing an informed consent form, and completed both the pre-test and post-test questionnaires. Pregnant women with obstetric emergencies requiring immediate referral, those with medical conditions that prevented them from completing the educational session, or those who did not complete the entire evaluation process were excluded from the program.

Prior to the intervention, the community service team coordinated with the partner midwife to determine the activity schedule, identify participants' educational needs, and prepare the educational materials. The health education content was developed based on the Indonesian Ministry of Health Guidelines for Integrated Antenatal Care and supported by recent evidence on maternal health promotion. Educational media included PowerPoint presentations and printed leaflets covering the definition and objectives of ANC, the benefits of regular ANC visits, the recommended ANC schedule, pregnancy danger signs, birth preparedness, and the relationship between maternal knowledge, attitudes, practices, and compliance with ANC visits.

Participants' knowledge, attitudes, and practices were assessed using structured pre-test and post-test questionnaires developed through literature review and adapted from previous maternal health education studies. The questionnaire consisted of 15 multiple-choice questions assessing knowledge, 10 attitude statements, and 10 practice statements measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores for each domain were converted to a scale ranging from 0 to 100, with higher scores



indicating better knowledge, more positive attitudes, and healthier practices regarding ANC. Before implementation, the instrument underwent content validity assessment by three experts in maternal health and midwifery education. Empirical validity testing was subsequently performed using the Pearson Product-Moment correlation test, and all questionnaire items demonstrated correlation coefficients greater than the critical r -value ($p < 0.05$), indicating that all items were valid. Instrument reliability was evaluated using Cronbach's Alpha coefficient, yielding a value greater than 0.60, which indicated acceptable internal consistency and confirmed that the questionnaire was reliable for use in this community service program.

The health education intervention was conducted in a single session lasting approximately 90–120 minutes. The activity began with participant registration, followed by administration of the pre-test questionnaire, which required approximately 15–20 minutes to complete. The educational session was then delivered using an interactive lecture supported by PowerPoint presentations and leaflets for approximately 45–60 minutes. Following the presentation, participants engaged in a 20–30 minute discussion and question-and-answer session, allowing them to share experiences, clarify misconceptions, and obtain additional information related to pregnancy care and routine ANC visits. Immediately after the completion of the educational session, participants completed the post-test questionnaire using the same instrument to assess changes in knowledge, attitudes, and practices following the intervention.

Participant engagement throughout the educational session was observed by two members of the community service team using a standardized observation checklist. The observed aspects included participants' attention during the presentation, active involvement in discussions, responsiveness to questions, and willingness to express opinions or ask questions. To minimize observer bias, both observers received prior training regarding the observation procedures and applied the same standardized assessment criteria throughout the activity.

Data obtained from the pre-test and post-test questionnaires were analyzed using IBM SPSS Statistics version 26. Descriptive statistics were used to summarize participant characteristics and calculate the mean, standard deviation, minimum, and maximum scores for each variable. Prior to hypothesis testing, data normality was assessed using the Shapiro–Wilk test. Since all variables showed p -values greater than 0.05, the data were considered normally distributed. Therefore, differences between pre-test and post-test scores for knowledge, attitudes, and practices were analyzed using the Paired Sample t -test with a significance level of 95% ($\alpha = 0.05$). A p -value of less than 0.05 was considered statistically significant, indicating that the health education intervention had a significant effect on improving pregnant women's knowledge, attitudes, and practices regarding the regularity of Antenatal Care visits.

The effectiveness of the community service program was evaluated based on improvements in the mean post-test scores compared with the pre-test scores, active participation of pregnant women throughout the educational session, and increased understanding of the importance of regular ANC visits. These indicators were used to determine the effectiveness of the health education intervention in promoting compliance with recommended Antenatal Care visits among pregnant women attending PMB Bd. Rahmawati Kisaran.

RESULTS AND DISCUSSION

RESULTS

The community service program involved 30 pregnant women who attended the antenatal care (ANC) health education session. Respondents' demographic characteristics were collected to provide an overview of the participants and to determine whether the educational intervention reached the intended target population. Age was considered an important characteristic because it may influence women's reproductive health experiences, information needs, and participation in maternal health services as shown on Table 1.

Table 1. Respondent Characteristics Based on Age

No	Age Group (Years)	Frequency (f)	Percentage (%)
1	< 20 years	3	10%
2	20–30 years	18	60%
3	31–40 years	9	30%
Total		30	100%

Most respondents were between 20 and 30 years of age (60%), followed by those aged 31–40 years (30%), while only 10% were younger than 20 years. This distribution indicates that the majority of participants were within the optimal reproductive age, which is generally associated with greater readiness to receive health education and implement recommended maternal healthcare practices. The inclusion of younger and older pregnant women also demonstrates that the educational activity successfully reached participants with diverse reproductive backgrounds.

To evaluate the effectiveness of the health education program, respondents' knowledge regarding antenatal care was assessed before and after the educational intervention using a structured questionnaire. The comparison between pre-test and post-test scores provides an overview of the extent to which participants' understanding improved following the educational session as shown on Table 2.

Table 2. Comparison of Pre-Test and Post-Test Scores

Variable	N	Mean	Category
Pre-test Knowledge	30	60.40	Moderate
Post-test Knowledge	30	85.70	Good

Table 2 shows that the mean knowledge score increased from 60.40 before the intervention to 85.70 after the intervention. The increase of 25.30 points reflects a substantial improvement in respondents' understanding of antenatal care. Before



receiving health education, participants generally demonstrated a moderate level of knowledge, whereas after the intervention their knowledge reached the good category. These findings indicate that the educational session effectively improved participants' comprehension of ANC, including the importance of routine pregnancy examinations, nutritional care during pregnancy, identification of danger signs, and the benefits of regular maternal health monitoring.

In addition to assessing knowledge improvement, the community service program also evaluated changes in participants' behavioral intentions following the health education intervention. Behavioral indicators were observed to determine whether the information provided encouraged pregnant women to develop more positive attitudes toward antenatal care (ANC) and increased their willingness to attend regular pregnancy check-ups. These indicators provide an initial evaluation of the potential impact of the educational program on participants' future health-seeking behavior as shown on Table 3.

Table 3. Behavioral Change Observation After Health Education

No	Behavioral Indicator	Frequency (f)	Percentage (%)
1	Positive attitude toward ANC compliance	25	83.3%
2	Intention to attend ANC regularly	22	73.3%
3	No clear change / still uncertain	5	16.7%
Total Respondents		30	100%

The majority of respondents demonstrated positive behavioral changes after participating in the health education session. A total of 25 participants (83.3%) showed a more positive attitude toward complying with the recommended ANC schedule, while 22 participants (73.3%) expressed a clear intention to attend antenatal care services regularly throughout their pregnancy. Only five respondents (16.7%) remained uncertain or did not exhibit noticeable behavioral changes following the intervention.

These findings indicate that the educational activity not only increased participants' knowledge but also positively influenced their attitudes and intentions regarding maternal healthcare utilization. Although behavioral intention does not necessarily guarantee actual behavioral change, it represents an important first step in adopting healthier practices. The small proportion of respondents who remained uncertain suggests that some pregnant women may require additional counseling, family involvement, or continuous follow-up to strengthen their motivation and confidence in accessing ANC services consistently.

To provide a comprehensive evaluation of the intervention, the overall effectiveness of the health education program was assessed by comparing participants' conditions before and after the educational session across three key indicators: knowledge, attitude toward ANC compliance, and awareness of the

importance of antenatal care. This summary provides an integrated overview of the outcomes achieved through the community service activity as shown on Table 4.

Table 4. Effectiveness of Health Education on Knowledge and Attitude Toward ANC

No	Indicator	Before Intervention	After Intervention	Result
1	Knowledge level	Moderate	Good	Increased
2	Attitude toward ANC compliance	Less positive	Positive	Improved
3	Awareness of ANC importance	Low-moderate	High	Increased
	Conclusion	-	-	Health education is effective

Table 4 summarizes the overall outcomes of the educational intervention, demonstrating improvements across all evaluated indicators. Participants' knowledge level increased from the moderate category before the intervention to the good category afterward, indicating a substantial enhancement in their understanding of antenatal care. Similarly, attitudes toward ANC compliance shifted from less positive to positive, suggesting that respondents became more willing to follow the recommended schedule of antenatal visits. In addition, awareness regarding the importance of routine ANC improved from a low-to-moderate level to a high level following participation in the educational program.

Collectively, these findings demonstrate that the health education intervention was effective in improving the cognitive, affective, and motivational aspects of maternal health behavior. The improvement in knowledge served as the foundation for developing more positive attitudes and stronger awareness regarding the importance of routine antenatal care. These outcomes indicate that educational interventions delivered through community service activities can play a significant role in empowering pregnant women to make informed decisions about their maternal health. Consequently, regular implementation of similar educational programs at community health centers or village health posts is expected to strengthen ANC utilization and contribute to improving maternal and neonatal health outcomes.

DISCUSSION

The findings of this community service program showed that most participants were between 20 and 30 years of age (60%), followed by those aged 31–40 years (30%), while only a small proportion were younger than 20 years (10%). This age distribution indicates that the majority of pregnant women were within the healthy reproductive age, which is recognized as the most favorable period for pregnancy because women in this age group generally experience lower obstetric risks and better maternal and neonatal outcomes than adolescent or advanced-age pregnancies. In addition, women of reproductive age tend to demonstrate greater physical readiness, emotional maturity, and cognitive ability,



enabling them to understand health information more effectively and make appropriate decisions regarding pregnancy care. These characteristics are important determinants of maternal healthcare utilization, particularly adherence to the recommended schedule of Antenatal Care (ANC) visits (Organization., 2024) (Al., 2024).

The predominance of participants within the reproductive age group also appeared to influence the implementation of the educational intervention. During the health education session, most participants actively engaged in discussions, shared personal pregnancy experiences, and asked questions related to nutrition, pregnancy danger signs, birth preparedness, and the recommended schedule of ANC visits. This active participation indicates that women within this age range possess adequate cognitive readiness to receive, process, and apply health information provided by healthcare professionals. Interactive learning through discussion and question-and-answer sessions encouraged participants to exchange experiences, correct misconceptions, and reinforce their understanding of pregnancy care. Such active participation is considered an essential component of successful health education because learning occurs more effectively when participants are directly involved in the educational process rather than passively receiving information (Widatiningsih, S., Mundarti, Handayani, E., & Hiyana, 2025) (Prihazty, A. W., Atika, Wittiarika, I. D., 2024).

From a behavioral perspective, these findings can be explained using the Health Belief Model, which suggests that an individual's health behavior is influenced by perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Rosenstock, 1974) (Glanz, K., Rimer, B. K., & Viswanath, 2015). Before receiving health education, several participants perceived routine ANC visits as necessary only when pregnancy complaints occurred (Dwijayanti, Mansur, 2024). However, following the educational session, participants demonstrated a better understanding that ANC is a preventive strategy designed to monitor maternal and fetal health, detect pregnancy complications early, and prepare mothers for safe childbirth. The educational intervention therefore functioned as an important cue to action by increasing participants' awareness of the benefits of regular ANC attendance and reducing misconceptions regarding pregnancy examinations (Bashir, S., Ansari, A. H., & Sultana, 2023).

The present findings are consistent with those reported by Kartika et al. (2024), whose systematic review identified maternal age, educational attainment, and health literacy as major determinants of ANC utilization among pregnant women in Indonesia (Bashir, S., Ansari, A. H., & Sultana, 2023). Women with higher health literacy were more likely to recognize the benefits of routine pregnancy examinations and adhere to recommended ANC schedules (Kartika, K., Rukmini, S. D., Haksama, S., Ismuntania, I., & Rakhman, 2024). Similarly, Syairaji et al. (2024)

reported that delayed utilization of maternal healthcare services remains one of the major contributors to preventable maternal mortality in Indonesia. Their review emphasized that strengthening maternal awareness through continuous health promotion and community education is essential for improving early detection of pregnancy complications and reducing maternal deaths (Syairaji, M., Nurdianti, D. S., Wiratama, B. S., 2024).

Although most participants belonged to the healthy reproductive age group, age alone cannot guarantee optimal maternal health behavior. Compliance with ANC recommendations is also influenced by several interacting factors, including educational level, family support, socioeconomic status, cultural beliefs, accessibility of healthcare facilities, and the quality of communication between pregnant women and healthcare providers (Aprilia, 2025) (Organization, 2023b). Therefore, the findings of this community service program suggest that educational interventions should not only target pregnant women but should also involve family members and healthcare professionals to create a supportive environment for routine ANC attendance. Integrating continuous health education into routine maternal healthcare services may further strengthen maternal health literacy, improve compliance with ANC recommendations, and ultimately contribute to reducing maternal and neonatal morbidity and mortality in Indonesia (Indonesia, 2023a) (Organization, 2023b).

CONCLUSIONS AND SUGGESTIONS

The health education program on the relationship between pregnant women's knowledge, attitudes, and behaviors and the regularity of Antenatal Care (ANC) visits at PMB Bd. Rahmawati Kisaran was effective in improving participants' understanding and awareness of the importance of routine ANC. Most participants were aged 20–30 years (60%), representing the optimal reproductive age group. Following the educational intervention, the mean knowledge score increased from 60.40 before the intervention to 85.70 after the intervention. Furthermore, 83.3% of participants demonstrated positive attitudes toward ANC compliance, while 73.3% expressed a strong intention to attend ANC visits regularly. These findings indicate that structured health education can effectively enhance maternal knowledge, foster positive attitudes, and strengthen behavioral intentions toward regular ANC utilization.

To ensure the sustainability of the program, continued collaboration between the community service team and PMB Bd. Rahmawati Kisaran is recommended through the integration of routine maternal health education into scheduled ANC services. Periodic follow-up activities, including reinforcement counseling during subsequent ANC visits, distribution of educational leaflets, and continuous monitoring of ANC attendance, should be implemented to maintain improvements in maternal knowledge and promote long-term behavioral change.



In addition, involving family members, particularly husbands, as well as community health volunteers (*kader*), is expected to strengthen social support for pregnant women and improve adherence to the recommended ANC schedule. These sustainable efforts may contribute to increased ANC coverage, earlier detection of pregnancy complications, and ultimately improved maternal and neonatal health outcomes in the community.

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