

The Effectiveness of Collaborative Learning in Improving Pregnant Women's Perceptions of Antenatal Care Quality

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Abstract

Background: Pregnant women's perceptions of the quality of Antenatal Care (ANC) services are important indicators in improving the utilization and quality of maternal health services. Educational approaches that actively involve participants, such as collaborative learning, can improve understanding and shape more positive perceptions toward health services. Through interaction, discussion, and experience sharing among participants, collaborative learning may enhance pregnant women's awareness and evaluation of ANC services.

Methods: This quasi-experimental study used a one-group pre-test and post-test design involving 97 pregnant women in the working area of Puskesmas Aur Duri, Jambi City, in 2025. Data were collected using a validated questionnaire and analyzed using univariate analysis and the Wilcoxon Signed Rank Test.

Results: The mean perception score increased from 97.67 before the intervention to 108.55 after the collaborative learning intervention. The Wilcoxon test showed a statistically significant difference ($Z = -6.013$; $p < 0.0001$). Most respondents experienced an increase in perception scores, with an effect size of 0.61, indicating a large effect.

Conclusion: Collaborative learning is effective in improving pregnant women's perceptions of the quality of ANC services and can be applied as an educational strategy to support improvements in maternal health services.

Keywords: Collaborative learning; Antenatal Care; Pregnant women

INTRODUCTION

Maternal mortality remains an urgent global health crisis in many countries. The World Health Organization (WHO) reports that in 2023, nearly one mother dies every two minutes, or more than 700 women die every day from preventable causes related to pregnancy and childbirth (1). This high rate makes the Maternal Mortality Ratio (MMR) one of the top priorities in the Sustainable Development Goals (SDGs), with a target of reducing the global MMR to below 70 per 100,000 live births (2). The vast majority of maternal deaths, more than 90%, occur in low- and middle-income countries, including Indonesia (1).

In Indonesia, maternal mortality rates remain a significant challenge. The Indonesian Ministry of Health reported 7,389 maternal deaths in 2021, up from 4,627 cases in 2020 (3). Indonesia's Health Profile data shows fluctuations in the following years, with

3,572 cases in 2022, increasing to 4,482 cases in 2023, and 4,150 cases in 2024 (4,5). In Jambi Province, the number of maternal deaths recorded was 75 cases in 2021 and showed a decrease to 57 cases in 2022, 50 cases in 2023, and 47 cases in 2024 (6,7,8). However, in Jambi City, there are still fluctuations with 20 cases in 2022 and 4 cases in 2023 (9).

Most maternal deaths are caused by complications that are actually preventable, such as bleeding, infection, hypertension during pregnancy, and complications during childbirth. Prevention efforts can be carried out through quality health services, one of which is through Antenatal Care (ANC) services. ANC is a health service provided to pregnant women by health workers in accordance with midwifery service standards to monitor the condition of the mother and fetus during pregnancy (10). Through regular checkups, various pregnancy complications

can be detected early so that appropriate treatment can be given. ANC service standards include a minimum of six visits during pregnancy with various examinations in accordance with service standards (11).

However, the utilization of ANC services is still not optimal. The 2024 Indonesian Health Profile data shows that national coverage of ANC K4 has only reached 80.1% and in Jambi Province it is 84.4%, still below the national target of 95%. Coverage of ANC K6 is also recorded at 75.64% nationally and 79.86% in Jambi Province, with a target of 100% (10). This condition shows that there are still many pregnant women who have not made full use of ANC services (12). One factor that influences this behavior is the quality of education and counseling provided by health workers in community midwifery practices (13).

Efforts to improve the quality of health education can be made by strengthening learning methods in midwifery education. One method that is considered effective is Collaborative Learning, which is a learning approach that emphasizes cooperation among students in small groups to achieve common goals through discussion, knowledge sharing, and joint problem solving. This method has been proven to improve students' understanding of concepts, critical thinking skills, and communication skills in the field of health (14). However, research examining the impact of this method on public perceptions of healthcare quality, particularly ANC services, remains limited. Therefore, this study aims to analyze the effectiveness of the Collaborative Learning method in improving pregnant women's perceptions of the quality of Antenatal Care services in the working area of the Aur Duri Community Health Center in Jambi City.

METHOD

This study employed a quantitative approach using a quasi-experimental design to examine the effectiveness of the collaborative learning method in improving pregnant women's perceptions of the quality of Antenatal Care (ANC). The research used a one-group pre-test and post-test design, in

which a single group of participants was assessed before and after receiving the intervention. In this design, baseline data on pregnant women's perceptions of ANC service quality were collected through a pre-test. Subsequently, participants received an educational intervention delivered through community midwifery practice using the collaborative learning method. After the intervention period, the same participants completed a post-test to evaluate changes in their perceptions of ANC service quality.

The study was conducted in the working area of Puskesmas Aur Duri, Telanaipura District, Jambi City, Indonesia. This location was selected purposively because it is a community practice area for midwifery students from the Midwifery Study Program of Poltekkes Kemenkes Jambi. The research was carried out over a five-month period from August to December 2025, which coincided with the schedule of community midwifery practice activities conducted by Diploma III and Diploma IV midwifery students.

The study population consisted of all pregnant women registered and residing in the working area of Puskesmas Aur Duri, including the villages of Penyengat Rendah, Buluran Kenali, Teluk Kenali, and Aur Kenali. A total sampling technique was used, resulting in 97 pregnant women who met the inclusion criteria being recruited as research participants. Inclusion criteria included pregnant women who lived in the study area, received ANC services, were willing to participate in community midwifery practice activities conducted using the collaborative learning approach, were able to communicate in Indonesian, and provided informed consent. Pregnant women with severe pregnancy complications, those who moved out of the study area during the research period, or those who did not complete the intervention were excluded from the study.

The intervention consisted of community midwifery care activities implemented through the collaborative learning method, in which midwifery students worked in small groups to design and deliver health education, counseling, and home visit activities for pregnant women. The

collaborative learning approach involved group discussion, problem-solving, and case-based learning among students before interacting with participants. Data were collected using a structured questionnaire measuring pregnant women's perceptions of ANC service quality, which was developed based on the 12 standard ANC service indicators, including physical examinations, laboratory tests, provision of iron tablets, immunization, counseling, and case management. The questionnaire was administered twice, namely before the intervention (pre-test) and after the intervention (post-test). Prior to data collection, the instrument underwent validity and reliability testing using Pearson product-moment correlation and Cronbach's alpha to ensure accuracy and consistency.

This study received ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Jambi with Ethical Clearance Number: LB.02.06/2/38/2026. All participants were informed about the objectives, procedures, benefits, and potential risks of the study before participation. Written informed consent was obtained from all respondents prior to data collection and intervention implementation. Participants were assured that their participation was voluntary and that the confidentiality of their personal information would be maintained throughout the study.

Data analysis was conducted using descriptive and inferential statistical techniques. Univariate analysis was performed to describe the distribution of respondents' characteristics and perception scores. To examine the effectiveness of the collaborative learning intervention, bivariate analysis using the Wilcoxon Signed Rank Test was applied to compare pre-test and post-test perception scores. This non-parametric test was chosen because it is appropriate for analyzing paired data from the same respondents measured at two different time points. The effect size was calculated using the formula:

$$r = \frac{Z}{\sqrt{n}}$$

where r represents the effect size, Z is the Wilcoxon test statistic, and N is the total number of observations. Statistical analysis was conducted using statistical software, and significance was determined at a p -value < 0.05 .

RESULTS

This study involved 97 pregnant women who were registered in the working area of Puskesmas Aur Duri, Jambi City. The characteristics of respondents were analyzed to describe the demographic and obstetric profiles of the participants.

Table 1. Distribution of Respondents Based on Sociodemographic Characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Age	< 20 years	7	7.2
	20–35 years	70	72.2
	> 35 years	20	20.6
Education	Primary	18	18.6
	Secondary	55	56.7
	Higher	24	24.7
Parity	Primigravida	41	42.3
	Multigravida	56	57.7

Table 1 shows the sociodemographic characteristics of the respondents. The majority of pregnant women were aged 20–35 years (72.2%), which is considered the productive reproductive age group. Based on educational level, most respondents had secondary education (56.7%), followed by higher education (24.7%). In terms of parity, 57.7% of respondents were multigravida, while 42.3% were primigravida.

Pregnant women's perceptions of the quality of Antenatal Care (ANC) services were measured before and after the implementation of the collaborative learning intervention.

Table 2. Distribution of Perception Scores Before and After the Intervention

Variable	Mean	Minimum	Maximum
Pre-test	97.67	78	112
Post-test	108.55	90	120

Table 2 presents the average scores of pregnant women's perceptions regarding ANC service quality before and after the collaborative learning intervention. The mean

perception score increased from 97.67 in the pre-test to 108.55 in the post-test, indicating an improvement in pregnant women's perceptions following the implementation of the collaborative learning approach in community midwifery practice.

To better understand the distribution of perception levels, the scores were categorized into three levels: good, moderate, and poor.

Table 3. Distribution of Perception Scores Before and After the Intervention

Category	Pre-test n (%)	Post-test n (%)
Good	35 (36.1%)	68 (70.1%)
Moderate	47 (48.5%)	26 (26.8%)
Poor	15 (15.4%)	3 (3.1%)
Total	97 (100%)	97 (100%)

Table 3 shows that before the intervention, most respondents had moderate perceptions of ANC quality (48.5%), followed by good perceptions (36.1%) and poor perceptions (15.4%). After the intervention, there was a notable improvement, with the majority of respondents having good perceptions of ANC quality (70.1%), while the proportion of respondents with moderate and poor perceptions decreased.

To determine the effectiveness of the collaborative learning method, a Wilcoxon Signed Rank Test was conducted to compare pre-test and post-test scores.

Table 4. Effectiveness of Collaborative Learning on Pregnant Women's Perceptions of ANC Quality

Variable	Z-value	p-value	Effect Size
Pre-test – Post-test	-6.013	<0.0001	0.61

The results of the Wilcoxon Signed Rank Test indicate a statistically significant difference between pre-test and post-test perception scores ($Z = -6.013$; $p < 0.0001$). This finding suggests that the collaborative learning method significantly improved pregnant women's perceptions of the quality of ANC services. Furthermore, the effect size of 0.61 indicates a large effect, demonstrating that the intervention had a substantial impact

on improving respondents' perceptions of ANC service quality.

DISCUSSION

Pregnant women's perceptions of the quality of Antenatal Care (ANC) services prior to the intervention indicated that, in general, respondents already held relatively positive views regarding the services they received. However, variations in perceptions among respondents suggest that the experience of ANC services was not uniformly perceived across all participants. Differences in perception may arise from several factors, including individual experiences during service delivery, variations in understanding health information, and the quality of communication between healthcare providers and pregnant women. Perception of healthcare service quality is fundamentally a subjective construct formed through direct experiences, interactions with health professionals, and the extent to which patients understand the information provided during healthcare encounters (15).

Within healthcare quality models, interpersonal communication, respect for patients, involvement in decision-making, and the provision of adequate information are recognized as key determinants shaping patients' perceptions of service quality (16). Effective communication between healthcare providers and patients can enhance feelings of trust, respect, and participation, which ultimately influence patients' evaluations of the care they receive. Therefore, although many respondents had already demonstrated favorable perceptions of ANC services, the presence of moderate perceptions suggests that improvements are still needed in terms of health education and empowerment of pregnant women.

Following the implementation of the collaborative learning intervention, respondents' perceptions of ANC service quality demonstrated a clear positive shift. In addition to improving overall perceptions, the distribution of respondents' perceptions became more consistent toward a positive evaluation of ANC services. This suggests that the intervention not only increased

pregnant women's understanding of ANC services but also contributed to reducing disparities in how service quality was perceived among participants.

Conceptually, collaborative learning represents a participatory educational approach that emphasizes interaction, group discussion, and shared construction of knowledge (17). In the context of community midwifery care, this approach allows pregnant women to move beyond passive receipt of information and actively engage in understanding the components and standards of ANC services, including their rights and responsibilities as patients and the importance of regular pregnancy examinations. Participatory approaches such as this have been shown to enhance patients' understanding and foster more positive healthcare experiences because participants feel respected and actively involved in the care process (18).

The improvement in perceptions observed in this study suggests that the intervention influenced not only the cognitive aspect of participants' knowledge about ANC but also the affective and evaluative dimensions of how women assess the quality of healthcare services. This finding aligns with the concept of health literacy, which states that individuals who possess a better understanding of healthcare systems tend to demonstrate more positive perceptions and higher satisfaction with the services they receive (18).

The statistical analysis further indicated that the changes observed after the intervention were unlikely to occur by chance, suggesting that the collaborative learning approach contributed meaningfully to the improvement of pregnant women's perceptions of ANC services. The dominance of participants who demonstrated positive changes in perception indicates that the intervention generated a strong response among the majority of respondents. In single-group intervention studies, a pattern of predominantly positive change reflects a substantial response to the treatment applied (19).

Beyond statistical significance, the analysis also demonstrated that the intervention produced a strong practical impact on changes in respondents' perceptions. This indicates that collaborative learning not only produces statistically significant improvements but also offers meaningful practical benefits in the context of community-based health education. Consequently, this method has important practical relevance for maternal health education programs implemented within community settings (20).

From a theoretical perspective, collaborative learning is grounded in social constructivist theory, which emphasizes that knowledge is constructed through social interaction and collective discussion.⁵⁰ According to this perspective, learning becomes more effective when individuals actively exchange ideas, experiences, and perspectives with others. Previous research by Purwati et al. also highlights that collaborative learning is supported by strong theoretical foundations derived from social constructivism, social learning theory, and cooperative learning theory, all of which contribute to improved motivation, engagement, knowledge acquisition, and interpersonal relationships among participants (21).

Within maternal healthcare services, collaborative approaches enable pregnant women to gain a more comprehensive understanding of ANC standards while also providing opportunities to share experiences and clarify previously misunderstood information. This process enhances health literacy and strengthens women's confidence in evaluating the quality of healthcare services they receive. The World Health Organization also emphasizes that positive experiences during antenatal care are strongly influenced by active patient engagement and effective communication between healthcare providers and patients (22).

Furthermore, the concept of person-centered maternity care highlights the importance of effective communication, respect for women's dignity, and active participation in maternity care services.

Research indicates that women's perceptions of maternal healthcare quality are strongly influenced by communication, autonomy, educational background, and previous pregnancy experiences (23). In addition, active patient involvement in healthcare processes has been associated with improved perceptions of service quality because women become more aware of procedures, rights, and standards of care that should be provided (24). Therefore, the collaborative learning approach applied in this study functions not only as an educational strategy for midwifery students but also as a form of empowerment for pregnant women, enabling them to better understand ANC standards, communicate more confidently with healthcare providers, and evaluate service quality more critically.

One limitation of this study should be acknowledged. The use of a one-group pre-test and post-test design without a control group limits the ability to establish a definitive causal relationship between the collaborative learning intervention and the improvement in pregnant women's perceptions of ANC service quality. During the five-month study period, respondents may have obtained additional information related to antenatal care from other sources, such as the internet, family members, healthcare workers, social media, or community health programs, which could have influenced their perceptions independently of the intervention. Therefore, the observed improvements may not be solely attributable to the collaborative learning approach. In addition, the absence of randomization and a comparison group may increase the possibility of confounding variables and reduce the internal validity of the study. Future research is recommended to use a randomized controlled or quasi-experimental design with a control group to provide stronger evidence regarding the effectiveness of collaborative learning interventions in improving perceptions of ANC service quality.

CONCLUSIONS

This study demonstrates that the implementation of the collaborative learning

method in community midwifery practice significantly improved pregnant women's perceptions of the quality of Antenatal Care (ANC) services in the working area of Puskesmas Aur Duri, Jambi City. The results showed a significant increase in perception scores after the intervention, indicating that participatory and interactive educational approaches can effectively enhance pregnant women's understanding of ANC services. Statistical analysis confirmed a significant difference between pre-test and post-test scores, with a large effect size, suggesting that collaborative learning had a substantial impact on improving respondents' perceptions of ANC quality.

Overall, collaborative learning provides an effective strategy for delivering maternal health education because it encourages active participation, discussion, and knowledge sharing among participants. By promoting deeper understanding and awareness of ANC standards and procedures, this approach can strengthen pregnant women's engagement with maternal health services and support efforts to improve the quality and utilization of antenatal care.

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