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Original Research

Correlation of pregnancy classes on knowledge and attitudes about childbirth preparation at Puskesmas Terminal Banjarmasin

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ABSTRACT

Background: Maternal mortality remains a critical public health concern in Indonesia. Pregnancy classes are a strategic intervention to enhance maternal knowledge and attitudes towards childbirth preparation, yet participation rates and their impact require further investigation, particularly at the primary healthcare level.

Objective: This study aimed to analyze the correlation between participation in pregnancy classes and the level of knowledge and attitudes regarding childbirth preparation among pregnant women at the Terminal Banjarmasin Community Health Centre.

Method: An analytical cross-sectional study with a correlational design was conducted from May to July 2025. A total population sample of 34 pregnant women registered in the classes was enrolled. Data were collected using an attendance sheet and a validated questionnaire on knowledge (20 Guttman-scale items) and attitudes (18 Likert-scale items). Data analysis employed Fisher's Exact Test to determine the relationship between attendance (categorized as optimal [≥4 sessions] or suboptimal [<4 sessions]) and knowledge/attitude levels, with a significance level of α=0.05.

Results: The majority of participants (70.6%) had suboptimal attendance. Half (50%) had insufficient knowledge and 55.9% held a negative attitude. A statistically significant correlation was found between optimal class attendance and higher knowledge levels ($p < 0.001$) and more positive attitudes ($p < 0.001$). All participants with optimal attendance had sufficient/good knowledge and positive attitudes.

Conclusion: Optimal participation in pregnancy classes is significantly correlated with improved knowledge and positive attitudes towards childbirth preparation. Program strategies should shift focus from mere enrolment to ensuring consistent attendance and completion to maximize educational outcomes and contribute to safer childbirth practices.

1. Introduction

Pregnancy and childbirth represent a critical period requiring thorough preparation to reduce maternal and infant mortality rates. In Indonesia, the Maternal Mortality Ratio (MMR) remains a serious concern. The MMR in Indonesia continues to exceed the Millennium Development Goal (MDG) target of 102 per 100,000 live births and is far from the Sustainable Development Goal (SDG) target of 70 per 100,000 live births by 203 (Nyfløt & Sitras, 2018;

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Suparji et al., 2024). Indonesia has witnessed a positive trend in the decline of maternal mortality from 1991 to 2020, with the ratio decreasing from 390 to 230 per 100,000 live births (Milhan et al., 2022). However, within the closely spaced period from 2019 to 2020, reported maternal deaths increased from 4,221 to 4,627 overall (Rahayu et al., 2023). Meanwhile, in South Kalimantan Province, data from the Provincial Health Office in 2024 indicates an MMR of 145 per 100,000 live births (EDP KP, 2024), with haemorrhage and hypertension identified as the leading causes of maternal mortality (Sajidah et al., 2025). This figure, although lower than the national average, still reflects the need for intensified efforts, particularly in urban areas with diverse populations such as Banjarmasin City.

Each maternal death is not merely a statistic but a tragedy that leaves profound social and economic impacts on families and communities. Widowers often experience deep loneliness and despair, surviving children face emotional turmoil, and older siblings frequently assume caregiving roles prematurely, which can lead to psychological stress and disrupted childhoods. Families may experience pathological grief, characterized by a prolonged and complicated mourning process that affects their mental health and daily functioning (Hvidtjørn et al., 2022; Igomu et al., 2025; Molla et al., 2015; Punaglom & Arayasinlapathon, 2022). Maternal death often results in significant economic strain due to the loss of income, medical bills, and funeral costs. This financial burden can push families into poverty, especially in low-income settings (Lawrence et al., 2022; Miller & Belizán, 2015). Therefore, effective strategies to ensure every pregnant woman receives adequate information and support are crucial for achieving sustainable development targets.

One strategic intervention mandated by the government to enhance the knowledge and preparedness of pregnant women is the implementation of pregnancy classes. The primary objective of these classes is to improve pregnant women's knowledge of various aspects of maternal health, including antenatal care, childbirth, and postnatal care. Research has demonstrated significant improvements in knowledge, attitudes, and birth preparedness among participants, with statistical evidence supporting these outcomes (Arpen & Silvia, 2024; Kasmiati, 2024; Nurjanah et al., 2024; Solhi et al., 2023). Prenatal classes can also reduce stress, anxiety, and fear, yet there is a recognized need for interventions focusing on mental health support and building self-efficacy (Alizadeh-Dibazari et al., 2024; Putri et al., 2022). Alongside this, studies highlight the importance of local, community-specific

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implementations of prenatal classes and the need to expand their coverage. Ensuring equitable access to these classes is paramount, as they have been shown to enhance birth preparedness and contribute to reducing maternal mortality rates (Sukawati & Futriani, 2024).

Puskesmas (community health centre) Terminal - Banjarmasin, one of the primary health facilities serving a densely populated area, the challenges in optimising these pregnancy classes are substantial. These range from low maternal awareness to a lack of family support. The 2023 Annual Report of the Terminal Banjarmasin Puskesmas recorded that the coverage of the fourth antenatal care visit reached 85%, yet participation in pregnancy classes was only around 40% of the total registered pregnant women. This situation is particularly concerning given the generally low level of knowledge among pregnant women about danger signs and birth preparedness. Several studies in Indonesia indicate that 53-81% of pregnant women have poor knowledge of danger signs and birth preparedness, with only 13% demonstrating adequate knowledge (Agustini, 2022; Lingga et al., 2025; Zaki et al., 2021). It is here that pregnancy classes are expected to act as a catalyst, transforming knowledge into positive attitudes and promoting behaviours that support the safety of both mother and foetus during childbirth. This study aims to analyse the correlation between participation in pregnancy classes and the level of knowledge and attitudes regarding childbirth preparation at the Terminal Banjarmasin Puskesmas. Specifically, it examines the significance of the relationship between the frequency of attendance at pregnancy classes and the improvement in knowledge, as well as changes in attitudes among pregnant women concerning various aspects of childbirth preparation, including planning for the birth location, birth attendant, blood donors, and financial readiness.

2. Methods

Research design

This study employed an analytical cross-sectional design with a correlational quantitative approach. This design was selected to examine the relationship between the independent variable (participation in pregnancy classes) and the dependent variables (knowledge and attitudes about childbirth preparation) at a single point in time. This approach allows for the efficient collection of data from all variables simultaneously to test the proposed hypotheses.

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Participants

The population of this study was all pregnant women registered as participants in the pregnancy classes at the Terminal Banjarmasin Community Health Center (Puskesmas) during the May–June 2025 period, totaling 34 individuals. A total sampling (census) technique was used, where the entire population was included as respondents (Mukti, 2025). The inclusion criteria were: 1) pregnant women actively registered in the pregnancy classes, 2) able to read and write, and 3) willing to participate by signing the informed consent form. The exclusion criterion was pregnant women with pregnancy complications requiring total bed rest.

Data collection

Data were collected using two instruments::

1. Pregnancy class attendance sheet

   Used to measure the independent variable (participation). Attendance was categorized as "Optimal" if the participant attended all 4 standard sessions and "Suboptimal" if they attended fewer than 4 sessions.

2. Questionnaire on knowledge and attitudes about childbirth preparation

   This instrument consisted of two parts , was adopted from Silvia (2022):

   - Knowledge questionnaire

     Comprised 20 items using a Guttman scale (Yes/No). This scale provides a clear dichotomy for assessing fundamental understanding.

   - Attitude questionnaire

     Comprised 18 items using a Likert scale (e.g., Strongly Agree, Agree, Disagree, Strongly Disagree) to measure respondents' perceptions and opinions.

   The instrument has been tested for validity and reliability, showing high internal consistency with a Cronbach's alpha of 0.916 for knowledge and 0.932 for attitude.

Data collection was conducted in July 2025 after obtaining ethical approval and research location permits.

Data analysis

The collected data were analyzed statistically using the Statistical Package for the Social Sciences (SPSS) version 26. The participants' characteristics and the distribution of all variables (attendance, knowledge, attitude) were presented using frequency and percentage distributions. The relationship between pregnancy class attendance (optimal vs. suboptimal),

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the level of knowledge was analyzed using Fisher's Exact Test. These non-parametric tests were chosen because the assumption for the Chi-square test was not met, as some cells had an expected count of less than 5. The significance level (α) was set at 0.05.

Ethical consideration

The ethical feasibility of this study was approved by the Research Ethics Commission of Sari Mulia University with certificate number 258/KEP-UNISM/VI/2025. The principles of research ethics were strictly adhered to, including: (1) obtaining informed consent prior to participation, (2) guaranteeing respondent confidentiality by using identity codes, (3) maintaining anonymity by not including respondent names in the report, and (4) upholding justice by providing equal rights for all participants to be involved in the study without coercion.

3. Results

Participant characteristics

Table 1 outlines the demographic profile of the 34 pregnant women who participated in this study. The presented characteristics include the distribution of age, highest education level, and parity status. This data provides a foundational overview of the research sample prior to the analysis of the main variables.

Table 1. Demographic characteristics of the participants (n=34)

Characteristic	Category	Frequency (n)	Percentage (%)
Age	At-Risk (<20 or >35 years)	9	26.5
	Not At-Risk (20-35 years)	25	73.5
Education Level	Elementary School	5	14.7
	Junior High School	6	17.6
	Senior High School	20	58.8
	Higher Education	3	8.8
Parity	Primigravida	11	32.4
	Multigravida	23	67.6

Participation in pregnancy classes

The frequency distribution of pregnant women's participation in pregnancy classes is presented in Table 2. This table categorizes participants based on the optimality of the number of meetings attended, according to the standard of four meetings. The results indicate that the majority of participants had a suboptimal level of attendance.

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Table 2. Frequency distribution of pregnancy class attendance

Category	Frequency (n)	Percentage (%)
Suboptimal	24	70.6
Optimal	10	29.4
Total	34	100.0

Level of knowledge about childbirth preparation

The participants' level of knowledge regarding childbirth preparation is detailed in Table 3. Knowledge was classified into three categories—insufficient, sufficient, and good—based on questionnaire scores. This finding reveals that half of all respondents were in the insufficient knowledge category.

Table 3. Frequency distribution of knowledge about childbirth preparation

Category	Frequency (n)	Percentage (%)
Insufficient	17	50.0
Sufficient	7	20.6
Good	10	29.4
Total	34	100.0

Attitude towards childbirth preparation

Table 4 presents an overview of the pregnant women's attitudes towards childbirth preparation. Attitudes were measured and grouped into positive and negative. The data show that more than half of the participants held a negative attitude toward the importance of childbirth preparation.

Table 4. Frequency distribution of attitude towards childbirth preparation

Category	Frequency (n)	Percentage (%)
Negative	19	55.9
Positive	15	44.1
Total	34	100.0

Relationship between pregnancy class attendance and knowledge

The results of the Kolmogorov-Smirnov Z testing the relationship between pregnancy class attendance and knowledge level are presented in Table 5. This cross-tabulation compares the distribution of knowledge levels between the group of participants with optimal and suboptimal attendance. A very clear pattern is evident, showing that not a single participant with optimal attendance had insufficient knowledge.

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Table 5. Association between pregnancy class attendance and knowledge level (n=34)

Pregnancy class attendance	Knowledge level, n (%)			Total	p-value*
	Insufficient	Sufficient	Good		
Suboptimal	17 (70.8)	6 (25.0)	1 (4.2)	24 (100)	<0.001
Optimal	0 (0.0)	1 (10.0)	9 (90.0)	10 (100)	
Total	17 (50.0)	7 (20.6)	10 (29.4)	34 (100)	

Note: **Fisher's exact test

Relationship between pregnancy class attendance and attitude

The relationship between pregnancy class attendance and attitude towards childbirth preparation is displayed in Table 6. Similar to the findings for knowledge, this table demonstrates a strong and significant correlation. It shows that all participants who attended classes optimally held a positive attitude.

Table 6. Relationship between pregnancy class attendance and attitude (n=34)

Pregnancy class attendance	Knowledge level, n (%)		Total	P-value*
	Negative	Positive		
Suboptimal	17 (70.8)	6 (25.0)	24 (100)	<0,001
Optimal	0 (0.0)	1 (10.0)	10 (100)	
Total	17 (50.0)	7 (20.6)	34 (100)	

Note: *Fisher's exact test

4. Discussions

this study provide robust empirical evidence for a positive correlation between optimal participation in pregnancy classes and enhanced knowledge as well as more positive attitudes regarding childbirth preparation at the Puskesmas Terminal, Banjarmasin. Bivariate analysis results demonstrated a statistically significant relationship, wherein not a single participant with optimal attendance fell into the 'insufficient knowledge' category, and all participants within this group exhibited a positive attitude. These findings align with health behaviour change theories, such as the Health Belief Model (Rosenstock, 1974), which posits that increased knowledge about a health issue and the benefits of preventive actions are prerequisites for forming positive attitudes and, ultimately, triggering the desired behaviour (Orbell et al., 2013). Pregnancy classes, as a structured health education intervention, function as a critical conduit for disseminating accurate information, thereby directly enhancing pregnant women's perceptions of their susceptibility to childbirth complications and their belief in the benefits of thorough preparation (Anita et al., 2022; Sari et al., 2024; Sukawati & Futriani, 2024).

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The dominance of participants (70.6%) with suboptimal attendance reflects the implementation challenges of the pregnancy class programme at the field level, a phenomenon also reported globally (Rahmawaty et al., 2025; Rashid, 2023; Rodrigues et al., 2024). This low participation rate not only limits programme coverage but also, as our data indicates, potentially hinders the achievement of optimal educational outcomes. The group with suboptimal attendance was predominantly characterized by insufficient knowledge (70.8%) and negative attitudes (70.8%). This suggests that sporadic or incomplete attendance may be insufficient to instil comprehensive understanding or alter deeply held beliefs and perceptions. Research in similar contexts has found that attendance consistency is a stronger predictor of knowledge improvement than mere programme enrolment (Rashid, 2023; Rodrigues et al., 2024), highlighting the critical importance of retention and sustained engagement in health education interventions.

The demographic profile of the study sample, where 67.6% were multigravida and 58.8% had a senior high school education, offers an additional lens through which to interpret the findings. Multigravida women may bring previous childbirth experiences that shape their knowledge and attitudes, sometimes inadvertently reinforcing myths or unsafe traditional practices, particularly if those experiences were negative (Aynalem et al., 2023; Gómez López et al., 2022; Rugumisa, 2024). However, optimal participation in pregnancy classes proved capable of overcoming these preconceptions, as evidenced by the high levels of knowledge and positive attitudes in that group. This indicates that pregnancy classes are effective not only for primigravida but also serve as a vital platform for information refreshment and correction for women who have previously given birth. This finding reinforces the argument that health education is iterative and necessary throughout the reproductive lifespan, not solely during the first pregnancy (Herval et al., 2019; Rizvi, 2022).

The strength of the relationship between class attendance and attitude is a crucial finding, as attitude often acts as a mediator between knowledge and actual behaviour. Research concludes that a positive attitude towards childbirth preparation is significantly correlated with the decision to give birth in a health facility and with a skilled birth attendant (Dona & Mue, 2024; Ifeanyichukwu et al., 2016). Consequently, the capacity of pregnancy classes to foster positive attitudes, as observed in the optimal attendance group in our study, carries direct practical implications for efforts to reduce maternal mortality. The group

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interaction inherent in these classes facilitates discussion and peer support, which are powerful mechanisms for altering subjective norms and perceptions of behavioural control (Mehay et al., 2023; Thapa et al., 2019), as explained by the Theory of Planned Behaviour (Ajzen, 1991).

The policy implications of this research are unequivocal. Given the evidence that optimal attendance is paramount, the Ministry of Health and local health offices need to shift focus from merely increasing enrolment numbers (coverage) towards strategies that enhance participant retention and programme completion. This may require innovations in class scheduling, for instance, providing symbolic incentives for participants who complete all sessions, or actively involving husbands and family members to bolster social support and minimize logistical barriers.

Research limitations must be acknowledged to provide appropriate context for interpreting these findings. Firstly, the cross-sectional design precludes definitive establishment of causal relationships. While it is logical that class participation enhances knowledge, the possibility that women who are intrinsically more motivated and knowledgeable beforehand are more likely to attend classes regularly cannot be entirely ruled out (Sedgwick, 2014). Secondly, the use of a total population sample of 34 participants from a single Puskesmas severely limits the generalizability of the findings. The small sample size and its origin from a specific urban setting mean these results cannot be readily extrapolated to pregnant populations in rural areas or with differing sociodemographic characteristics within South Kalimantan, let alone at the national level. Thirdly, although the instrument was reliable, the measurement of knowledge and attitudes relied on self-reporting, which is potentially susceptible to biases such as social desirability bias, especially within the context of programme evaluation.

Suggestions for future research should build upon these limitations. Firstly, further studies employing longitudinal or quasi-experimental designs (e.g., with a control group) are highly recommended. Such designs would be more robust in establishing causality and controlling for potential confounding variables like intrinsic motivation and socioeconomic status. Secondly, research with a broader scope and larger sample sizes, involving multiple Puskesmas with different characteristics (urban, rural, coastal) across South Kalimantan Province, is warranted. This would enable a more comprehensive analysis of the determinants

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of participation and the effectiveness of pregnancy classes, while also enhancing the generalizability of the findings. Thirdly, qualitative or mixed-methods research is strongly needed to delve deeply into the barriers and motivators for participation from the perspectives of pregnant women and their families. Understanding the "why" behind the low attendance figures will yield rich insights for designing more effective, evidence-based retention strategies tailored to the local context.

5. Conclusion

This study conclusively demonstrates a significant positive correlation between optimal attendance in pregnancy classes and improved knowledge and attitudes toward childbirth preparation. These findings underscore the critical importance of shifting program priorities from merely increasing enrolment to ensuring consistent participation and completion.

6. Conflict of interest

All authors declare no conflict of interest.

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