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The Effect of the Lecture Method with Leaflet Distribution on Knowledge of Signs of Labor in Pregnant Women at Community Health Center X

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Abstract

Research Objective: Pregnancy classes are important promotive strategies to improve pregnant women's knowledge. A preliminary study found that 60% of pregnant women were unable to correctly identify labor signs, and most reported one-way counseling without engaging media. This study aimed to determine the effect of lecture-based education using leaflets on improving pregnant women's knowledge of labor signs**. Methodology:** This quantitative study used a pre-experimental one-group pretest–posttest design to assess the effect of the intervention by comparing respondents' knowledge before and after. The research instrument was a questionnaire tested for validity and reliability on 30 pregnant women, with 21 valid items. The intervention consisted of education on signs of labor using leaflets for approximately 20 minutes, involving 40 pregnant women as participants. **Results**: Lecture-based education combined with leaflets significantly improved pregnant women's knowledge of labor signs. Good knowledge increased from 5% to 35%, while poor knowledge decreased from 42.5% to 5% after the intervention (p = 0.001). Respondents' characteristics, including healthy reproductive age, secondary education, and prior pregnancy experience, supported the intervention success. **Conclusion**: Lecture and leaflet methods are effective educational strategies to enhance pregnant women's understanding of labor signs.

Keywords: *Pregnancy; Knowledge; Education; Leaflet; Labor.*

INTRODUCTION

The maternal mortality rate (MMR) remains a key indicator for assessing global public health. According to a World Health Organization report, there were approximately 287,000 maternal deaths worldwide in 2020, most of which occurred in developing countries and could have been prevented through promotive and preventive interventions and quality health services (World Health Organization, 2023). In Indonesia, the MMR remains a serious problem. Recent data shows that the national MMR remains at around 189 per 100,000 live births, far from the Sustainable Development Goals (SDGs) target of <70 per 100,000 live births by 2030 (Ministry of Health of the Republic of Indonesia, 2023; United Nations, 2015). This situation indicates that efforts to reduce MMR are still not optimal and require strengthening strategies, particularly in the aspects of education and early detection (Badan Pusat Statistik, 2023). Regionally, conditions in West Kalimantan Province are even more concerning.

The latest data shows that the maternal mortality rate in West Kalimantan will remain at around 246 per 100,000 live births in 2025, higher than the national rate. Furthermore, according to a report from the West Kalimantan Provincial Health Office, 101 maternal deaths were recorded in West Kalimantan in 2024, with an increasing trend from 120 cases in 2022 to 135 cases in 2023 (Dinas Kesehatan Provinsi Kalimantan Barat, 2025). This indicates that maternal mortality in West Kalimantan remains a priority health issue that remains unresolved. When examined more specifically at the district/city level, variations in maternal mortality rates are still found across regions, including Kubu Raya Regency, a region with a relatively large population and diverse access to healthcare. Provincial government data shows that maternal deaths were still reported in various districts/cities in West

Kalimantan in 2024, including Kubu Raya (Dinas Kesehatan Provinsi Kalimantan Barat, 2025). This indicates that maternal health issues are not limited to the province but are also a significant issue at the district level, requiring specific, area-based interventions. The high maternal mortality rate is inseparable from both medical and non-medical factors. Medical factors such as bleeding, hypertension during pregnancy, and infection remain the main causes (Say et al., 2014; World Health Organization, 2016). However, non-medical factors such as delays in recognizing danger signs during pregnancy and childbirth, low maternal knowledge, and limited access to health services also contribute significantly to the high maternal mortality rate (Damayanti et al., 2023). One common form of delay is a delay in making the decision to seek help, which is closely related to the level of knowledge of pregnant women.

Efforts to improve the knowledge of pregnant women can be implemented through pregnancy classes at community health centers as a promotional and preventive strategy. This program aims to increase understanding of pregnancy, danger signs, and signs of labor (Kementerian Kesehatan Republik Indonesia, 2020). However, the effectiveness of material delivery remains a challenge, as the one-way lecture method can reduce pregnant women's understanding and retention. Therefore, more effective methods are needed, such as a combination of lectures and leaflets, to improve pregnant women's understanding of the signs of labor (Rini Kundaryanti et al., 2024), (Yeni Nurul Rahmawati et al., 2023).

Based on a preliminary study, interviews with 10 pregnant women attending prenatal classes showed that 6 (60%) were unable to correctly identify the signs of labor. 4 (40%) only knew some of the signs of labor, such as contractions, without understanding other signs, such as the breaking of the membranes and the discharge of blood. Most pregnant women (60%) stated that the counseling provided was still one-way and did not utilize engaging media.

Based on previous evidence, it was hypothesized that health education using the lecture method combined with leaflet distribution would significantly improve pregnant women's knowledge regarding the signs of labor compared with their baseline knowledge before the intervention.

Although pregnancy classes have been widely implemented in Indonesia, evidence regarding the effectiveness of combining lecture methods with printed educational media such as leaflets remains limited, particularly in community health center settings. Therefore, this study provides additional evidence regarding an educational strategy that is simple, feasible, and applicable in routine maternal health services.

METHODS

This quantitative study used a pre-experimental design using a one-group pretest-posttest design. This design was used to determine the effect of an intervention by comparing respondents' knowledge levels before and after treatment (Notoatmodjo, 2020).

Inclusion Criteria are pregnant women in the second or third trimester who attended the pregnancy class, were able to communicate effectively, agreed to participate, and signed informed consent. Exclusion Criteria are pregnant women with cognitive impairment, severe pregnancy complications requiring emergency care, or those who did not complete both pretest and posttest assessments were excluded.

The questionnaire was developed based on the Indonesian Ministry of Health guideline on pregnancy classes and relevant literature regarding signs of labor. Content validity was evaluated by three maternal health experts. Reliability testing involving 30 pregnant women yielded a Cronbach's Alpha coefficient of 0.83, indicating good internal consistency.

The research instrument used was a questionnaire that had been tested for validity and reliability on 30 pregnant women at Community Health Center Y. The results showed that 21 out of 30 items were valid and the Cronbach's Alpha value was 0.83 (>0.70), thus declaring it reliable (Sugiyono, 2019).

The intervention was conducted through education on the signs of labor using leaflets for approximately 20 minutes and sample 40 pragnant women. The education was delivered in groups in the pregnant women's class, accompanied by a brief explanation, accompanied by researchers and health workers from the community health center (Adisty Dwi Treasa et al., 2025). This study has obtained approval from the community health center, and all respondents signed an informed consent form before the study was conducted in accordance with ethical principles of health research.

The one-group pretest–posttest design was selected to evaluate preliminary intervention effectiveness. However, the absence of a control group limits causal inference and internal validity.

RESULTS

This research was conducted at a community health center located in a semi-rural-urban area with heterogeneous community characteristics and a relatively high number of visits by pregnant women each month. This community health center provides maternal and child health (MCH) services including Antenatal Care (ANC) examinations, health counseling, and outreach activities for pregnant women, carried out routinely by midwives. The working conditions of the work area, which combine rural and urban characteristics and the availability of health education services, make this community health center suitable as a research location to investigate the effect of the lecture method with leaflets on knowledge about the signs of labor in pregnant women. Respondents in this study numbered 40 pregnant women who met the inclusion criteria. Data collected on respondent characteristics included age, education level, parity, social media use, and the level of knowledge of pregnant women about the signs of labor before and after the intervention.

Table 1. Frequency Distribution of Respondents according to Characteristics of Pregnant Women at Community Health Center in 2026

Characteristics	Criteria	Frequency	
		N	%
Age	< 20 years	2	5
	20-35 years	32	80
	>35 years	6	15
Education	Elementary School	6	15
	Junior High School	9	22,5
	Senior High School/Vocational School	22	55
	University	3	7,5
Parity	Primigravida	18	45
	Multigravida	22	55
Social Media	There Is	6	15
	There isn't any	34	85
Total		**40**	**100%**

Source : Primary Research Data Processing, 2026

Based on Table 1, the characteristics of the 40 pregnant women respondents, the age distribution shows that the majority of respondents were between 20 and 35 years old, amounting to 32 (80%), which, according to Arikunto's criteria, constitutes almost the entire population. Meanwhile, there were 6 respondents aged over 35 (15%) and 2 respondents aged under 20 (5%), both of which constitute a small minority.

Regarding education level, the majority of respondents, 22 (55%), had a high school/vocational high school education. Nine (22.5%) had a junior high school education, and six (15%) had an elementary school education, representing a small minority. Only three (7.5%) had a college education,

also a small minority. This indicates that the respondents' educational level was predominantly secondary education.

Based on parity, 22 (55%) were multigravida respondents, representing the majority, while 18 (45%) were primigravida respondents, representing almost half. Therefore, most of the pregnant women in this study had previous pregnancy experience.

Respondent characteristics according to social media ownership, almost all 34 people (85%) of respondents have social media.

Table 2. Frequency Distribution of Knowledge Level of Mothers Before and After Being Given a Lecture Using a Childbirth Sign Leaflet at a Community Health Center in 2026

Knowlage Categori	Before		After	
	n	%	n	%
Good	2	5	14	35
Sufficient	21	52,5	24	60
Poor	17	42,5	2	5
Total	40	100	40	100

Source : Primary Research Data Processing, 2026

Based on the results of the study of 40 respondents, the level of knowledge before the intervention showed that the majority of respondents were in the adequate category, 21 (52.5%). Furthermore, 17 (42.5%) were in the inadequate category, accounting for almost half, while only 2 (5%) had good or partial knowledge. This indicates that before the education, the majority of pregnant women did not have optimal knowledge of the material provided.

After the intervention, there was an increase in knowledge levels. The adequate category increased to 24 (60%), accounting for the majority, and the good category increased significantly to 14 (35%), accounting for almost half. Conversely, the inadequate category decreased drastically to 2 (5%), accounting for a small portion.

Normality Test

Table 3. Data Normality Test

Varialbles	Shapiro-Wilk	
	Statistic	Description
PRE TEST	0.303	Normal
POST TEST	0.173	Normal

Source : Primary Research Data Processing, 2026

Based on Table 3 In this study, the normality test used was Shapiro-Wilk (Notoatmodjo, 2020). This is because the respondents in this study were less than 50 people. The normality test results 0,303 ; 0,173, > 0,05, meaning normal distribution.

Bivariate Analysis

Bivariate analysis is an analysis used to determine the effect of the intervention given to the research subjects.

Table 4. The Effect of Lecture Method with Leaflet Distribution on Knowledge of Signs of Labor in Pregnant Women at Community Health Center in 2026

	Mean	df	P value
PRE TEST AND POST TEST	1.43	39	0.001

Source: Research Data Processing 2026

Based on the results of the t-test, the P value was 0.001, which is smaller than 0.05. It can be concluded that there is an influence of the lecture method with the provision of leaflets on knowledge about signs of labor in pregnant women at the Community Health Center.

DISCUSSION

The study results showed that the majority of respondents were in the 20–35 age group (80%), which is considered a healthy reproductive age. In this age range, individuals are at optimal cognitive maturity, enabling them to think logically, understand information, and make rational decisions (Adisty Dwi Treasa et al., 2025). Theoretically, the more mature a person is, the better their ability to receive and process health information. Age is a predisposing factor influencing health knowledge and behavior, so early adulthood tends to respond better to educational interventions (Ahmad et al., 2024).

Research by (Adisty Dwi Treasa et al., 2025) showed that pregnant women of healthy reproductive age have better knowledge levels than those at risk (<20 years and >35 years), as individuals at this age are more active in seeking information and have better psychological preparedness. Thus, the predominance of the 20–35 age group in this study was a supporting factor for the success of the health education intervention (Zhang et al., 2024) Thus, the predominance of the 20–35 age group in this study was a supporting factor for the success of the health education intervention, as respondents were in an optimal condition to receive education.

The results showed that the majority of respondents (55%) had a high school/vocational high school education, which is considered secondary education. Education is a key determinant in the development of a person's knowledge because it influences their ability to understand health information (Agustina Ayu Puspita, 2023) (Gebremichael et al., 2023).

Individuals with higher levels of education tend to have better health literacy, making it easier to understand educational materials. This is supported by research showing that education is significantly associated with increased knowledge after health interventions (Stormacq et al., 2020).

Research by (Nutbeam & Lloyd, 2021) showed that pregnant women with secondary or higher education experienced a more significant increase in knowledge after receiving health education compared to those with lower education. Thus, respondents' educational level is a critical factor in the success of interventions.

The majority of respondents were multigravida (55%), meaning they had previous pregnancy experience. Experience is a learning resource that can enhance knowledge, as individuals gain understanding from firsthand experiences (Adisty Dwi Treasa et al., 2025) (Puspitasari et al., 2021).

Multigravida mothers tend to have better knowledge than primigravida mothers, especially regarding childbirth preparedness. This is evidenced by research by (Adisty Dwi Treasa et al., 2025), which showed that multigravida mothers were better prepared for childbirth than primigravida mothers.

However, experience alone is not always sufficient without the support of accurate information. This study still found low levels of knowledge in the pre-test, indicating that education is still needed to correct inaccurate understanding.

Based on social media ownership, almost 85% of respondents had access to social media, indicating the high potential for pregnant women to access digital information. Advances in information

technology allow individuals to access health information quickly and widely (Dol et al., 2022). However, not all information obtained through social media is valid, necessitating direct education from health professionals as a trusted source of information (Lee et al., 2022) (Xu et al., 2025).

Recent research shows that digital media can increase the knowledge of pregnant women, but its effectiveness is highly dependent on the quality of the information received (Adisty Dwi Treasa et al., 2025). Therefore, in this study, social media access can be a supporting factor in strengthening the information provided through leaflets.

Similar findings have been reported in Ethiopia, China, and Canada, where educational interventions combining verbal counseling and printed educational materials significantly improved maternal knowledge regarding pregnancy danger signs and labor preparedness.

Changes in Knowledge Before and After the Intervention, the results of the study showed a significant increase in knowledge levels after the intervention, with good knowledge increasing from 5% to 35%, while poor knowledge decreased from 42.5% to 5%. This indicates that health education interventions have a positive impact on improving the knowledge of pregnant women (Susanti & Utami, 2022).

The lecture method combined with leaflets is an effective educational approach because it engages more than one sense, thereby increasing the absorption and retention of information. Previous research also shows that the use of educational media such as leaflets can significantly increase knowledge (Hidayati et al., 2021).

The statistical test results showed a p-value of 0.001 ($p < 0.05$), indicating a significant effect of the lecture method combined with leaflets on knowledge improvement. This indicates that the intervention was highly effective in improving the knowledge of pregnant women (Tadesse et al., 2022). The mean difference of 1.43 indicates an increase in knowledge scores after the intervention. Previous research has shown similar results, where health education with supporting media has been shown to be effective in improving the knowledge of pregnant women (Dol et al., 2022).

Improved maternal knowledge regarding labor signs may contribute to reducing the first delay in seeking obstetric care, thereby supporting early referral and potentially reducing maternal morbidity and mortality.

Characteristics such as maternal education, parity, and access to social media may have influenced the improvement in knowledge observed after the intervention. These factors should be controlled in future studies using multivariate analytical approaches.

Overall, the increase in knowledge in this study was influenced by internal factors such as age, education, and experience, as well as external factors such as access to information and educational methods. The lecture method with leaflets proved effective because it combined direct communication and visual media, thus strengthening information retention and tailoring to the characteristics of the respondents.

Limitation

This study has several limitations. First, the one-group pretest–posttest design without a control group limits causal interpretation of the findings. Second, the relatively small sample size may limit generalizability. Third, respondents were recruited from a single community health center, which may not represent pregnant women in other settings. Finally, potential confounding variables such as educational level, parity, and previous exposure to health information were not controlled statistically.

CONCLUSION

Based on the research results, it can be concluded that the lecture method with leaflets has a significant effect on increasing pregnant women's knowledge about the signs of labor among

participants in pregnancy classes at the Community Health Center. This is indicated by an increase in the proportion of knowledge in the good category from 5% to 35% and a decrease in the less than category from 42.5% to 5% after the intervention, which is supported by the results of the paired sample t-test with a p value = 0.001 ($p < 0.05$). The characteristics of respondents who are predominantly of healthy reproductive age, secondary education level, and previous pregnancy experience also support the success of the intervention. Thus, the combination of lecture and leaflet methods has proven effective as an educational strategy in increasing pregnant women's understanding of the signs of labor.

Community health centers are encouraged to integrate lecture methods combined with printed educational materials into routine pregnancy classes. Future educational programs should also incorporate digital media and family involvement to further improve maternal preparedness for childbirth.

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Informed Consent Statement: This study did not disregard the informed consent process, in which consent was obtained from all participants after a full explanation of the study's purpose, procedures, benefits, and risks. The implementation of informed consent was supported and approved by the research ethics committee at the Nani Hasanuddin College of Health Sciences, ensuring that all stages of the study adhered to applicable research ethics principles..

Data Availability Statement: The data used in this study are available from the corresponding author upon reasonable request. Data will not be published publicly to maintain the confidentiality of respondent information, to ensure ethical research practices and to protect participant privacy. Interested parties may request data access from the author, clearly stating the purpose for which the data is being used.

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Conflicts of Interest: The author firmly states that in conducting this research there was no conflict of interest of any kind, either financial or non-financial. The entire research process was conducted independently, objectively, and professionally without any influence or intervention from any party that could affect the results or interpretation of the research.

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