



The Relationship Between Pregnant Women's Knowledge of Pregnancy Warning Signs and Their Use of Maternal and Child Health (MCH) Booklets at the Pasi Barat Community Health Center

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Abstract. Pregnancy is a physiological process that still carries the risk of complications; therefore, pregnant women need to have a good understanding of the warning signs of pregnancy. One educational tool used to improve this knowledge is the Maternal and Child Health Handbook (KIA Handbook). This study aims to analyze the relationship between pregnant women's knowledge of pregnancy warning signs and their use of the KIA Handbook at the Pasi Barat Community Health Center. The study employed an analytical observational design with a cross-sectional approach. The sample consisted of 20 pregnant women selected using total sampling. Data were collected via a questionnaire and analyzed using univariate and bivariate analyses, including the Spearman's Rho test. The results showed that the majority of respondents had "adequate" knowledge (55.0%) and "inadequate" utilization of the KIA Book (60.0%). Bivariate analysis revealed a significant and strong relationship between pregnant women's knowledge of pregnancy danger signs and their utilization of the KIA Book ($p=0.000$; $r=0.732$). The better the knowledge of pregnant women, the more optimal the use of the KIA Book as a health education tool. These findings highlight the importance of improving education on danger signs of pregnancy and optimizing the use of the KIA Book in antenatal care to support the early detection of complications and improve the health of mothers and fetuses.

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1. BACKGROUND

Pregnancy is a physiological process that generally proceeds normally; however, every pregnant woman remains at risk of complications that can threaten the safety of both the mother and the fetus if not properly recognized and managed. One crucial effort to reduce maternal morbidity and mortality is to improve pregnant women's ability to recognize warning signs of pregnancy, such as vaginal bleeding, severe headaches, vision problems, severe edema, decreased fetal movement, premature rupture of membranes, high fever, severe abdominal pain, and seizures. Adequate knowledge of warning signs of pregnancy enables mothers and their families to seek immediate care at health facilities so that complications can be prevented early on (World Health Organization [WHO], 2022; Indonesian Ministry of Health, 2020). One educational resource developed by the Indonesian government to improve maternal health literacy is the Maternal and Child Health Book (, KIA), which contains comprehensive information on pregnancy, childbirth, the postpartum period, infant health, and warning signs requiring immediate referral (Osaki et al., 2019).

Obstetric complications remain the leading cause of maternal mortality worldwide. The WHO reports that approximately 287,000 mothers died from complications of pregnancy and childbirth in 2020, with nearly 95% of these deaths occurring in low- and middle-income countries (WHO et al., 2023). Most of these deaths are caused by hemorrhage, pregnancy-induced hypertension, infection, sepsis, labor complications, and unsafe abortion, which are



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often preceded by warning signs of pregnancy that are frequently not recognized early on (Say et al., 2014; WHO et al., 2023). In Indonesia, the 2023 Indonesian Health Survey (SKI) indicates that pregnancy complications remain a maternal health issue requiring serious attention, while the 2023 Indonesia Health Profile reports that the leading causes of maternal mortality continue to be dominated by hemorrhage, pregnancy-induced hypertension, and infection (Indonesian Ministry of Health, 2024). Various national studies indicate that pregnant women's knowledge of pregnancy warning signs remains in the low-to-moderate range, leading to delays in seeking help when complications arise (Sari et al., 2022; Hidayati et al., 2023).

Low knowledge of pregnancy danger signs contributes to the occurrence of the “three delays”: delay in recognizing problems, delay in deciding to seek help, and delay in receiving adequate health care. These conditions increase the risk of severe complications, such as postpartum hemorrhage, eclampsia, hypovolemic shock, preterm birth, fetal death, and maternal death (Thaddeus & Maine, 1994; Miller et al., 2016). Studies in various countries show that pregnant women with low levels of knowledge are less likely to make optimal use of antenatal care, are less able to recognize symptoms of complications, and are more likely to seek care at health facilities only in emergency situations compared to women with good knowledge (Kassie et al., 2020; Bintabara et al., 2019).

One recommended strategy to improve pregnant women's knowledge is to optimize the use of the Maternal and Child Health (MCH) Handbook as a medium for communication, information, and education. The MCH Handbook serves not only as a record of health services but also as a self-education tool containing information on warning signs of pregnancy complications, the schedule for antenatal checkups, preparation for childbirth, postpartum care, and infant health. The results of a systematic review indicate that the optimal use of the KIA Book can improve mothers' knowledge, adherence to antenatal visits, readiness for childbirth, and the behavior of seeking help when complications arise (Osaki et al., 2019). Studies in Indonesia have also reported that pregnant women who actively read and use the KIA Book have higher levels of knowledge compared to those who merely keep the KIA Book without using it as a source of health information (Yulizawati et al., 2021; Nurhayati et al., 2022).

The Pasi Barat Community Health Center is one of the primary health care facilities that has distributed the KIA Book to all pregnant women as part of its antenatal care services. However, based on initial observations, there are still pregnant women who do not understand the contents of the KIA Book, particularly regarding warning signs of pregnancy, so the use of the KIA Book as an educational tool has not been optimal. This situation highlights the need to evaluate the relationship between pregnant women's knowledge of pregnancy danger signs and their use of the KIA Book as a means of improving the quality of antenatal care.

Based on this description, this study aims to analyze the relationship between pregnant women's knowledge of pregnancy danger signs and the use of the KIA Book at the Pasi Barat Community Health Center. The study results are expected to serve as a scientific basis for optimizing the use of the KIA Book as a maternal health education tool, improving pregnant women's knowledge of pregnancy warning signs, strengthening the implementation of communication, information, and education in antenatal care, and supporting efforts to reduce maternal and neonatal morbidity and mortality.

2. THEORETICAL REVIEW

Pregnant women's knowledge of danger signs during pregnancy is a critical factor in supporting the early detection of complications and decision-making to promptly seek medical care. One educational tool used to improve mothers' knowledge is the Maternal and Child Health Book (KIA Book), which contains information on pregnancy, childbirth, the postpartum period, and warning signs of pregnancy (Indonesian Ministry of Health, 2020; Osaki et al., 2019). Optimal use of the MCH Book has been shown to improve mothers' knowledge, adherence to antenatal visits, and preparedness to handle pregnancy complications (Yulizawati et al., 2021; Nurhayati et al., 2022). Other studies have also shown that pregnant women with good knowledge tend to be more active in using the KIA Book as a source of

health information and are better prepared to recognize warning signs of pregnancy (Kassie et al., 2020; Keswara & Laksono, 2024). Therefore, pregnant women’s knowledge is expected to be associated with the use of the KIA Book as an educational tool in antenatal care.

3. RESEARCH METHODS

This study employed an analytical observational design with a cross-sectional approach to analyze the relationship between pregnant women’s knowledge of pregnancy danger signs and their use of the KIA Book in the service area of the Pasi Barat Community Health Center. The study population consisted of all pregnant women who underwent antenatal checkups during the study period. Based on the tabulated data, the sample consisted of 20 respondents selected using total sampling, meaning that all pregnant women who met the inclusion and exclusion criteria were included as study subjects.

The independent variable was pregnant women’s knowledge of pregnancy danger signs, while the dependent variable was the use of the KIA Book. Data were collected using a structured questionnaire to measure the level of knowledge and the use of the KIA Book, accompanied by a data collection sheet on respondent characteristics, including age, education, gestational age, gravidity, parity, history of abortion, and address. Levels of knowledge and use of the KIA Book were then categorized based on scores established in the research instrument.

Data analysis was conducted in stages: univariate analysis to describe the distribution of respondent characteristics and each research variable, and bivariate analysis using Spearman’s Rho test to determine the relationship between pregnant women’s knowledge and their use of the Maternal and Child Health (MCH) Handbook. If any cell had an expected count of less than 5, Fisher’s Exact test was used as an alternative. All analyses were performed at a 95% confidence level with a significance threshold of $p < 0.05$. The study was conducted in accordance with the ethical principles of health research through the provision of informed consent, maintaining the confidentiality of respondents’ identities, and ensuring that all data were used solely for scientific purposes.

4. RESULTS AND DISCUSSION

Table 1. Demographic Data.

	Var	n	F (%)
Ages	<20 years old	2	10.0
	20–35 years old	16	80.0
	>35 years old	2	10.0
Education	No education	0	0
	Elementary school	0	0
	Junior high school	4	20.0
	High school	13	65.0
	College	3	15.0
Pregnant	1	7	35.0
	2	8	40.0
	3	4	20.0
	4	1	5.0
Trimester	1	0	0
	2	1	5.0
	3	19	95.0
Total		20	100

(source: primary data, 2026)

An evaluation of the sociodemographic characteristics (age, educational level) and obstetric clinical profiles (parity and trimester of gestation) of 20 respondents at the Passi Barat Community Health Center is presented in detail in Table 1. Based on Table 1, the vast majority of pregnant women were within the healthy and safe reproductive age range (20–35 years), totaling 16 women (80.0%). In terms of educational background, most respondents had a secondary or higher level of education, dominated by high school graduates (13 women, 65.0%) and college graduates (15.0%). Regarding obstetric profiles, the multigravida group (second pregnancy) constituted the largest proportion at 40.0%, followed by primigravida at 35.0%. In addition, the gestational age characteristics of the sample were very specific, with

nearly all respondents in the late stages of pregnancy or the third trimester, totaling 19 individuals (95.0%).

Table 2. Research Data.

Var		n	F (%)
Knowledge	Good	3	15.0
	Fair	11	55.0
	Poor	6	30.0
KIA book utilization	Good	3	15.0
	Fair	5	25.0
	Poor	12	60.0
Total		20	100

(source: primary data, 2026)

A univariate analysis of pregnant women's knowledge of pregnancy warning signs and their use of the Maternal and Child Health (MCH) handbook is presented in Table 2. The data in Table 2 reveal a sharp clinical contrast. From a cognitive perspective, the majority of pregnant women actually had a level of knowledge in the "Fair" category—11 women (55.0%)—and only 30.0% had "Poor" knowledge. However, the results regarding the use of the KIA book showed a negative reversal, with the absolute majority of respondents falling into the "Poor" utilization category—12 women (60.0%)—while the group that utilized the KIA book "Well" accounted for only 15.0%.

Table 3. Statistical Analysis (Numerical Data).

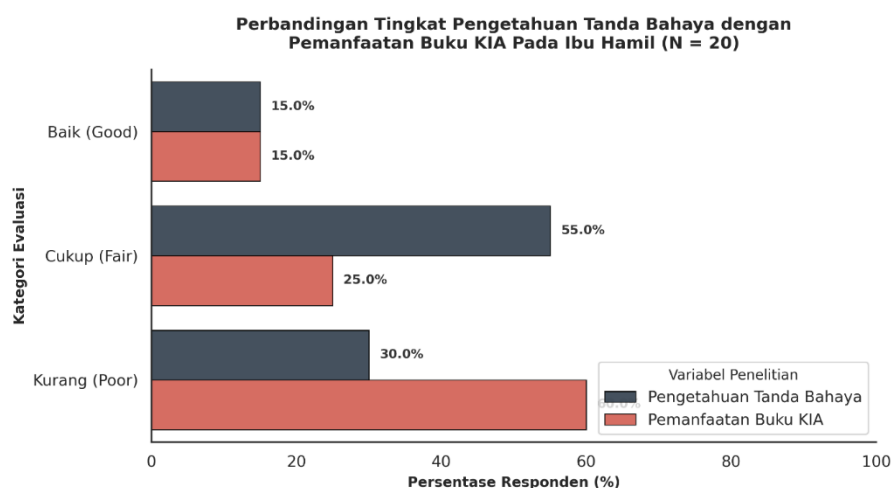
Independent variable	N	P-Value	r	Var dep
Knowledge	30	0.000*	0.732	KIA book utilization

Spearman's Rho

(source: primary data, 2025)

To test the significance of the relationship between the level of knowledge of danger signs and the use of the KIA book by pregnant women, a non-parametric Spearman's Rho correlation test was conducted. The results of the analysis are presented in Table 3.

Based on the bivariate analysis in Table 3, a $P\text{-Value} = 0.000$ ($p < 0.05$) was obtained. This statistical result indicates a highly significant relationship. The correlation coefficient obtained was $r = 0.732$. Based on the criteria for the strength of the relationship, this value indicates a strong, positive, and unidirectional correlation. This positive relationship means that the higher a mother's level of knowledge regarding pregnancy danger signs, the more optimal and increased her level of utilization of the KIA booklet at the Passi Barat Community Health Center will be.



Picture 1. Comparison of Knowledge Levels Regarding Danger Signs.

Comparison between pregnant women's knowledge of pregnancy danger signs and the functional use of the KIA Book (N = 20). The horizontal grouped bar chart illustrates the cognitive-behavioral gap in maternal health services at the Passi Barat Community Health

Center. Although the majority of respondents had a moderate level of knowledge (category “Fair” = 55.0%), actual behavioral compliance showed an opposite pattern, with most respondents demonstrating suboptimal utilization (category “Poor” = 60.0%). Spearman’s Rho test revealed a strong, positive, and direct correlation ($p = 0.000$; $r = 0.732$), indicating that strategic educational interventions are crucial for translating knowledge into active health monitoring behaviors.

Discussion

The findings of this study empirically demonstrate a strong and highly significant positive relationship between pregnant women’s knowledge of pregnancy danger signs and their use of the KIA booklet at the Passi Barat Community Health Center ($p = 0.000$; $r = 0.732$). This high correlation coefficient confirms that mothers’ cognitive understanding of the fatal risks of pregnancy acts as one of the primary determinants driving their behavior to read, understand, and bring the KIA booklet with them during every antenatal care (ANC) visit (Bayu et al., 2025).

Although the relationship between these two variables is statistically very strong, univariate analysis reveals a critical health management gap. The data show that the majority of mothers have knowledge classified as “Sufficient” (55.0%), yet the rate of utilization of the KIA booklet is predominantly in the “Insufficient” category (60.0%). This gap indicates that having sufficient knowledge does not automatically guarantee optimal, functionally effective utilization of the KIA booklet in practice (Siti & Ahmad, 2024). The KIA booklet is often treated merely as a passive administrative document that must be brought to receive health services, rather than as a self-education tool that is actively read at home (Pratiwi & Utami, 2023).

In terms of gestational age, 95.0% of the respondents in this study were already in the third trimester. Psychologically, this late stage of pregnancy should trigger increased vigilance in mothers as they prepare for childbirth, a phenomenon known as the maternal nesting instinct (Putri et al., 2022). However, the low utilization of the KIA book (60.0%) during this crucial phase indicates a sense of boredom or a lack of extrinsic motivation from the surrounding environment (Dewi & Saputra, 2021). Many pregnant women in their third trimester prefer to seek instant information through social media rather than reading the KIA book, which is perceived as less visually interactive, even though the medical validity of the KIA book is far more assured (Wulandari & Handayani, 2024).

The educational background of the respondents, which was dominated by high school graduates (65.0%), suggests that, in theory, this population possesses sufficient literacy skills to absorb health information. The cognitive maturity stemming from this high school educational background explains why the percentage of knowledge categorized as “Insufficient” was only 30.0%. A good education makes it easier for mothers to understand clinical terminology related to warning signs such as preeclampsia (swelling of the feet or face), vaginal bleeding, or decreased fetal movement (Rahmawati et al., 2023). Nevertheless, the failure to translate this educational capital into the behavior of using the KIA booklet reflects a lack of interactive stimulation and guidance from health care providers at community health centers (Hasanah & Nur, 2022).

In terms of pregnancy status, the majority of respondents were multiparous (second pregnancy), accounting for 65.0%. Previous pregnancy experiences often lead to overconfidence bias among pregnant women (Rini & Wijaya, 2025). Mothers feel familiar with the pregnancy process and therefore assume that the contents of the Maternal and Child Health (MCH) booklet no longer provide new information that is urgent to read (Rini & Wijaya, 2025). In reality, every pregnancy has unique and distinct biological risk characteristics, where warning signs can appear unexpectedly during the second or third pregnancy even if the first pregnancy proceeded normally (Astuti et al., 2023).

Geographical conditions and the healthcare system at the Passi Barat Community Health Center also play a significant role. Low utilization rates indicate the need for a reorientation of ANC service delivery methods by midwives (Ningsih & Lestari, 2024). Health workers should not merely record clinical data (such as weight and blood pressure) in the Maternal and Child Health (MCH) booklet in a one-way manner; rather, they must actively engage the mother through bedside counseling (Tan et al., 2023). After each examination,

midwives should assign the mother and her husband the task of reading or reviewing the warning signs section together (Tan et al., 2023). Through this interactive, partnership-based approach, the KIA booklet can be transformed from a mere medical record-keeping tool into an effective family empowerment instrument to reduce maternal morbidity and mortality rates in the community.

5. CONCLUSION AND RECOMMENDATIONS

This study shows that there is a significant association between pregnant women's knowledge of pregnancy warning signs and their use of the KIA Book at the Pasi Barat Community Health Center ($p=0.000$; $r=0.732$). The better the knowledge of pregnant women, the more optimal the use of the KIA Book as a health education tool. However, the study results must be interpreted with caution because they were obtained using a cross-sectional design with a limited sample size, which does not allow for the establishment of a cause-and-effect relationship.

Healthcare workers are encouraged to further optimize education and guidance on the use of the KIA Book during every antenatal visit. Future studies are recommended to use a larger sample size and consider other factors, such as family support, maternal motivation, and the quality of counseling.

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