

Relationship Between Pregnant Women's Knowledge of Pregnancy Danger Signs and Compliance with Antenatal Care Visits at Primary Healthcare Facilities

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Abstract

Pregnancy is a physiological condition that may develop into complications if not monitored regularly through Antenatal Care (ANC) examinations. Limited maternal knowledge regarding danger signs during pregnancy can affect compliance with ANC visits, thereby increasing the risk of complications for both mother and fetus. This study aimed to analyze the relationship between maternal knowledge of pregnancy danger signs and compliance with ANC examinations. This study employed a quantitative analytical design with a cross-sectional approach. The study population consisted of all pregnant women in the working area of a healthcare facility, with 92 respondents selected using a purposive sampling technique. Data were collected using a knowledge questionnaire and an ANC compliance observation sheet. Data analysis was conducted using univariate and bivariate methods with the Chi-Square test at a significance level of $\alpha = 0.05$. The results showed that most respondents had a good level of knowledge regarding pregnancy danger signs (48 respondents; 52.2%), and the majority were compliant with ANC examinations (61 respondents; 66.3%). Statistical analysis demonstrated a significant relationship between maternal knowledge regarding pregnancy danger signs and compliance with ANC examinations ($p = 0.001$). Pregnant women with better knowledge tended to demonstrate higher compliance with routine ANC visits. This study highlights the importance of strengthening maternal health education regarding pregnancy danger signs to improve compliance with ANC examinations and support the early prevention of pregnancy complications.

Keywords: Pregnancy Complications; Pregnancy Danger Signs; Antenatal Care; Prenatal Care; Maternal Health

Introduction

Pregnancy is a natural physiological condition experienced by women; however, without proper monitoring, it may develop into complications that endanger both the mother and the fetus. One of the essential efforts to reduce maternal morbidity and mortality is the implementation of regular and continuous Antenatal Care (ANC) examinations. According to the World Health Organization, many maternal deaths occur due to complications that could actually be detected earlier through routine pregnancy checkups. Therefore, pregnant women need to understand various danger signs during pregnancy, including bleeding, severe headaches, edema of the extremities, high fever, and decreased fetal movement, so that appropriate medical management can be provided immediately (WHO, 2024). Limited maternal understanding regarding danger signs during pregnancy often leads to delays in seeking healthcare services, thereby increasing the risk of pregnancy complications.

In Indonesia, maternal mortality remains one of the major concerns in improving public health status. Data from the Indonesian Ministry of Health indicate that the maternal mortality rate is still relatively high and has not fully achieved the Sustainable Development

Goals (SDGs) target. One of the contributing factors is the low compliance of pregnant women in attending ANC examinations according to healthcare service standards. The government recommends that pregnant women undergo at least six ANC visits during pregnancy; however, implementation in several regions remains suboptimal. Compliance with ANC visits is influenced by various factors, including educational background, family support, accessibility to healthcare services, and maternal knowledge regarding pregnancy danger signs (Kemenkes RI, 2021).

At the community level, some pregnant women still consider pregnancy as a natural process that does not require regular medical examinations (Wassihun et al., 2020). In addition, maternal understanding regarding danger signs during pregnancy remains relatively limited, despite these conditions having the potential to threaten maternal and fetal health. Inadequate knowledge may result in delayed treatment-seeking behavior when pregnancy complications occur, which can subsequently increase the risk of adverse pregnancy outcomes. Therefore, improving maternal knowledge regarding pregnancy danger signs is important to increase awareness

and encourage compliance with ANC examinations as recommended by healthcare workers (Ajabmoh, 2021).

Several previous studies have demonstrated a relationship between maternal knowledge and compliance with antenatal care examinations. Research conducted by Dewi Kartika Sari showed that pregnant women with better knowledge tended to attend ANC visits more regularly and completely compared to those with limited knowledge (Windayanti, 2022). Similar findings were reported by Nurhayati, who stated that understanding pregnancy complications was significantly associated with maternal health-seeking behavior (Agustina & Mariana, 2023). In addition, Rahmawati explained that pregnant women who were able to recognize danger signs during pregnancy showed better ANC compliance compared to mothers with limited understanding of these signs (Lidia Fitri, Rohmi, 2025). Other studies also reported that maternal health education contributes to improving ANC visit compliance, particularly among pregnant women in the second and third trimesters (Andarwulan et al., 2024). Furthermore, Fitriani explained that knowledge was the most dominant factor influencing ANC compliance compared to maternal age and parity (Juwita et al., 2025).

Although several studies have examined the relationship between knowledge and ANC compliance, research findings across regions still demonstrate considerable variation, particularly regarding maternal understanding of pregnancy danger signs. Most previous studies focused more on socioeconomic conditions and healthcare accessibility (Kalunair & Aksohini, 2025). Few studies specifically examine maternal understanding of pregnancy danger signs as a behavioral determinant of ANC adherence in primary healthcare settings. Therefore, this study emphasizes maternal knowledge regarding pregnancy danger signs as an important factor influencing compliance with ANC examinations (Susanti, 2023).

Method

This study employed a quantitative method with an observational analytical design using a cross-sectional approach. This approach was chosen to analyze the relationship between maternal knowledge regarding pregnancy danger signs and compliance with antenatal care (ANC) examinations during the same period. The study was conducted in a maternal and child health service area from January to March 2026.

The population in this study included all 120 pregnant women undergoing antenatal care at the study site. The sample was determined using the Slovin formula with a 5% margin of error, resulting in 92 respondents. The sampling method used was purposive sampling. Inclusion criteria included pregnant women who were willing to participate, able to communicate effectively, and had a Maternal and Child Health (KIA) handbook. Exclusion criteria included pregnant women in emergency situations and respondents who did not complete the questionnaire.

The independent variable in this study was maternal knowledge regarding danger signs during pregnancy, while the dependent variable was maternal compliance with antenatal care (ANC) examinations. Maternal knowledge is defined as the level of mastery of information they possess regarding pregnancy danger signs, including bleeding, severe headaches, high fever, swelling of the extremities, and decreased fetal movement. Knowledge levels were measured using a closed-ended questionnaire, which was then classified into good, adequate, and poor categories. Meanwhile, ANC check-up

compliance was defined as the consistency of pregnant women in attending ANC visits according to service standards, which is at least six times during pregnancy. Compliance was assessed through visit data in the KIA handbook and through interviews with respondents, who were categorized as compliant and non-compliant.

The main instrument in this study was a questionnaire regarding knowledge of pregnancy danger signs that had previously undergone validity and reliability testing. Validity testing was conducted using the Pearson Product Moment method, which showed a calculated r value greater than the tabulated r value. Reliability was assessed using Cronbach's Alpha, with an α value above 0.70. Supporting materials for the study included informed consent forms, observation sheets, stationery, and Maternal and Child Health (MCH) books, which were used to verify antenatal care (ANC) visit data.

Data collection was conducted through face-to-face interviews using a questionnaire with respondents after obtaining permission and approval for the study. Before completing the questionnaire, the researcher explained

the purpose of the study, the instrument procedures, and ensured that all respondents' identities would be kept confidential. The data obtained were then processed through editing, coding, data entry, and data cleaning before further analysis.

Data processing in this study was conducted through univariate and bivariate analyses. The univariate analysis aimed to describe the characteristics of the respondents, the mothers' level of understanding, and their compliance with ANC check-ups, presented in the form of frequencies and percentages. Furthermore, bivariate analysis was used to identify the relationship between mothers' knowledge of pregnancy danger signs and ANC check-up compliance. This relationship was tested using the Chi-Square test with a significance level of $\alpha = 0.05$. The results of the data processing are presented in the form of a frequency distribution table accompanied by a narrative description to facilitate understanding of the research findings.

Results

This study involved 92 pregnant women undergoing prenatal care at a

healthcare facility. Findings include a description of the respondents' characteristics, their level of understanding of danger signs during pregnancy, their level of compliance with antenatal care (ANC) visits, and the results of an analysis of the relationship between these two variables.

Table 1. Frequency Distribution of Mothers' Knowledge of Danger Signs in Pregnancy

No	Level of Knowledge	Frequency (f)	Percentage (%)
1	Good	48	52,2
2	Enough	28	30,4
3	Poor	16	17,4
Total		92	100

Table 1 shows that the majority of respondents (48 respondents, 52.2%) had a good level of knowledge about danger signs in pregnancy. Meanwhile, 16 respondents (17.4%) had poor knowledge. These results indicate that most pregnant women have a fairly good understanding of danger signs in pregnancy.

Table 2. Frequency Distribution of ANC Check-Up Compliance

No	ANC Compliance	Frequency (f)	Percentage (%)
1	Compliant	61	66,3
2	Disobey	31	33,7
Total		92	100

Table 2 shows that the majority of respondents (61 respondents) complied with ANC checkups according to the

recommended standards, while 31 respondents (33.7%) did not comply.

Table 3. Analysis of the Relationship Between Mothers' Knowledge of Danger Signs in Pregnancy and ANC Checkup Compliance

Level of Knowledge	Obedient f (%)	Not obey f (%)	Total	p-value
Good	40 (83,3%)	8 (16,7%)	48	
Enough	16 (57,1%)	12 (42,9%)	28	
Poor	5 (31,3%)	11 (68,7%)	16	
Total	61 (66,3%)	31 (33,7%)	92	0,001

Based on the results of the bivariate analysis using the Chi-Square test, a p-value of 0.001 ($p < 0.05$) was obtained. It can be concluded that there is a significant relationship between maternal knowledge of danger signs in pregnancy and adherence to ANC check-ups. Pregnant women with a good level of knowledge tend to be more compliant with ANC check-ups than those with less knowledge.

The results showed that the better the mother's knowledge of danger signs in pregnancy, the higher her compliance with routine ANC check-ups. Good knowledge can increase pregnant women's awareness of the importance of early detection of pregnancy complications, thus increasing their motivation to attend ANC visits according to the schedule recommended by health professionals.

Discussion

Research findings indicate that most pregnant women had a relatively good understanding of danger signs during pregnancy. This understanding was reflected in their ability to identify several high-risk conditions, including bleeding, severe headaches, high fever, swelling in certain parts of the body, and decreased fetal movement (Yunitasari et al., 2023). Maternal knowledge regarding pregnancy danger signs can be influenced by various factors, such as educational background, access to health information, previous pregnancy experience, and counseling provided by healthcare workers during antenatal care (ANC) examinations. In line with Lawrence Green's health behavior theory, knowledge is considered a predisposing factor that contributes to the formation of individual health behavior. Individuals with higher levels of knowledge generally demonstrate a greater tendency to adopt appropriate health behaviors (Kumar et al., 2022).

The findings of this study are consistent with previous studies reporting that pregnant women with better knowledge tend to have a higher ability to recognize the risk of pregnancy complications and are therefore more motivated to utilize maternal healthcare services appropriately (Kiptulon et al., 2025). Similarly, previous findings also

showed that maternal understanding regarding pregnancy danger signs contributed positively to the regularity of ANC visits (Wahyuningsih et al., 2017). In addition, pregnant women with higher levels of knowledge are generally more prepared to anticipate possible pregnancy complications compared to those with lower levels of understanding (Sulistiyah, 2024). These findings suggest that maternal knowledge plays an important role in encouraging awareness and preparedness during pregnancy.

The results of this study also showed that most respondents had undergone ANC examinations according to healthcare service standards. Compliance with ANC examinations is an important indicator in monitoring maternal and fetal health throughout pregnancy. Several factors may influence ANC compliance, including maternal understanding regarding the benefits of routine pregnancy examinations, family support, and the quality of healthcare services received. Regular ANC examinations enable healthcare workers to identify potential pregnancy complications earlier, thereby allowing timely and appropriate management (Indriyani & Sukarji, 2022).

Furthermore, the bivariate analysis demonstrated a significant relationship

between maternal knowledge regarding pregnancy danger signs and compliance with ANC visits. Pregnant women with better understanding of pregnancy danger signs tended to show higher compliance with ANC examinations compared to mothers with lower levels of knowledge. This finding indicates that knowledge has an important role in shaping maternal health behavior during pregnancy. Adequate understanding may help pregnant women recognize potential risks earlier and encourage them to undergo routine ANC examinations as an effort to prevent pregnancy complications (Lestari & Winarsih, 2022).

The findings of this study are also in accordance with previous research showing a significant association between maternal knowledge and compliance with ANC visits (Tanberika et al., 2024). Pregnant women who understand the importance of early detection of pregnancy complications are generally more motivated to attend routine prenatal examinations according to the recommended schedule. Similar findings were reported by previous studies which stated that continuous maternal health education could improve compliance with ANC visits, particularly among pregnant women in the second and third trimesters (Sidabutar et al., 2023).

These findings further emphasize the importance of strengthening maternal health education programs as part of antenatal healthcare services.

However, the findings of this study are not entirely consistent with studies reporting that ANC compliance is not solely influenced by maternal knowledge. Other factors, such as economic conditions, sociocultural background, accessibility to healthcare facilities, and family support, may also contribute to maternal compliance in attending ANC examinations (Bhutada et al., 2024). Differences in findings between studies may be associated with variations in respondent characteristics, healthcare settings, and social environmental conditions in each research location.

The novelty of this study lies in its focus on maternal understanding regarding pregnancy danger signs as a factor associated with ANC compliance in primary healthcare settings. This study demonstrates that improving maternal education regarding pregnancy danger signs may become an important strategy to increase compliance with routine ANC visits. The findings are expected to provide useful information for healthcare professionals in developing sustainable maternal health education programs aimed at reducing pregnancy complications and

improving maternal and fetal health outcomes.

Limitations

This study has several limitations that should be considered in interpreting the findings. First, the cross-sectional design used in this study only describes the relationship between maternal knowledge regarding pregnancy danger signs and compliance with antenatal care (ANC) examinations at one point in time; therefore, causal relationships between variables cannot be fully determined. Second, the use of purposive sampling may limit the generalizability of the findings to wider populations with different demographic and social characteristics. In addition, data regarding maternal knowledge were collected using self-reported questionnaires, which may have introduced response bias because respondents may not always provide answers that accurately reflect their actual level of understanding. Furthermore, this study focused primarily on maternal knowledge and did not comprehensively assess other factors that may influence ANC compliance, such as cultural beliefs, economic conditions, accessibility to healthcare services, and family support.

Practical Implications

The findings of this study provide important implications for maternal healthcare services, particularly in primary healthcare settings. Maternal knowledge regarding pregnancy danger signs was found to be significantly associated with compliance with ANC examinations, indicating that educational interventions should become an essential component of maternal healthcare programs. Healthcare workers are expected to strengthen health education activities through counseling, health promotion, and continuous education during ANC visits. Providing clear and understandable information regarding pregnancy danger signs may improve maternal awareness of the importance of routine pregnancy examinations and early detection of pregnancy complications. In addition, family involvement and community support are also important to encourage pregnant women to maintain regular ANC attendance according to healthcare service standards.

Recommendations for Future Research

Future studies are recommended to use longitudinal or cohort study designs to better evaluate the causal relationship between maternal knowledge and

compliance with ANC examinations over time. Further research involving larger sample sizes and different healthcare settings is also needed to improve the generalizability of the findings. In addition, future researchers are encouraged to examine other factors that may influence ANC compliance, including cultural beliefs, socioeconomic conditions, healthcare accessibility, and family support. Studies evaluating the effectiveness of specific educational interventions related to pregnancy danger signs are also recommended to provide stronger evidence for the development of maternal healthcare education programs.

Conclusion

This study concluded that most pregnant women had a good level of knowledge regarding pregnancy danger signs and demonstrated compliance with antenatal care (ANC) examinations according to healthcare standards. The findings showed a significant relationship between maternal knowledge of pregnancy danger signs and compliance with ANC visits. Pregnant women with better knowledge tended to be more compliant with routine ANC examinations. These findings indicate that maternal

knowledge plays an important role in encouraging positive health behaviors during pregnancy. Therefore, strengthening maternal health education regarding pregnancy danger signs is important to improve ANC compliance and support early detection of pregnancy complications.

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Conflict of Interests Statement

The authors declare that there are no conflicts of interest related to the publication of this study.

References

Agustina, P., & Mariana, S. (2023). Hubungan pengetahuan sikap dan

pendidikan ibu terhadap kepatuhan ibu dalam melakukan kunjungan antenatal care (ANC) di Klinik Kasih Ibu Kota Jambi Tahun 2021, *23*(3), 3033–3038. <https://doi.org/10.33087/jiubj.v23i3.3821>

Ajabmoh, E. N. (2021). *Knowledge of danger signs during pregnancy and health seeking behaviours among women attending antenatal care: The case of two referral hospitals in Southwest Cameroon* (pp. 1–21).

Andarwulan, S., Rihardini, T., & Waroh, Y. K. (2024). Edukasi kesehatan tentang pemeriksaan. *4*(6). <https://doi.org/10.59818/jpm.v4i6.998>

Bhutada, K., Venkateswaran, M., Atim, M., Munabi-babigumira, S., & Nankabirwa, V. (2024). Factors influencing the uptake of antenatal care in Uganda: A mixed methods systematic review, *6*.

Indriyani, D., & Sukarji, V. (2022). Analisis status maternal dan kepatuhan antenatal care (ANC) pada ibu hamil dengan status kesejahteraan janin, *1*(4), 585–591.

Juwita, D., Aisyn, A., & Nursupian, N. (2025). Analisis faktor yang berhubungan dengan kepatuhan kunjungan antenatal care pada ibu hamil, *2025*, 29–39.

Kalunalr, D., & Aksohini, T. R. (2025). Relationship between pregnant women's knowledge of danger signs and compliance with antenatal care at Ternate City Health. *Proceeding of The International Conference of Innovation, Science, Technology*, 1–5.

Kemendes RI. (2021). *Profil kesehatan Indonesia*.

Kiptulon, E. K., Galgalo, D. A., Elmadani, M., & Orsolya, M. (2025). Knowledge of obstetric

- danger signs and birth preparedness and complications readiness among mobile Pokot nomadic pastoralist pregnant women in Tiaty Sub-County, Baringo County-Kenya. *BMC Pregnancy and Childbirth*, 0. <https://doi.org/10.1186/s12884-025-07532-0>
- Kumar, A., Raj, D., Gupta, A., & Kumar, A. (2022). Assessment of knowledge of obstetric danger signs and its associated factors among pregnant women attending antenatal clinic of rural health training centre of a medical college: A cross-sectional study from Rajasthan. <https://doi.org/10.4103/jfmpc.jfmpc>
- Lestari, Y. D., & Winarsih, S. (2022). Pengetahuan ibu hamil tentang tanda kegawatdaruratan kehamilan dengan kepatuhan dalam pemeriksaan antenatal care di wilayah kerja, 1(3), 279–286. <https://doi.org/10.55123/sehatmas.v1i3.591>
- Lidia Fitri, Rohmi, C. R. (2025). Hubungan pengetahuan ibu hamil tentang tanda bahaya kehamilan dengan kepatuhan melakukan antenatal care (ANC), 4(1), 206–216.
- Sidabutar, S., Valensia, R., & Sinaga, N. (2023). The relationship knowledge of pregnant women with the utilization of antenatal care (ANC) services in Panombeian Panei Health Center Simalungun Regency, 2(2), 433–436. <https://doi.org/10.55299/ijphe.v2i2.336>
- Sulistiyah, W. S. I. (2024). Modifying factors and level of knowledge about pregnancy danger signs that influence antenatal care utilization compliance, 17, 287–296.
- Susanti. (2023). Danger signs of pregnancy on compliance with antenatal care visits in the Mamuju Community Health Center work area, 995–1004.
- Tanberika, F. S., Sansuwito, T. Bin, & Hassan, H. C. (2024). Knowledge in enhancing antenatal care compliance and improving maternal and neonatal health outcomes, 2024.
- Wahyuningsih, D., Linggardini, K., & Purwokerto, U. M. (2017). Correlation between maternal knowledge about danger sign and antenatal care (ANC) visit compliance in the health care, 3(1), 2–5. <https://doi.org/10.30595/pshms.v3i.615>
- Wassihun, B., Negese, B., Bedada, H., Bekele, S., Bante, A., Yeheyis, T., Abebe, A., Mohammed, M., Gashawbez, S., & Hussen, E. (2020). Knowledge of obstetric danger signs and associated factors: A study among mothers in Shashamane town, Oromia region, Ethiopia, 1–8.
- World Health Organization. (2024). *WHO recommendations on antenatal care for a positive pregnancy experience*.
- Windayanti, H. (2022). Characteristics of pregnant women related to pregnant women's knowledge about antenatal care (ANC), 8(4), 709–716.
- Yunitasari, E., Matos, F., Zulkarnain, H., Kumalasari, D. I., Kusumaningrum, T., Putri, T. E., Yusuf, A., & Astuti, N. P. (2023). Pregnant woman awareness of obstetric danger signs in developing country: Systematic review. *BMC Pregnancy and Childbirth*, 1–24. <https://doi.org/10.1186/s12884-023-05674-7>