

## Original Research

# Analysis of Antenatal Care (ANC) Visits and Prenatal Classes for High-Risk Pregnancy : Compliance and Involvement of Couples

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## ABSTRACT

**Background:** High-risk pregnancies present a significant threat to the health of both the mother and the fetus. Antenatal care (ANC) visits and prenatal classes play an essential role in monitoring and maintaining maternal and fetal health.

**Purpose:** Analyzing the Level of Compliance of ANC Visits, Assessing the Involvement of Couples

**Method:** This is a quantitative, descriptive study involving 14 high-risk pregnant women as the research sample, Small Sample using total sampling. The research instrument was a questionnaire. Data analysis was performed to obtain the distribution of frequency and percentage of physical activity and nutrition among high-risk pregnant women.

**Result:** All respondents reported that most pregnant women had their first ANC examination in the first trimester and attended regular check-ups with obstetricians and midwives at private practices, health centers, hospitals, and clinics. The husbands of pregnant women also played an active role in the pregnancy process, providing fetal stimulation and accompanying their partners during check-ups. However, most participants did not attend prenatal classes, with 10 women (71.40%) opting out. Among those who participated in prenatal classes, 10 women (71.40%) attended fewer than four classes. Additionally, the majority of husbands did not participate in prenatal classes.

**Conclusion:** Healthcare providers are encouraged to increase the involvement of husbands both during ANC visits and prenatal classes to enhance support for pregnant women. Prenatal classes should be designed to be as engaging as possible to increase the interest and participation of both pregnant women and their partners.

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## INTRODUCTION

High-risk pregnancy refers to a condition that poses significant risks to the health and safety of both the mother and the fetus. This condition can lead to increased maternal and infant morbidity and mortality, with hypertension during pregnancy being one of the primary contributing factors. Pregnancy-induced hypertension, including preeclampsia, is a major risk factor contributing to the rise in maternal and infant mortality rates (Girotra et al., 2023). Preeclampsia may develop after 20 weeks of gestation, and if not detected early, it can lead to serious complications, such as eclampsia, which endangers both the mother and the fetus. Additionally, poorly managed chronic hypertension can lead to cardiovascular diseases in mothers later in life, including heart failure, stroke, and coronary heart disease (Girotra et al., 2023; Wu et al., 2023). Other common complications associated with high-risk pregnancies include preterm birth, intrauterine growth restriction, and, in severe cases, fetal or maternal death (Hromadnikova, 2024; Kuppusamy et al., 2023).

Approximately 2-7% of all pregnancies worldwide are estimated to be at risk due to preeclampsia, which is higher than the general prevalence of hypertension at the beginning of pregnancy, around 8%. Data from Indonesia's National Population and Family Planning Agency (BKKBN) in 2020 revealed that high-risk pregnancies, caused by various factors, included 22.4% with single high-risk factors (the "4 Too's"), broken down as follows: birth spacing <24 months (5.2%), maternal age >34 years (3.8%), and having more than three children (9.4%) (Martínez, G., 2023). The high-risk pregnancy phenomenon in Buntalan, Klaten, Central Java, in 2023, was analyzed based on potential emergencies, danger signs, emergencies, total cases, and referrals. Potential emergency cases included maternal age >35 years (2 cases), children <2 years (4 cases), maternal height <145 cm (1 case), poor obstetric history (2 cases), history of cesarean section (1 case), and history of chronic energy deficiency (1 case), totaling 11 cases. With 228 pregnant women recorded, danger signs were identified in 19 cases, including multiple risk factors (7 cases), asthma (2 cases), twin pregnancies (2 cases), post-term pregnancies (3 cases), transverse lie (2 cases), and comorbid conditions (3 cases). Emergency cases reached 192, while 29 cases required referral over the year, with 15 referred to hospitals and 14 to community health centers (PKM).

High-risk pregnancies necessitate special attention to ensure the health and safety of both the mother and the fetus (Menke et al., 2022). The risks during pregnancy can be mitigated through regular antenatal care (ANC) visits and participation in prenatal classes. The primary function of ANC is to identify risks and facilitate appropriate referrals for high-risk pregnancies (Arsenault et al., 2024). Antenatal Care (ANC) is also used to monitor both maternal and fetal health throughout pregnancy, serving as a key strategy to reduce maternal and infant mortality rates (Defar et al., 2020; Gayatri et al., 2023). A study by Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen (2021) found that early detection during first-trimester Antenatal Care (ANC) examinations is linked to a reduced risk of pregnancy complications, including preeclampsia and preterm birth (Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen, 2021). Health issues like gestational diabetes, anemia, and preeclampsia are often detected during second-trimester ANC. If pregnant women only begin attending ANC visits at the end of the second trimester, healthcare providers may have limited opportunities to implement timely and effective preventive or corrective measures before these conditions negatively impact the health of both the mother and the child (Ali et al., 2020).

One of the factors contributing to high maternal and infant mortality rates in Indonesia is the lack of maternal knowledge regarding health and the limited ability to recognize obstetric danger signs, which can delay pregnant women's decisions to seek medical care (Yörük & Acikgoz, 2023). To improve maternal and neonatal health education, the Indonesian government has introduced prenatal class programs. These classes are designed to improve pregnant women's understanding of pregnancy, encourage the use of antenatal care (ANC) services, promote postpartum family planning, and increase awareness of infectious diseases (Azhar et al., 2020). Research by Adhikari (2023) revealed that irregular attendance at prenatal classes leads to pregnant women missing critical information that could help them make informed health decisions (Adhikari, 2023). This finding is consistent with other studies, which suggest that prenatal classes can enhance women's knowledge about pregnancy, reduce the time required to identify danger signs, and help facilitate timely decisions to seek medical care (Patriajati & Sriatmi, 2019). Based on the above, herefore, this study aims to analysis of antenatal care (ANC) visits and prenatal classes for high-risk pregnancy compliance and involvement of couples

## METHOD

This study is a quantitative research using a descriptive approach, designed to describe and analyze Antenatal Care (ANC) visits and prenatal classes among high-risk pregnant women. The research was conducted in Buntalan Village, Central Klaten, Central Java, in February – June 2024. The study population consisted of all high-risk pregnant women in Buntalan Village, Central Klaten, Central Java. Sampling was conducted using total sampling, with a total of 14 participants included in the study.

The instruments used are sourced from the Maternal and Child Health Book Data collection was carried out by having respondents complete the questionnaire. Respondents filled out the questionnaire after receiving an explanation from the researcher and signing an informed consent form. The questionnaires were completed collectively at the village hall, or for those unable to attend, at the respondents' homes under the guidance of the research team. Data analysis was conducted to determine the frequency distribution and percentage of Antenatal Care (ANC) visits and prenatal class participation among high-risk pregnant women.

## RESULTS

This study was carried out in February 2024 in Buntalan Village, Klaten Tengah, Central Java, involving 14 high-risk pregnant women as respondents. The respondents' characteristics are presented in Table 1.

**Table 1.** Respondent characteristics

Respondent characteristics	Frequency	Percent	Valid percent
<b>Maternal age</b>			
< 20 years	0	0	0
20-29 years	10	71.40	71.40
30-39 years	4	28.60	28.60
≥ 40 years	0	0	0
<b>Maternal education</b>			

Respondent characteristics	Frequency	Percent	Valid percent
Primary school	0	0	0
Junior high school	1	7.10	7.10
Senior high school	7	50.00	50.00
Diploma/bachelor's degree	6	42.90	42.90
Master's/doctoral degree	0	0	0
<b>Maternal occupation</b>			
Housewife	8	57.20	57.20
Private sector worker	1	7.10	7.10
Civil servant	3	21.40	21.40
Entrepreneur	2	14.30	14.30

Source: Primary data

The majority of respondents (71.40%) fell within the 20–29 age range, recognized as the most productive reproductive period associated with lower health risks for both mothers and their babies. This is the most common age range for childbearing, suggesting that the sample predominantly represents younger, likely healthier women who are within the optimal reproductive years. 50% of respondents have completed high school, while 42.90% have a bachelor's degree education level. This indicates that most respondents have at least a high school education or higher. The high proportion of respondents with at least a high school education suggests that the sample has a reasonable ability to understand health information, which could potentially contribute to better maternal health practices and adherence to prenatal care guidelines. The absence of postgraduate education may indicate that further educational programs could be beneficial to this group, particularly in improving knowledge about advanced maternal health topics. This suggests that the sample represents a population with relatively good educational attainment, which may correlate with better understanding of health information and greater likelihood of engaging in healthcare practices such as regular antenatal care.

The majority of respondents (57.20%) are Housewife which may influence their ability to access healthcare services and attend antenatal care (ANC) appointments regularly. The high proportion of Housewife may imply that some women might face challenges in accessing healthcare or engaging in prenatal education due to limitations in mobility or lack of Financial independence. The majority of respondents are Housewife, which might indicate that the sample group could have limited Financial independence or might require additional support in accessing healthcare. There is also a noticeable proportion of women employed in more stable jobs (civil servants), suggesting a mixed economic status within the sample.

**Table 2.** Antenatal Care (ANC) visits

Antenatal Care	Frequency	Percent	Valid percent
<b>First pregnancy checkup</b>			
Yes	14	100.0	100.0
<b>Person who conducted the checkup</b>			
Obstetrician specialist	7	50.0	50.0
Midwife	7	50.0	50.0

Antenatal Care	Frequency	Percent	Valid percent
<b>Time of first checkup</b>			
First trimester (0-12 weeks)	13	92.90	92.90
Second trimester (12-28 weeks)	1	7.10	7.10
<b>Place of first pregnancy checkup</b>			
Hospital	4	28.60	28.60
Independent midwife practice	5	35.70	35.70
doctor's practice			
Community health center	4	28.60	28.60
Clinic	1	7.10	7.10
<b>Regular ANC visits</b>			
Yes	13	92.90	92.90
No	1	7.10	7.10
<b>Husband engaged in fetal stimulation</b>			
Yes	13	92.90	92.90
No	1	7.10	7.10
<b>Companion during pregnancy checkup</b>			
Husband	14	100.0	100.0
Mother in law	0	0	0
None	0	0	0

*Source: Primary data*

All pregnant women in this study confirmed their pregnancies, demonstrating high compliance with initial check-ups. The first pregnancy check-ups were evenly distributed between obstetrician-gynecologists and midwives, with each covering 50% of the total sample. The majority of pregnant women (92.90%) had check-ups during the first trimester (0-12 weeks), showing good early attention. Only one pregnant woman (7.10%) had a check-up during the second trimester, and none had check-ups during the third trimester. The check-ups were conducted in various locations, with a relatively even distribution between PMB independent midwife practice /Doctor's Practices, Hospitals, and community health center. Clinics were a less common option (7.10%). Almost all pregnant women (92.90%) regularly attended antenatal care (ANC), showing high compliance with the routine check-up schedule. The majority of pregnant women (92.90%) reported that their husbands were involved in fetal stimulation, showing significant partner support during the pregnancy process. All pregnant women were accompanied by their husbands during the pregnancy check-ups, indicating consistent partner involvement in the process of pregnancy monitoring.



**Table 3.** Prenatal class attendance of pregnant women

Prenatal class attendance	Frequency	Percent	Valid percent
<b>Pregnant women attended prenatal class</b>			
Yes	4	28.60	28.60
No	10	71.40	71.40
<b>Frequency of attending prenatal class</b>			
4 times	4	28.60	28.60
Less than 4 times	10	71.40	71.40
<b>Pregnant women received information in prenatal class</b>			
Yes	4	28.60	28.60
No	10	71.40	71.40
<b>Husband attended prenatal class at least once</b>			
Yes	1	7.10	7.10
No	13	92.80	92.80

*Source: Primary data*

The results of this study show that only 28.60% of pregnant women attended antenatal classes, while 71.40% did not. The low participation rate indicates that many pregnant women are not involved in antenatal classes, which are designed to improve knowledge and prevent risks. This may be due to various factors, including lack of information, unsuitable schedules, or discomfort with the class format. Among the pregnant women who attended antenatal classes, 28.60% attended four times, while 71.40% attended fewer than four times. Even among those who participated, the low attendance frequency suggests that antenatal classes may not be attended consistently, which could affect the effectiveness of the education. The low frequency may indicate uncertainty about the class schedule or the relevance of the material presented. 28.60% of pregnant women reported receiving information from the antenatal classes, while 71.40% did not. The low proportion of pregnant women who felt they gained information indicates that the quality or relevance of the information provided may not be adequate. This suggests the need to evaluate the class materials and delivery methods to ensure that the information is useful and relevant. Only 7.10% of husbands attended at least one antenatal class, while 92.80% did not. The very low involvement of husbands indicates that the antenatal class program may not be engaging or relevant enough for couples. The lack of involvement from husbands could reduce the support for pregnant women, which is crucial for preventing high-risk pregnancies.

## DISCUSSION

This study found that the majority of respondents were aged 20–29, an age group considered the most productive reproductive period with comparatively lower health risks for both the mother and the baby than other age groups. However, providing adequate education about high-risk pregnancy signs, including preeclampsia, gestational diabetes, and preterm birth, remains essential. Research by Figueiredo, B., Costa, R., & Rodrigues (2019) indicates that mothers in this age group generally have better health outcomes and fewer complications compared to older pregnant women. Nonetheless, education on high-

risk pregnancy signs is critical, as risks persist even in younger age groups (Figueiredo, B., Costa, R., & Rodrigues, 2019). A prospective study conducted in China revealed a strong correlation between maternal age and the risk of preterm birth, low birth weight, and various neonatal complications (Yin et al., 2024). According to Zhang et al. (2020), advanced maternal age (above 35 years) significantly increases the likelihood of complications such as preeclampsia, gestational diabetes, and preterm birth. Therefore, preventive programs for high-risk pregnancies should focus on these age groups. Intensive prenatal care and adequate counseling are crucial for early detection of complications and minimizing adverse outcomes for both mothers and babies (Zhang et al., 2024).

Most participants in this study had an educational background of senior high school or diploma/bachelor's degree. The findings indicate that the majority of pregnant women in this study attained education levels ranging from secondary to tertiary. Preventive strategies for high-risk pregnancies should consider educational backgrounds to ensure the information and interventions provided are well-understood and accepted. Yadav (2020) found that higher education positively impacts the quality of maternal healthcare and understanding of medical information. Highly educated mothers tend to be more aware of the importance of antenatal care and preventing complications. Conversely, mothers with lower education levels, such as junior high school graduates, may struggle to comprehend health information, making them more vulnerable to complications (Yadav, A., 2020). Higher education correlates with better comprehension and access to health information, as well as greater proactivity in seeking antenatal care and preventing complications. On the other hand, mothers with lower education levels may require tailored educational approaches. Improving health literacy, particularly for mothers with lower educational attainment, should be a priority (Martínez, G., 2023).

This study found that most pregnant women were Housewives, a factor that may affect their access to and use of information regarding the prevention of high-risk pregnancies. Employment status plays a role in accessing and utilizing maternal health services, with Housewives often having more restricted access to information compared to women working in the formal sector. Recent studies show that women working in the formal sector have better exposure to health information and medical services, often supported by workplace initiatives. In contrast, Housewives face barriers that can hinder their understanding of prenatal care and risk management (Jiang et al., 2023). According to Dahlgren & Whitehead (2023), Housewives often spend more time at home but may face limited access to accurate and relevant health information. Factors such as low education levels, minimal support from husbands or other family members, and restricted access to information technology can exacerbate this situation (Dahlgren, G., & Whitehead, 2023).

The study reveals that all pregnant women ensured their pregnancies were confirmed, demonstrating a high level of adherence to initial check-ups. All pregnant women in this study had check-ups to confirm their pregnancies, and nearly all of them did so regularly and during the first trimester. The first examination was evenly distributed between obstetricians and midwives, and took place in various locations such as midwifery practices, doctor's offices, and health centers. This finding aligns with Bohren, M. A., Vogel, J. P., Hunter, E. C., Lutsiv, O., Makh, S. K., Souza, J. P., & Gülmezoglu (2020), who stated that the quality of care provided to pregnant women by healthcare professionals, whether doctors or midwives, directly affects their adherence to

regular ANC programs (Bohren, M. A., Vogel, J. P., Hunter, E. C., Lutsiv, O., Makh, S. K., Souza, J. P., & Gülmezoglu, 2020).

A study by McKinney, J., Turner, D. M., & Schoenfeld (2022) showed that early access to quality healthcare, whether through a midwife or doctor, has a significant impact on better pregnancy outcomes (McKinney, J., Turner, D. M., & Schoenfeld, 2022). Research by Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen (2021) found that early examination in the first trimester correlates with a reduced risk of pregnancy complications, such as preeclampsia and preterm birth. Additionally, the high percentage of pregnant women who had their check-ups during the first trimester (92.90%) indicates that efforts to raise awareness about the importance of early examination have been successful (Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen, 2021). Dennis, A., & Fosu (2021) emphasized that women who attend ANC earlier tend to have better pregnancy outcomes, including a reduced risk of complications like preeclampsia and preterm birth (Dennis, A., & Fosu, 2021). A study conducted in the United Arab Emirates mentioned that health issues like gestational diabetes, anemia, and preeclampsia are often detected during ANC visits in the second trimester. Thus, if pregnant women delay or postpone their ANC visits, healthcare providers cannot offer timely and effective prevention or interventions before these health problems negatively affect the mother and baby (Ali et al., 2020).

According to Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen (2021), varied access to healthcare facilities increases the likelihood that pregnant women will receive care tailored to their needs (Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., & Chen, 2021). These results are consistent with a recent study by Wang, J., Chen, X., Liu, Y., & Zhao (2023), which found that early first-trimester examinations correlate with improved pregnancy outcomes and a reduction in complications like preeclampsia and preterm birth (Wang, J., Chen, X., Liu, Y., & Zhao, 2023). This supports findings by Okeke, E., Nwachukwu, C., & Obasi (2023), who stated that collaboration between doctors and midwives enhances access to and the quality of healthcare for pregnant women, which in turn improves adherence to ANC schedules (Okeke, E., Nwachukwu, C., & Obasi, 2023).

Partners play an active role in the pregnancy process, both in fetal stimulation and accompanying the women during check-ups. The study shows a high level of partner involvement and good adherence to ANC schedules among the pregnant women in this sample. Significant partner involvement in the pregnancy process, particularly in fetal stimulation (92.90%) and accompanying women during check-ups (100%), also reflects strong social support, which significantly impacts both maternal and fetal health. According to research by Vélez, A. L., Montgomery, M. R., & Molina (2021), partner support during pregnancy has been shown to improve maternal mental health and contribute to positive pregnancy outcomes (Vélez, A. L., Montgomery, M. R., & Molina, 2021). A recent study by Thompson, J. R., Harris, M., & Reid (2023) found that partner support during pregnancy can enhance maternal emotional well-being, which in turn benefits fetal development (Thompson, J. R., Harris, M., & Reid, 2023). Research by Yargawa and Leonardi-Bee (2020) shows that partner support has a positive impact on maternal emotional well-being and can improve both maternal and fetal health (Yargawa, J., & Leonardi-Bee, 2020). A study by Garcia, R., Perez, L., & Mendoza (2023) found that partner support can improve maternal emotional well-being, reduce stress, and contribute to better pregnancy outcomes (Garcia, R., Perez, L., & Mendoza, 2023).

The results of this study also revealed that the majority of pregnant women did not attend prenatal classes. The low participation rate indicates that many pregnant



women are not involved in prenatal classes designed to increase knowledge and prevent risks. This could be due to various factors, including a lack of information, inconvenient schedules, or discomfort with the class format. Research by Nankunda et al. (2021) shows that inadequate information about prenatal classes can be a barrier to participation. They found that many pregnant women were unaware of the benefits of these classes, which resulted in their non-participation (Nankunda, 2021). A study by Kharbanda et al. (2023) found that participation in Prenatal classes is often hindered by a lack of clear information about the benefits and schedules of the classes. This highlights the need to raise awareness about available educational programs (Kharbanda, 2023).

Among the pregnant women who attended prenatal classes, 28.60% attended four times, while 71.40% attended less than four times. Even for those who participated, the low attendance frequency suggests that the prenatal classes may not be attended consistently, which could affect the effectiveness of the education. The low frequency of attendance may indicate uncertainty about the schedule of the classes or the relevance of the material presented. Research by Bick (2020) shows that uncertainty about the schedule and conflicts with the daily activities of pregnant women can lead to high absenteeism. Therefore, it is important to evaluate the class schedule to better align with the needs of pregnant women (Bick, 2020). Adhikari (2023) highlights that inconsistent attendance in prenatal classes may lead to missed opportunities for pregnant women to access crucial information necessary for making informed health decisions (Adhikari, 2023).

The information or knowledge gained about pregnancy and childbirth in Prenatal classes can influence pregnant women to utilize adequate ANC services (Azhar et al., 2020). Good knowledge about pregnancy improves the ability of pregnant women to identify various risk factors for complications and predictions based on their medical and pregnancy history. Being aware of their pregnancy status will indirectly encourage pregnant women to engage more regularly with healthcare professionals to seek solutions and preventive measures that can be taken (Patriajati & Sriatmi, 2019). The more knowledge a woman has about pregnancy and childbirth, the better she understands and can identify medical and pregnancy histories that may pose risks to the pregnancy. This also increases awareness of the importance of routine antenatal check-ups and utilizing all activities related to the detection and prevention of risk factors (Rajbanshi et al., 2021).

However, this study found that only 28.60% of pregnant women felt they gained information from prenatal classes, while 71.40% did not. The low proportion of pregnant women who felt they obtained information suggests that the quality or relevance of the information provided may not be sufficient. This indicates the need to evaluate the class materials and delivery methods to ensure that the information provided is useful and relevant. Research by Kuo (2023) states that ongoing evaluation of class materials and delivery methods is crucial to ensure that the information provided is relevant and meets the needs of pregnant women (Kuo, 2023). Only 7.10% of husbands attended at least one Prenatal class, while 92.80% did not. The very low involvement of husbands suggests that the Prenatal class program may not be engaging or relevant enough for partners. The lack of involvement from husbands could reduce the support for pregnant women, which is crucial in preventing high risks during pregnancy. A study by Duan (2024) shows that partner involvement can enhance emotional and practical support for pregnant women, which is vital in preventing high risks during pregnancy. Active partner support can help pregnant women feel more confident and prepared to face the challenges of pregnancy (Duan, 2024).

## CONCLUSION

The findings of this study reveal that all pregnant women undergo examinations to confirm their pregnancies, with the majority doing so regularly, especially during the first trimester. These initial examinations are equally conducted by obstetricians and midwives at various facilities, such as private clinics and public health centers. Husbands of pregnant women actively contribute to the pregnancy process by providing fetal stimulation and accompanying their wives during checkups. However, the study highlights that most pregnant women do not participate in prenatal classes, which are aimed at enhancing knowledge and mitigating risks. Among those who do attend, the majority participate fewer than four times, indicating inconsistent attendance. Additionally, the involvement of husbands in prenatal classes is minimal. This limited participation suggests that these programs may not yet be engaging or relevant enough for couples. The lack of husband involvement could potentially reduce the level of support for pregnant women, which is crucial for preventing high-risk pregnancies.

To address this, healthcare providers should strive to increase husband participation in ANC checkups and prenatal classes to strengthen support for pregnant women. Furthermore, prenatal classes should be designed to be more engaging and tailored to the specific needs of pregnant women, encouraging greater interest and attendance from both women and their partners. Limitations of this study The very small sample size (14 respondents) tends to have limitations in generalizing the results of the study to a wider population.

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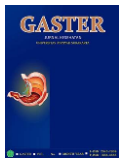
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