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The Effect of Healthcare Access on Antenatal Care (ANC) Visit Compliance Among Pregnant Women

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Abstract. Access to quality healthcare is an essential factor influencing pregnant women's compliance with Antenatal Care (ANC) visits. This study aimed to analyze the effect of healthcare access on ANC visit compliance among pregnant women in the Working Area of UPT Kasarangan Kasarangan Primary Health Center, South Kalimantan, Indonesia. A quantitative study with a correlational analytic design was conducted involving 43 pregnant women selected through total sampling. Data were collected using structured questionnaires and maternal health records, then analyzed using descriptive statistics and Spearman's rho correlation test. The results showed that 46.5% of respondents had sufficient healthcare access, while 69.8% were non-compliant with the recommended ANC visits. Statistical analysis revealed a significant positive relationship between healthcare access and ANC visit compliance ($r = 0.614$; $p < 0.001$), indicating that better healthcare access was associated with higher compliance. These findings highlight the importance of improving healthcare accessibility to enhance ANC utilization and support better maternal health outcomes, particularly in primary healthcare settings.

Keywords: Antenatal Care; Healthcare Access; Maternal Health; Pregnant Women; Visit Compliance.

1. INTRODUCTION

Antenatal Care (ANC) is recognized as one of the most essential components of maternal healthcare because it enables early identification of pregnancy-related complications, promotes maternal and fetal well-being, and contributes to the reduction of maternal and neonatal morbidity and mortality. The World Health Organization recommends a minimum of eight ANC contacts to optimize pregnancy outcomes; however, many developing countries, including Indonesia, continue to adopt national standards requiring at least six ANC visits throughout pregnancy. Despite these recommendations, inadequate ANC utilization remains a significant public health challenge in many low- and middle-income countries. Delayed initiation of ANC, irregular attendance, and incomplete visits reduce opportunities for healthcare providers to detect pregnancy complications, deliver health education, and provide timely interventions, thereby increasing the risk of adverse maternal and neonatal outcomes (Kebede et al., 2023; Dusingizimana et al., 2023). Therefore, improving compliance with ANC visits has become a major priority in maternal health programs worldwide.

One of the most influential determinants of ANC utilization is healthcare access. Healthcare access extends beyond the availability of health facilities and encompasses geographic distance, transportation availability, travel time, financial affordability, and the accessibility of qualified healthcare providers. Women living in geographically isolated or

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underserved communities frequently experience substantial barriers in reaching healthcare facilities, resulting in delayed or missed ANC visits. Research conducted in Zambia demonstrated that seasonal flooding and difficult geographical conditions significantly reduced pregnant women's access to maternal healthcare services by limiting transportation routes and increasing travel difficulties (Mroz et al., 2023). Similarly, a cross-sectional study conducted across low-resource settings reported that limited spatial accessibility to maternal health services remained a major obstacle preventing women from receiving continuous maternal and perinatal healthcare throughout pregnancy (Li et al., 2024). These findings indicate that physical accessibility plays a critical role in ensuring adequate ANC utilization.

Previous studies have consistently identified healthcare accessibility as an important determinant of maternal healthcare utilization across different countries. In rural Rwanda, women who experienced easier access to healthcare services were significantly more likely to achieve adequate ANC visits than those facing transportation and accessibility barriers (Dusingizimana et al., 2023). Likewise, qualitative research conducted in rural Indonesia revealed that distance to healthcare facilities, transportation limitations, restricted mobility, and disruptions in health services substantially affected pregnant women's ability to attend scheduled ANC visits, particularly during the COVID-19 pandemic (Anggraeni et al., 2023). Furthermore, research among disadvantaged women in Australia found that structural barriers, including transportation difficulties, long travel distances, service availability, and socioeconomic constraints, frequently prevented women from accessing appropriate antenatal services despite their awareness of the importance of pregnancy care (Penman et al., 2023). These studies suggest that healthcare accessibility remains a universal challenge regardless of a country's economic status.

Evidence also indicates that inadequate access to healthcare may have consequences extending beyond reduced ANC compliance. Geographic distance to health facilities has been associated with poorer maternal and neonatal health outcomes because delayed healthcare utilization limits opportunities for early diagnosis and treatment of pregnancy complications. Kibret et al. (2023) reported that increasing distance from healthcare facilities significantly contributed to adverse neonatal outcomes, emphasizing that geographical accessibility remains a critical determinant of maternal and newborn health. Additionally, delayed initiation of the first ANC visit has been linked to reduced completion of recommended ANC schedules, as women who begin pregnancy care later are less likely to complete the required number of visits before delivery (Kebede et al., 2023). These findings collectively demonstrate that improving

healthcare accessibility is fundamental not only for increasing ANC compliance but also for enhancing maternal and neonatal health outcomes.

Although numerous international studies have investigated determinants of ANC utilization, evidence specifically examining the effect of healthcare access on ANC visit compliance among pregnant women in the Working Area of UPT Kasarangan Kasarangan Primary Health Center, Hulu Sungai Tengah Regency, South Kalimantan Province, remains limited. Preliminary health records from the study area revealed a considerable gap between the expected and actual achievement of standard ANC visits, with a documented dropout rate of approximately 20.3% from the first (K1) to the sixth (K6) visit. This condition suggests that barriers related to healthcare accessibility may contribute substantially to incomplete ANC attendance among pregnant women in the region. Therefore, this study aims to analyze the effect of healthcare access on ANC visit compliance among pregnant women in the Working Area of UPT Kasarangan Kasarangan Primary Health Center. The findings are expected to provide evidence for healthcare policymakers and primary healthcare providers in developing strategies that improve healthcare accessibility, strengthen ANC service utilization, and ultimately contribute to better maternal and neonatal health outcomes.

2. LITERATURE REVIEW

Antenatal Care (ANC) Visit Compliance

Antenatal Care (ANC) visit compliance refers to pregnant women's adherence to the recommended schedule of antenatal care services throughout pregnancy. Regular ANC visits enable healthcare providers to monitor maternal and fetal health, identify pregnancy complications at an early stage, provide preventive interventions, and promote healthy pregnancy outcomes. Compliance with ANC schedules is therefore considered an essential indicator of maternal healthcare utilization and quality of maternal health services.

Previous studies have demonstrated that delayed initiation of ANC substantially reduces the likelihood of completing the recommended number of antenatal visits. Kebede et al. (2024) found that more than seventy percent of pregnant women initiated their first ANC visit after 16 weeks of gestation, with inadequate information regarding ANC services, previous late ANC attendance, and unplanned pregnancy significantly contributing to delayed utilization. These findings suggest that timely initiation of ANC is fundamental to improving overall compliance with antenatal care schedules.

Healthcare Access as a Determinant of ANC Utilization

Healthcare access encompasses the physical, geographical, financial, and organizational ability of individuals to obtain appropriate healthcare services when needed. For pregnant women, healthcare access includes the availability of healthcare facilities, distance to health centers, transportation, travel time, affordability, and access to qualified healthcare professionals. Limited accessibility often discourages women from attending routine ANC services, especially in rural and underserved communities.

A cross-sectional study conducted across several low-resource settings demonstrated that spatial accessibility to maternal healthcare services strongly influences the continuity of maternal and perinatal healthcare utilization. Women living farther from healthcare facilities or experiencing transportation barriers were less likely to receive continuous maternal healthcare services throughout pregnancy (Li et al., 2024). Likewise, Dusingizimana et al. (2023) reported that adequate healthcare accessibility significantly increased the likelihood of pregnant women completing sufficient ANC visits in rural Rwanda, emphasizing that geographical accessibility remains one of the primary determinants of ANC compliance.

Geographic Barriers and Transportation Challenges

Geographical conditions frequently create significant obstacles that prevent pregnant women from accessing maternal healthcare services. Long travel distances, poor transportation infrastructure, seasonal environmental conditions, and high transportation costs often contribute to missed or delayed ANC visits. Such barriers are particularly evident in rural and geographically isolated regions where healthcare facilities are difficult to reach.

Mroz et al. (2023) demonstrated that seasonal flooding in Zambia substantially reduced geographical accessibility to maternal healthcare facilities by disrupting transportation routes and increasing travel time. Similarly, Kibret et al. (2023) reported that greater distance to healthcare facilities was associated with poorer maternal healthcare utilization and adverse neonatal outcomes, highlighting the importance of improving geographical accessibility to health services. These findings indicate that reducing physical barriers may contribute to better compliance with recommended ANC visits.

Structural and Socioeconomic Barriers to ANC Attendance

Besides geographical accessibility, structural and socioeconomic factors also influence pregnant women's ability to utilize antenatal healthcare services. These barriers include transportation expenses, limited service availability, socioeconomic disadvantage, and inadequate healthcare infrastructure. Even when healthcare services are available, women may

encounter difficulties accessing them because of financial constraints or limited transportation options.

Penman et al. (2023) found that disadvantaged women in Australia experienced multiple barriers to accessing antenatal care, including transportation difficulties, long travel distances, service limitations, and financial hardship. Likewise, Anggraeni et al. (2023) reported that pregnant women living in rural Indonesia experienced disruptions in ANC utilization due to transportation limitations, restricted mobility, and reduced accessibility to healthcare services during the COVID-19 pandemic. These studies demonstrate that healthcare access is influenced by both physical and socioeconomic dimensions that collectively affect ANC attendance.

Healthcare Access and Maternal Health Outcomes

Healthcare access not only influences ANC visit compliance but also contributes significantly to maternal and neonatal health outcomes. Adequate access enables pregnant women to receive timely health assessments, nutritional counseling, screening for pregnancy-related complications, immunizations, and appropriate referrals when necessary. Conversely, limited access often results in delayed diagnosis, missed preventive interventions, and an increased risk of adverse pregnancy outcomes.

Several studies have emphasized the importance of ensuring equitable access to maternal healthcare services. Li et al. (2024) demonstrated that improved spatial accessibility facilitates continuity of maternal and perinatal healthcare, enabling women to complete essential healthcare services throughout pregnancy. Similarly, Mroz et al. (2023) found that geographical barriers substantially reduced access to maternal healthcare, particularly during periods of environmental disruption, highlighting the need for resilient healthcare systems capable of maintaining service accessibility under challenging conditions.

In addition, Kibret et al. (2023) reported that greater distance to healthcare facilities was associated with poorer neonatal outcomes, suggesting that healthcare accessibility has implications beyond service utilization alone. These findings reinforce the perspective that improving healthcare access is an essential strategy for increasing ANC compliance, enhancing early detection of pregnancy complications, and ultimately reducing maternal and neonatal morbidity and mortality.

3. RESEARCH METHOD

This study employed a quantitative approach with a correlational analytic design to analyze the effect of healthcare access on Antenatal Care (ANC) visit compliance among

pregnant women. A significant relationship has been reported between maternal education level and ANC visit adherence, with studies also identifying information sources and accessibility as factors that significantly influence ANC compliance (Azahra et al., 2025; Utami & Remedina, 2022). The study was conducted in the Working Area of UPT Kasarangan Kasarangan Primary Health Center, Hulu Sungai Tengah Regency, South Kalimantan Province, from March to April 2026. The population consisted of all pregnant women in the area, with a total sample of 43 respondents (N=43). Subject selection was based on the phenomenon of a gap between the target and actual achievement of standard ANC visits (K1, K4, K6), where a visit dropout rate of 20.3% was identified in the area.

The research variables consisted of an independent variable, namely healthcare access, and a dependent variable, namely ANC visit compliance. Healthcare access was assessed based on indicators of travel distance, availability of healthcare personnel and equipment, and transportation costs. Meanwhile, ANC visit compliance was measured based on the standard minimum of six visits throughout the pregnancy period. Although some studies have focused on knowledge as a factor influencing ANC visit compliance, the present study specifically examines healthcare access as the primary determinant (Ardianto et al., 2024). Data collection was conducted through document study of the Kasarangan Kasarangan Primary Health Center Maternal and Child Health (KIA) Reports for 2024–2026, as well as structured interviews using a questionnaire instrument. Data analysis was carried out using statistical software through two levels of analysis: 1) Univariate analysis was used to describe the frequency distribution of respondent characteristics, including age, education level, occupation, gestational age (trimester), gravida status, and health insurance (BPJS) ownership. Similar studies have applied univariate analysis to describe characteristics such as age and gravida status prior to examining their relationship with ANC visit compliance (Adriani & Wahyuni, 2023); 2) Bivariate analysis was conducted to examine the strength of the relationship between healthcare access and visit compliance using Spearman's rho correlation test. The test result was considered statistically significant if the significance value (p-value) was less than the predetermined significance level of α=0.01. This approach is consistent with quantitative cross-sectional studies that employ bivariate analysis to investigate the relationship between respondent characteristics and ANC visit adherence (Fatriani, 2023).

4. RESULT AND DISCUSSION

Data analysis is a series of processes aimed at transforming raw data into meaningful information in order to draw scientific conclusions. Factors affecting the utilization of complete

ANC services, including cultural barriers, knowledge gaps, facility availability, and accessibility issues, are directly related to barriers in healthcare access and can inform strategies for improving ANC adherence (Hasanah et al., 2024). In this study, analysis was employed to statistically demonstrate whether barriers to healthcare access, such as distance and transportation costs, are directly associated with low ANC visit compliance among pregnant women at Kasarangan Primary Health Center. Given the observed visit dropout rate of 20.3%, this analysis is key to determining appropriate intervention strategies for pregnant women in the area.

Results of Data Analysis

Univariate Analysis

Univariate analysis was used to provide an overview of the frequency distribution of respondent characteristics and the main research variables. Descriptive statistical analysis offers a comprehensive overview of respondents' demographics and research variables, which aligns with the application of univariate analysis for examining frequency distributions (Sibarani et al., 2026).

Table 1. Demographic Characteristics of Respondents (Age, Education, Occupation).

Characteristics	Frequency (n)	Percentage (%)	Cumulative (%)
Gestational Age			
<20 years	1	2.3	2.3
20–35 years	37	86.0	88.4
>35 years	5	11.6	100.0
Total	43	100.0	—
Education Level			
Elementary School	22	51.2	51.2
Junior High School	16	37.2	88.4
Senior High School	5	11.6	100.0
Total	43	100.0	—
Occupation			
Housewife	35	81.4	81.4
Entrepreneur	8	18.6	100.0
Total	43	100.0	—

The majority of respondents were of productive age, ranging from 20 to 35 years (86.0%). However, the education level of respondents was relatively low, with 51.2% having only completed elementary school (SD). Additionally, the majority of respondents were housewives (81.4%).

Table 2. Clinical Characteristics and Health Insurance of Respondents (n=43).

Characteristics	Frequency (n)	Percentage (%)	Cumulative (%)
Gestational Age			
Trimester I	15	34.9	34.9
Trimester II	17	39.5	74.4
Trimester III	11	25.6	100.0

Total	43	100.0	—
Gravida			
Primigravida	6	14.0	14.0
Multigravida	37	86.0	100.0
Total	43	100.0	—
Health Insurance (BPJS)			
Yes	36	83.7	83.7
No	7	16.3	100.0
Total	43	100.0	—

Most respondents were in their second trimester (39.5%) and belonged to the multigravida group (86.0%). Regarding health insurance, the majority of respondents (83.7%) already possessed a BPJS card.

Table 3. Frequency Distribution of Healthcare Access and ANC Compliance.

Characteristics	Frequency (n)	Percentage (%)	Cumulative (%)
Healthcare Access			
Good	10	23.3	23.3
Sufficient	20	46.5	69.8
Poor	13	30.2	100.0
Total	43	100.0	—
ANC Visit Compliance			
Compliant	13	30.2	30.2
Non-Compliant	30	69.8	100.0
Total	43	100.0	—

The data revealed that healthcare access for pregnant women in this area was predominantly categorized as Sufficient (46.5%) and Poor (30.2%). This is consistent with the low compliance rate, where 69.8% of respondents were classified as non-compliant in completing standard ANC visits.

Bivariate Analysis

Bivariate analysis was conducted to examine the strength of the relationship between healthcare access and ANC visit compliance using Spearman's rho correlation test. Studies have applied Spearman's rho in bivariate analysis to test relationships between variables, demonstrating significant and strong correlation coefficients (Prabawa, 2025).

Table 4. Spearman's rho Correlation Test Results.

			Akses	Kepatuhan
Spearman's rho	Akses	Correlation Coefficient	1.000	.614**
		Sig. (2-tailed)	.	.000
		N	43	43
	Kepatuhan	Correlation Coefficient	.614**	1.000
		Sig. (2-tailed)	.000	.
		N	43	43

****. Correlation is significant at the 0.01 level (2-tailed).**

The statistical test results showed a Correlation Coefficient of 0.614 with a Sig. (2-tailed) value of 0.000. Since the significance value (0.000) < 0.01, it is concluded that there is a significant and strong relationship between healthcare access and ANC visit compliance. The positive direction of the correlation (0.614) indicates that the better the healthcare access available to pregnant women, the higher their compliance in completing ANC visits.

Discussion

The findings of this study confirm that healthcare access plays a decisive role in determining ANC visit compliance among pregnant women at Kasarangan Primary Health Center. Although the majority of respondents possessed BPJS health insurance (83.7%), the non-compliance rate remained high (69.8%). This indicates that health insurance ownership alone is insufficient without being accompanied by ease of physical access.

Based on preliminary study data, barriers such as long travel distances and transportation costs to reach the Primary Health Center were identified as the primary obstacles. This explains the visit dropout rate of 20.3% from K1 to K6. The strong correlation (0.614) found in this study confirms that pregnant women facing access barriers tend not to complete the standard six ANC visits throughout their pregnancy.

Therefore, efforts are needed to bring healthcare services closer to the community, particularly for those in the "Poor" access category, so that the risk of pregnancy complications can be detected early through consistent and compliant routine visits.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

The findings of this study demonstrate that healthcare access is a significant determinant of Antenatal Care (ANC) visit compliance among pregnant women. The statistical analysis confirms that better access to healthcare services is associated with a higher likelihood of completing the recommended ANC visits during pregnancy. This relationship highlights the importance of ensuring equitable access to maternal healthcare as part of efforts to improve maternal health service utilization.

The study also indicates that improving maternal health outcomes requires more than simply expanding healthcare coverage. Physical accessibility, affordability, and the availability of healthcare services should be considered as integrated components of maternal healthcare delivery. Addressing these dimensions simultaneously is essential to ensure that pregnant women can obtain timely and continuous antenatal care throughout pregnancy.

This study contributes empirical evidence regarding the influence of healthcare access on ANC compliance within the primary healthcare setting in South Kalimantan, Indonesia. Nevertheless, the findings should be interpreted with caution because the study was conducted in a single health center with a relatively small sample size. Future studies involving larger populations and multiple healthcare facilities are recommended to strengthen the generalizability of the findings and to explore additional determinants influencing ANC utilization.

Recommendations

Healthcare providers, particularly Kasarangan Primary Health Centers, should strengthen strategies that improve the accessibility of antenatal care services for pregnant women living in geographically disadvantaged areas. Expanding community-based maternal health services, optimizing outreach activities, and improving collaboration with local stakeholders may help reduce barriers related to distance and transportation while encouraging regular ANC attendance.

Health policymakers are encouraged to incorporate healthcare accessibility into maternal health planning by improving transportation support, strengthening referral systems, and ensuring equitable distribution of healthcare resources. Continuous monitoring of ANC coverage and identification of areas with low compliance are also necessary to facilitate targeted interventions that increase service utilization and reduce disparities in maternal healthcare access.

Future researchers are recommended to investigate additional factors that may influence ANC visit compliance, including maternal knowledge, family support, socioeconomic status, cultural beliefs, and the quality of healthcare services. Employing larger sample sizes, multicenter study settings, and longitudinal research designs would provide more comprehensive evidence regarding the complex determinants of ANC utilization and support the development of more effective maternal health interventions.

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