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The Relationship Between Distance To Health Facilities And Regularity Of Pregnancy Check-Ups (Anc) In Remote Areas

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ABSTRACT

Access to maternal health services is a determining factor in the success of maternal and child health programs. One important indicator is the regularity of antenatal care *(ANC) visits*, which is significantly influenced by geographic conditions, including distance to health facilities. This study aims to analyze the relationship between distance to health facilities and the regularity of antenatal care visits among pregnant women in remote areas.

The study used an observational analytical design with a cross-sectional approach. Sectional. The research population was all pregnant women in the working area of Health Center X, totaling 120 people, and the sample consisted of 80 respondents taken proportionally. Random sampling. Primary data were collected through interviews using a structured questionnaire, while secondary data were obtained from the KIA book and community health center reports. Data analysis was performed univariately and bivariately using the Chi- Square (χ^2) test with a 95% confidence level.

The results showed that 62.5% of respondents traveled >5 km to a health facility, and 58.7% did not undergo regular ANC check-ups. Statistical tests showed a p-value of 0.002 (<0.05), indicating a significant relationship between distance traveled and the regularity of prenatal check-ups. The longer the distance traveled, the lower the frequency of ANC visits.

In conclusion, difficult geographic access is a significant determinant of irregular antenatal care in remote areas. It is recommended that the government and health facilities expand the reach of maternal services through mobile services, the role of village midwives, and integrated integrated health posts (Posyandu) to improve the accessibility and regularity of ANC.

Keywords: Distance, Health Facilities, ANC, Pregnant Women, Remote Areas

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1. Introduction

Maternal health is a key indicator in assessing the health status of a community. *Antenatal care* (ANC) is a health service provided to pregnant women to monitor the condition of the mother and fetus and to detect early potential complications during pregnancy. According to the World Health Organization (WHO), Organization (WHO, 2020), pregnant women are advised to make at least eight ANC visits during pregnancy to obtain optimal health services and detect pregnancy risks as early as possible.

In Indonesia, maternal health improvement programs have been prioritized in efforts to reduce the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). However, coverage of regular prenatal checkups remains uneven across all regions. According to the Indonesian Health Profile (Ministry of Health, 2022) , there is still a gap in access to health services between urban and remote areas. One of the most influential factors is distance to health facilities.

Long distances, challenging geographic conditions, and limited transportation are major barriers for pregnant women in remote areas to access regular ANC services. Research by Siregar and Hutapea (2021) showed that mothers living more than five kilometers from a health facility were three times more likely to miss scheduled prenatal care than mothers living closer. This suggests that geographic factors strongly influence maternal health-seeking behavior.

Besides distance, other factors such as education level, socioeconomic status, and family support also play a role in ANC regularity. However, in remote areas, geographic access is often the dominant factor determining the affordability of healthcare services. This is in line with Andersen's theory. Behavioral Model of Health Services Use, which explains that physical access is an important component in health service utilization behavior.

Therefore, research is needed to examine the relationship between distance to health facilities and the regularity of prenatal care visits, particularly in remote areas. This research is expected to provide an empirical overview of the influence of geographic factors on pregnant women's behavior in utilizing ANC services and provide a basis for policymakers in designing strategies to ensure equitable access to maternal health services in hard-to-reach areas.

Based on this background, this study aims to analyze the relationship between the distance to health facilities and the regularity of antenatal care (ANC) in remote areas, so that the results can support efforts to improve equitable and just maternal health services.

2. Research Methods

a. Research Design

This study uses an observational analytical design with a cross-sectional approach. Sectional. This approach is used to determine the relationship between the independent variable (distance to a health facility) and the dependent variable

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(regularity of antenatal care/ANC visits) simultaneously. This design was chosen because it is effective in describing the relationship between variables in a population over a specific period.

b. Location and Time of Research

The research was conducted in the working area of Community Health Center X, which is a remote area with hilly geographical characteristics and limited transportation access. The research period took place from May to July 2025, which included the preparation stage, data collection, and analysis of results.

c. Population and Research Sample

The population in this study was all pregnant women in the working area of Health Center X, a total of 120 people.

Samples were taken using proportional techniques. random sampling, with a total of 80 respondents. Determination of sample size was carried out based on the Slovin formula with an error rate (α) of 5%.

1) Inclusion criteria:
   a) Pregnant women who have lived in the research area for at least six months.
   b) Willing to be a respondent and fill out the questionnaire.
2) Exclusion criteria :
   a) Pregnant women with severe complications who require special referral.
   b) Pregnant women who cannot be interviewed directly.

d. Research Variables and Operational Definitions

1) Independent variable (X):
   - Distance to health facilities, namely the distance between the respondent's residence and the nearest health facility (Community Health Center or Village Health Post).
   - Measured using kilometers (km) and categorized into:
     - Near: ≤ 5 km
     - Distance: > 5 km
2) Dependent variable (Y):
   - Regularity of pregnancy check-ups (ANC), namely the frequency of visits by pregnant women to health workers during pregnancy.
   - Based on the Ministry of Health guidelines (2022), it is categorized as:
     - Regular: ≥ 4 check-ups during pregnancy (1 time in the first trimester, 1 time in the second trimester, 2 times in the third trimester).
     - Irregular: < 4 check-ups during pregnancy.

e. Research Instruments

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The research instrument used a structured questionnaire that had been tested for validity and reliability on 20 respondents outside the research sample.

The questionnaire consisted of three sections:

1) Respondent identity (age, education, occupation, and parity).
2) Travel distance and transportation access data.
3) Frequency and regularity of ANC visits.

f. Data collection technique

Data is collected through:

1) Direct interviews using questionnaires by trained enumerators.
2) Review secondary documents, such as KIA books, ANC registers, and monthly health center reports to ensure the accuracy of data on pregnant women's visits.

g. Data Analysis Techniques

1) Univariate Analysis:

Used to describe respondent characteristics, distribution of travel distance, and regularity of ANC in the form of frequency and percentage tables.

2) Bivariate Analysis:

This was done to determine the relationship between distance to health facilities and regularity of ANC using the Chi- Square (χ^2) statistical test.

Significance level is set at $\alpha = 0.05$. If the *p-value* < *0.05*, then there is a significant relationship between the two variables.

3. Results And Discussion

a. Results

1) Respondent Characteristics

This study involved 80 pregnant women respondents in the working area of Community Health Center X, located in a remote area. Respondent characteristics are presented in the following table:

Table 1.
Distribution of Respondent Characteristics (n = 80)

Characteristics	Category	Frequency (f)	Percentage (%)
Mother's Age (years)	< 20	10	12.5
	20–35	57	71.3
	> 35	13	16.2
Last education	Elementary/Middle School	38	47.5
	SENIOR HIGH SCHOOL	33	41.3
	College	9	11.2
Work	Housewife	49	61.3

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Characteristics	Category	Frequency (f)	Percentage (%)
	Farmers/Laborers	22	27.5
	Employee/Business	9	11.2
Parity (number of children)	1–2	51	63.8
	≥ 3	29	36.2

Source: Primary data, 2025

Most respondents were in the healthy reproductive age group (20–35 years) and had secondary education. The majority of respondents worked as housewives.

2) Distribution of Travel Distance to Health Facilities and Regularity of ANC

Table 2.
Distribution of Travel Distance and Regularity of Pregnancy Check-ups (ANC)

Variables	Category	Frequency (f)	Percentage (%)
Distance to Health Facilities	≤ 5 km	30	37.5
	> 5 km	50	62.5
Regularity of Pregnancy Checkups (ANC)	Regularly (≥ 4 times)	33	41.3
	Irregular (< 4 times)	47	58.7

Source: Primary data, 2025

More than half of respondents (62.5%) traveled more than 5 km to a health facility, and most (58.7%) did not have regular pregnancy check-ups.

3) The Relationship Between Travel Distance and Regularity of Pregnancy Check-ups

Table 3.
Relationship between Distance to Health Facilities and Regularity of Pregnancy Check-ups (ANC)

Mileage	Regular (≥4x)	Irregular (<4x)	Total	% Irregular
≤ 5 km	20	10	30	33.3
> 5 km	13	37	50	74.0
Total	**33**	**47**	**80**	**58.7**

*Square Test (χ^2) = 9.57
p- value = 0.002 (< 0.05)

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Interpretation: There is a significant relationship between the distance traveled to health facilities and the regularity of pregnancy check-ups.

b. Discussion

The study results showed a significant relationship between distance to a health facility and regular antenatal care (ANC) visits. Pregnant women who lived more than 5 km from a health facility were less likely to attend ANC regularly than those who lived closer.

This finding aligns with research by Siregar and Hutapea (2021), which found that mothers living longer than five kilometers were three times more likely to miss a complete ANC visit. Difficult geographic conditions and limited transportation are major barriers for pregnant women in remote areas.

Besides distance, interviews revealed that other contributing factors, such as bad weather, poor road conditions, and limited transportation costs, also influence the regularity of ANC visits. Pregnant women who rely on public transportation or walk are more likely to delay prenatal care visits.

Andersen's theory. Behavioral Model of Health Services Use , which explains that physical access and the availability of health facilities are the main predisposing factors in the use of health services. The greater the distance and the more difficult the access, the less likely a person is to use those services regularly.

Geographic access- based interventions, such as strengthening the role of village midwives, home visits by health workers, and mobile ANC services. clinic. This strategy has proven effective in increasing the accessibility of maternal health services in hard-to-reach areas.

Thus, it can be concluded that the distance to health facilities has a significant relationship with the regularity of pregnancy check-ups, and is an important factor that must be considered in efforts to improve the quality of maternal health services in remote areas.

4. Conclusion And Suggestions

a. Conclusion

Based on the results of research on the relationship between distance to health facilities and the regularity of pregnancy check-ups (ANC) in remote areas, it can be concluded that:

1) Most pregnant women in the working area of Health Center X have a distance of more than 5 km to travel to health facilities and do not have regular pregnancy check-ups.
2) The results of the analysis showed that there was a significant relationship (p = 0.002) between the distance traveled to health facilities and the regularity of pregnancy check-ups.

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3) The further the distance that must be traveled, the lower the level of regularity of pregnant women in making ANC visits.
4) Geographical factors, such as difficult terrain, limited transportation facilities, and weather, are major obstacles to pregnant women's access to health services.

Thus, travel distance is a significant factor influencing the regularity of prenatal checkups in remote areas. Efforts to improve access to maternal health services should be a priority in public health program planning.

b. Suggestion

1) For the Health Department:

It is hoped that maternal health services in hard-to-reach areas will be strengthened by providing mobile service programs. clinic, increasing the number of village midwives, and optimizing integrated integrated health posts.

2) For Community Health Centers:

It is necessary to take an active approach to pregnant women who live far from health facilities through home visits and empowering village health cadres to monitor ANC compliance.

3) For Communities and Families:

It is hoped that families can provide transportation support and motivation to pregnant women to carry out routine pregnancy check-ups according to schedule.

4) For Further Researchers:

It is recommended to conduct research with a longitudinal or mixed design. methods to explore other factors that influence ANC regularity, such as socioeconomic conditions, maternal knowledge, and husband's support.

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