World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

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Enhancing antenatal care appointments: Analysis of influential factors at Hadimulyo Primary Health Centre, Lampung

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World Journal of Advanced Research and Reviews, 2025, 26(03), 2411-2419

Publication history: Received on 17 May 2025; revised on 23 June 2025; accepted on 25 June 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.26.3.2443

Abstract

Background: Antenatal care has an important impact on preventing complications that cause maternal death. The coverage of K1 ANC in Indonesia in 2023 was 96.9%, but K4 was 68.1%, and K6 was only 17.6%. At the Hadimulyo Primary Health Centre, the coverage of ANC was only 68.1% for K4 and only 30.3% for K6. This study aims to analyze the factors associated with antenatal care (ANC) visits in pregnant women at the Hadimulyo Primary Health Centre.

Method: This research used a quantitative approach with a cross-sectional design, involving 54 pregnant women in their second and third trimesters selected using consecutive sampling techniques at the Hadimulyo Primary Health Centre in 2025. The study employed questionnaires as its research instruments. Independent variables include age, parity, education, knowledge, distance from health facilities, a husband's support, and healthcare provider support, while the dependent variable is ANC visits. The data were processed and analyzed using chi-square and Spearman tests. For a multivariate analysis, use the logistic regression model.

Results: In this research, the significant factors found were age (p=0.061), parity (p=0.031), education (p=0.014), knowledge (p=0.716), distance to health facilities (0.018), husband's support (p=0.012), and healthcare provider support (p=0.043). Based on the multivariate analysis, a husband's support had a 10,122-times increase in ANC visits.

Conclusion: There is a significant association between education, distance to health facilities, husband's support, and healthcare provider support with ANC visits. However, there is no relationship between age, parity, and knowledge with ANC visits. The most related factor to ANC visits is the husband's support.

Keywords: Antenatal care; Pregnant women; Health system access; The husband support; Related factors

1. Introduction

The Maternal Mortality Rate (MMR) is a crucial metric for evaluating the effectiveness of maternal health services. One of the SDGs' goals is to decrease the world maternal mortality ratio to 70 per 100,000 live births by 2030. However, globally, the maternal mortality ratio (MMR) is 233 per 100,000, while in Indonesia, it is 189 per 100,000 live births [1]. An essential initiative to reduce maternal mortality rates (MMR) is to enhance antenatal care (ANC) visits, which facilitate the early identification of high-risk pregnancies and the avoidance of complications [2]. WHO recommends eight antenatal care (ANC) visits during pregnancy, whereas Indonesia encourages a minimum of six ANC visits (K1–K6) [3]. Although K1 has a satisfactory coverage of 96.9%, K6 has significantly decreased to only 17.6%. Lampung Province's rate is even lower, at 15.3% for K6 [4].

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A majority of pregnant women who executed ANC visits (76.4%) were aged between 21 and 35 years, indicating a correlation between age and the frequency of ANC appointments [5]. The mother's age significantly impacts mentality, enhancing adherence to antenatal care visits. Mothers in ages 20–35 years exhibit emotional maturity that facilitates the effective assimilation of knowledge and makes the right health-related decisions [6]. Parity affects antenatal care (ANC) visits, evidenced by research revealing that 33.3% of pregnant women with high parity fail to finish these appointments [7]. Mothers with several birth experiences frequently perceive themselves as experienced, resulting in a diminished motivation for prenatal check-ups [8]. Education may predispose mothers' decisions regarding antenatal care. A pregnant woman's degree of education correlates positively with her ability to comprehend information and adopt health-promoting habits for herself and her baby [6].

Other research indicates that the knowledge and support of the partner are associated with the completion of ANC visits. Based on research, 81.3% of mothers who possess high knowledge and 82.4% of mothers who receive their husband's support complete their ANC visits [9]. The husband's position as the primary companion during pregnancy is crucial for making collaborative decisions concerning the health of both the mother and the baby. In addition to husband support, professional healthcare providers' support can also predispose the antenatal care behavior of pregnant women. Pregnant women who receive enough support from healthcare providers are more likely to attend optimal antenatal care visits compared to those who receive insufficient support [10]. The distance to healthcare facilities is a determinant of antenatal care for pregnant women. Pregnant women who live closer to health facilities are more likely to consistently utilize antenatal services than those who live further away. Nevertheless, this does not signify that pregnant woman residing at further distances refrain from utilizing services entirely; rather, they sometimes opt for examination locations that are nearer to their homes, even if these are outside the designated operational area of a certain health facility [11].

Hadimulyo Primary Health Centre is in the border region between Lampung Province and South Sumatera, an area with the lowest ANC coverage in the Regency. Therefore, it is important to understand the characteristics of pregnant women and the factors related to ANC visits to improve antenatal care coverage, which can help reduce complications during pregnancy and labor that cause maternal mortality. The aim of this study was to analyze factors related to ANC visits in pregnant women at the Hadimulyo Primary Health Centre, Lampung.

2. Material and methods

2.1. Study design

This research used quantitative observational analysis with a cross-sectional design.

2.2. Sample

2.2.1. Inclusion

- Pregnant women in the second and third trimesters
- pregnant women ready to participate in this research

2.2.2. Exclusion

- Pregnant women with psychiatric illnesses
- Unregistered pregnant women who have never undergone an ANC screening within the Hadimulyo Primary Health Centre

2.2.3. extensive sample

54 pregnant women

2.2.4. sampling technique

Consecutive sampling technique

2.3. Location and Time of Research

The location of this research is Hadimulyo Primary Health Centre, Lampung, and it was conducted from January to March 2025.

2.4. Variables

The independent factors include age, parity, education, knowledge, distance to health facilities, husband's support, and healthcare provider support. Whereas the dependent factor is Antenatal care (ANC) visits. Antenatal care, as per standards, requires a minimum of one ANC visit in the 1st trimester or two visits in the 2nd trimester, along with contact with a doctor once in the 1st trimester and once in the 3rd trimester.

2.5. Instrument of research

This research was obtained from questionnaires that were filled in by counseling participants, and also secondary data from the KIA book, or cohort of pregnant women, to view ANC visit history.

2.6. Data analysis

In this research a bivariate test was carried out using chi-square and Spearman statistical tests to assess the relationship and also conducted a multivariate analysis to identify the factors that significantly influenced ANC.

3. Results

Hadimulyo Primary Health Centre, located on the border of Lampung Province and South Sumatra, has the lowest ANC visit achievement in Mesuji Regency, with a K1 percentage of 56.9% and K4 of 56.5% in 2024. Although almost all health workers are available, there is no dentist at this health centre. The study was conducted on 54 pregnant women who met the inclusion criteria in the Hadimulyo Primary Health Centre work area. Data were collected during Integrated health service post activities by first providing an explanation, asking for approval through informed consent, and distributing questionnaires. In this research, data on the number of ANC visits was obtained by examining the KIA book.

3.1. Characteristic of participant

Table 1 Characteristic of participant

Variable	Frequency (n)	Percentage (%)
Age		
< 20 years	6	11.1
20-35 years	34	63
> 35 years	14	25.9
Number of children		
Not yet	18	33.3
1-2	34	63
≥ 3	2	3.7
Educational		
Elementary and Middle School	34	63
Senior High School	14	25.9
academy/bachelor	6	11.1
Job		
Housewife	30	55.5
Teacher	5	9.3
Seller	11	20.4
labourer	8	14.8

distance to health facilities		
≤ 3 km	19	35.2
> 3 km	35	64.8
Most frequently visited health facilities		
Primary health care	11	20.4
Village health post	2	3.7
Integrated health service post	30	55.5
Doctor	8	14.8
Hospital	3	5.6
National health insurance		
Participant	30	55.6
Not a participant	24	44.4
Total	54	100

Table 1 presents data on participant characteristics, encompassing age, number of children, education, job, distance to health facilities, location of ANC visits, and national health insurance. The majority of pregnant women participating in this study were within the healthy reproductive age range of 20 to 35 years; that is 63% of the participants. 63% of the pregnant women already have 1–2 children, 63% of the participants had basic education, and 55.5% are housewives. 64.8% of participants live more than 3 km from health facilities. Most pregnant women choose integrated health service post as a place to carry out ANC checks; as many as 55.5% and also 55.6% are participants of national health insurance.

3.2. Univariate analysis

Table 2 Univariate analysis

Variable	**Frequency (n)**	**Percentage (%)**
Age		
No Risk (20-35 years)	34	63
High Risk (< 20 dan > 35 years)	20	37
Parity		
Primipara	18	33.3
Multipara	36	66.7
Level of education		
Low education	34	63
Medium education	14	25.9
Higher education	6	11.1
Knowledge		
Well	16	29.6
Enough	35	63
Not Good	4	7.4
Distance to health facilities		
Near	19	35.2

Far	35	64.8
Husband support		
Support	40	74
Does not support	14	26
Healthcare provider support		
Does not Support	26	48
Support	28	52
ANC visits		
Standard	31	57.4
Not standard	23	42.6
Total	54	100

The univariate analysis results in table 2 indicate that the majority of participants (63%) belong to the non-risk age category of 20–35 years. Most of them are multiparous, namely 66.7%. 63% of the participants have a basic educational background, specifically in elementary and junior high school. According to the questionnaire results, a majority of respondents (63%) had enough understanding of prenatal care (ANC). A majority of respondents (64.8%) live at a far distance from health facilities. Regarding social support, the majority of respondents (74%) indicated that their husbands facilitated attendance at ANC visits, and also 52% of participants perceived that they received it from healthcare providers. The research indicates that 57.4% of pregnant women do standard antenatal care visits.

3.3. Bivariate analysis

Table 3 Bivariate analysis

Variable Independent	**ANC visits**				**P-value**
	Standard		**Not Standard**		
	n	**%**	**N**	**%**	
Age					
Not risk	24	70.6	10	29.4	0.061
Risk	7	35	13	65	
Parity					
Primipara	12	66.7	6	33.3	0.331
Multipara	19	52.8	17	47.2	
Level of education					
Low education	23	67.6	11	32.4	0.014*
Medium education	6	42.9	8	57.1	
Higher education	2	33.3	4	66.7	
Knowledge					
Well	13	81.3	3	18.8	0.716
Enough	18	51.4	17	48.6	
Not Good	1	25	3	75	
Distance of health facilities					
Near	14	73.7	5	26.3	0.018*

Far	17	48.6	18	51.5	
Husband support					
Support	28	70	12	30	0.012*
Does not support	3	21.4	11	78.6	
Health worker support					
Support	11	42.3	15	57.7	0.041*
Does not support	20	71.4	8	28,6	
Total	31	57.4	23	42.6	

*there is a significant association with the antenatal care visits

Table 2, the bivariate analysis using the chi-square test, indicates no significant correlation between age and ANC visits, and there is also no significant correlation between parity and ANC visits with a p-value greater than 0.05. The research results indicate a significant correlation between distance to health facilities, husband support, and healthcare provider support with ANC visits (p-value < 0.05). The Spearman test indicates a relationship between education level and ANC visits with $p < 0.05$. The same test on the knowledge variable indicates no significant correlation between pregnant women's knowledge levels and ANC visits, with a p-value of more than 0.05.

3.4. Multivariate analysis

Table 4 Multivariate analysis

Variable	**B**	**Sig.**	**Exp(B)**	**95% C I For EXP(B)**	
				Lower	**Upper**
Age	1.694	0.061	5.443	0.925	32.031
Education	-2.171	0.014	0.114	0.020	0.640
Distance from health facilities	2.267	0.018	9.648	1.473	63.202
Husband Support	2.315	0.012	10.122	1.655	61.890
Health worker support	1.722	0.043	5.597	1.057	29.640
Constant	-3.167	0.006	0.042		

Table 4 presents a multivariate analysis using backward logistic regression, which revealed that the most influential factor in antenatal care (ANC) visits was support from the husband (RR = 10.122; $p < 0.05$), followed by the distance they lived from the health facilities (RR = 9.648; $p < 0.05$) and support from healthcare providers (RR = 5.597; $p < 0.05$). All three factors were found to significantly impact pregnant women's attendance at ANC visits. However, the support from the husband emerged as the most significant factor influencing pregnant women’s adherence to antenatal care standards.

4. Discussion

Factors influence pregnant women’s decisions to make antenatal care (ANC) visits, including support from their husbands, distance to health facilities, healthcare providers’ support, and education. Pregnant women who receive support from their husbands are more likely to adhere to normal antenatal care visits [12]. The husband's help includes not only financial and transportation assistance but also emotional support and knowledge. The distance to health facilities can be an obstacle for pregnant women in making ANC visits due to various factors, such as fatigue during the trip, limited transportation facilities, and additional costs that must be incurred for transportation [13]. The lack of public transportation, unpaved roads, and slippery conditions during rain are important factors that pregnant women consider when deciding to visit health facilities for antenatal care (ANC) standards. Nasution (2023) reveals that there is a significant correlation between healthcare provider support and antenatal care visits. Pregnant women who receive adequate support from healthcare professionals are more likely to have regular pregnancy check-ups in accordance with established guidelines. Maternal education level affects the frequency of ANC [14], as demonstrated by the results

in this study. However, it does not mean that pregnant women with low education have low knowledge about ANC. They receive a lot of information about pregnancy check-ups from local health cadres and midwives, which increases their knowledge about ANC. Research findings indicate that low-educated individuals do not necessarily possess inadequate knowledge [15].

Husband involvement in ANC visits has been proven to have a positive and effective impact on increasing mothers' knowledge of pregnancy risk signs, encouraging the use of health facilities, and helping to reduce stress and anxiety during the labour process [16]. Husbands play an important role in supporting the achievement of a healthy pregnancy for mother and foetus. Therefore, the involvement of husbands needs to be increased to strengthen the behaviour of pregnant women in conducting ANC visits optimally and completely. Participation by the husband or family in at least one session of the pregnancy class must be done to provide an opportunity for the husband to understand important materials, such as preparation for childbirth, which can increase their support for pregnant women during pregnancy and postpartum [3]. Therefore, efforts to promote pregnancy-related health should focus on pregnant women and involve husbands. This effort aims to improve husbands' understanding and knowledge about pregnancy so that they can provide optimal support to pregnant women, including in conducting ANC visits according to standards.

Pregnant women of non-risk age tend to follow ANC standards. At this age, women are considered more ready to face changes during pregnancy and when playing the role of mother [17]. Researchers concluded that pregnant women aged <20 years still do not have the physical or mental readiness to face pregnancy. For mothers aged over 35 years, their motivation decreases due to previous pregnancy experiences. Some multiparous mothers fail to adhere to standard ANC procedures. This aligns with research indicating that multigravida or grand multipara mothers who have had previous normal pregnancy experiences tend to decrease their routine ANC visits, as they often rely on their knowledge and experience from past pregnancies to manage the physical and psychological changes in their current pregnancy [18]. Past experiences profoundly shape the journey of multiparous mothers during pregnancy, especially those over 35. While the wisdom gained from previous pregnancies can offer a sense of confidence, it often leads to a decrease in motivation to engage with standard antenatal care (ANC) practices. This reliance on prior knowledge may result in some mothers neglecting essential procedures designed to safeguard their health and that of their unborn children. Consequently, the interplay between experience and motivation highlights a complex dynamic, where the lessons learned may simultaneously empower and hinder these mothers' adherence to recommended ANC practices. Understanding this balance is crucial in developing targeted support systems that encourage active participation in prenatal care, ultimately fostering healthier outcomes for both mother and child.

Pregnant women's knowledge of the benefits of health services, especially antenatal care, can form a positive attitude that encourages them to make ANC visits [19]. This positive attitude can lead to increased utilization of antenatal care services, ultimately improving maternal and foetus health outcomes. By understanding the advantages of these services, pregnant women are more likely to prioritize their health and seek necessary medical support [20]. Sufficient knowledge will provide a pregnant woman with the foundation to make ANC visits according to standards, as it helps her understand the importance of ANC. However, adequate knowledge alone does not have a significant influence on a mother's decision to have an antenatal check-up (ANC) if it is not supported by the husband's involvement, accessibility to health facilities, and support from healthcare providers. This multifaceted approach illustrates the importance of a supportive environment that includes both partners and accessible healthcare resources. Only through a combination of knowledge, partnership, and support can we effectively encourage pregnant women to prioritize their antenatal care.

This study has limitations on the variables of husband support and healthcare provider support because it does not involve husbands or healthcare provider directly as participants. Therefore, the data obtained is only based on the perspective of pregnant women. We hope that future research will examine the perspectives of husbands and healthcare provider

5. Conclusion

The research done at the Hadimulyo Primary Health Centre in Lampung concludes that factors with significant associations to ANC visits include education, distance to health facilities, husband support, and healthcare provider support. Therefore, age, parity, and knowledge are unrelated to ANC visits. The most determinant factor affecting ANC visits is the support of the husband. It is hoped that there will be an increase in husband involvement through more intensive and innovative educational programs and approaches, such as creating special class activities for husbands of pregnant women, so that support for pregnant women can be more optimal.

Compliance with ethical standards

Acknowledgments

The author would like to thank Directorate General of Health Personnel, Ministry of Health of the Republic of Indonesia.

Disclosure of conflict of interest

All authors confirm that there is no conflict of interest related to the results of the research.

Statement of ethical approval

This research has received ethical approval from the ethics committee of the Faculty of Medicine, Airlangga University, with certificate number 45/EC/KEPK/FKUA/2025.

Statement of informed consent

This study has obtained consent from respondents after being given an explanation of the objectives, procedures, and benefits. All participants have signed the consent form after understanding the contents of the study and are willing to participate voluntarily.

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