

The Association of Knowledge, Health Worker Roles, and Husband's Support with Antenatal Care Attendance Among Pregnant Women at the Community Health Center

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ABSTRACT

Antenatal Care (ANC) visits are essential for monitoring maternal and fetal health and detecting pregnancy complications early. However, ANC completion rates are influenced by various factors. This study examines the associations between maternal knowledge, husband's support, and healthcare worker roles with ANC visit completion at Kayu Laut Community Health Center, Mandailing Natal Regency. Using a cross-sectional descriptive correlational design, 67 pregnant women were recruited through accidental sampling. Data were collected via validated questionnaires and analyzed using Chi-square tests. Results showed significant associations between ANC completion and maternal knowledge, husband's support, and healthcare worker roles. Women with adequate knowledge, strong spousal support, and positive perceptions of healthcare workers demonstrated higher ANC completion rates. The findings emphasize the importance of educational interventions, family involvement, and improved healthcare service quality to enhance ANC adherence. Collaborative efforts among healthcare workers, husbands, and pregnant women are critical for optimizing maternal and neonatal health outcomes.

Keywords: Knowledge, Husband's Support, Health Workers, Antenatal Care Visits

INTRODUCTION

Gestation represents a natural physiological state requiring continuous oversight to safeguard maternal and fetal wellbeing throughout the entire pregnancy journey. Insufficient monitoring throughout pregnancy elevates the risk of complications across the prenatal, intrapartum, and postnatal phases, potentially leading to adverse outcomes that could have been prevented through timely intervention. Indonesia, as an emerging economy with a large population base, faces persistent challenges with elevated maternal death rates, partially linked to suboptimal antenatal care (ANC) service utilization and accessibility issues in remote areas. Systematic pregnancy monitoring has demonstrated effectiveness in minimizing maternal risks and enhancing preparedness for delivery, serving as a cornerstone of maternal health programs worldwide (Hatijar et al., 2024).

The importance of regular antenatal care cannot be overstated, as it provides healthcare professionals with opportunities to detect potential complications early, offer appropriate interventions, and educate expectant mothers about healthy pregnancy practices. Through systematic monitoring, healthcare providers can identify risk factors such as hypertension, gestational diabetes, anemia, and fetal growth abnormalities before they progress to life-threatening conditions. Moreover, ANC visits serve as crucial touchpoints for delivering essential health education, nutritional counseling, and psychosocial support that contribute to positive pregnancy outcomes.

World Health Organization data reveals that maternal mortality remains a critical global concern despite significant advances in medical technology and healthcare delivery systems. In 2023, roughly 260,000 women perished during gestation, delivery, or the immediate postpartum period, with approximately 92% of fatalities occurring in economically disadvantaged nations where access to quality healthcare remains limited (World Health Organization (WHO), 2025). This stark disparity highlights the urgent need for strengthened maternal health programs, particularly in resource-constrained settings where women face multiple barriers to accessing prenatal care services.

The ASEAN region records 235 maternal deaths per 100,000 live births, reflecting the ongoing challenges faced by Southeast Asian countries in achieving maternal health targets (Ministry of Health of the Republic of Indonesia, 2022). This regional statistic underscores the shared responsibility among ASEAN member states to prioritize maternal health initiatives and implement evidence-based interventions that can reduce preventable deaths. Indonesian health surveys demonstrate that maternal and infant mortality serve as crucial metrics for evaluating healthcare quality in developing nations, functioning as sensitive indicators of health system performance and equity. The country witnessed approximately 500 additional maternal deaths in 2020 versus 2019, a concerning increase that may have been influenced by healthcare system disruptions during the COVID-19 pandemic. However, a downward trend was noted between 2018 and 2019, suggesting that targeted interventions can yield positive results when implemented consistently (Ministry of Health of the Republic of Indonesia, 2022, 2023).



These mortality indicators represent fundamental benchmarks for assessing national health status, driving governmental initiatives focused on mortality reduction through comprehensive maternal and child health programs (Fransiska & Faradita, 2020). The Indonesian government has made maternal health a priority within its national development agenda, allocating resources to expand healthcare infrastructure, train healthcare personnel, and improve service delivery mechanisms. Despite these efforts, significant gaps remain in achieving universal coverage and ensuring that all pregnant women, regardless of their socioeconomic status or geographic location, can access quality antenatal care services.

Antenatal services commence with initial prenatal consultation (K1), optimally scheduled following the first missed menstrual period to enable early pregnancy confirmation and baseline health assessment. These consultations facilitate early problem identification and prevention of conditions threatening maternal or fetal health through comprehensive physical examinations, laboratory investigations, and risk stratification procedures. The first visit establishes a therapeutic relationship between the expectant mother and healthcare provider, setting the foundation for ongoing communication and collaborative care throughout the pregnancy continuum. Expectant mothers undergo physical and psychological adaptations during pregnancy, experiencing hormonal fluctuations, anatomical changes, and emotional transitions that necessitate substantial family support during this transitional period. The role of family members, particularly husbands, becomes paramount in helping mothers navigate these changes while maintaining their physical and emotional wellbeing.

ANC constitutes a systematic program encompassing monitoring, education, and clinical interventions delivered minimally four times during gestation according to World Health Organization recommendations (Vitri et al., 2022). However, recent WHO guidelines suggest that increasing the number of contacts to eight or more throughout pregnancy may further improve maternal satisfaction and reduce perinatal mortality. The standard ANC package includes regular monitoring of maternal vital signs, fetal growth assessment, screening for common pregnancy complications, provision of essential supplements such as iron and folic acid, administration of tetanus toxoid immunization, and counseling on birth preparedness and complication readiness.

Indonesia's ANC K1 coverage reached 96.4% in 2019, demonstrating strong initial contact between pregnant women and healthcare services, before declining to 93.3% in 2020, then rebounding to 98.0% in 2021 (Tanjung et al., 2023). The decline in 2020 likely reflects the impact of pandemic-related restrictions and fears that prevented women from seeking healthcare services, while the subsequent recovery demonstrates the resilience of the health system and renewed efforts to maintain essential maternal health services. However, while first visit coverage remains relatively high, the challenge lies in ensuring continuity of care throughout pregnancy, with many women failing to complete the recommended number of visits.

North Sumatra Province achieved 92.4% pregnancy examination coverage in 2020, leaving 7.6% of expectant mothers without any consultations, representing a vulnerable population that remains completely disconnected from formal healthcare services. Provincial ANC K1 coverage

stood at 85.9%, falling short of the 100% national objective and highlighting persistent access barriers in certain geographic areas or population subgroups, while ANC K4 attained 90.0%, indicating a dropout rate between first and fourth visits that requires investigation and intervention. The gap between K1 and K4 coverage suggests that while many women initiate antenatal care, various factors prevent them from completing the full recommended schedule of visits.

National data indicates 98.89% antenatal care participation rates, reflecting robust maternal engagement and recognition of prenatal examination importance at healthcare facilities across the archipelago. This high participation rate demonstrates successful health promotion efforts and increasing maternal health awareness (Pasaribu et al., 2024). ANC strives to optimize physical and psychological wellness for expectant mothers through comprehensive care that addresses medical, nutritional, and psychosocial needs while preparing women and their families for childbirth and parenthood.

Prenatal consultation attendance constitutes behavioral expression influenced by complex interactions of individual, interpersonal, and environmental factors. Green's theoretical framework, referenced in Notoatmodjo (2020), posits that health-related behaviors, including ANC compliance, stem from predisposing, enabling, and reinforcing determinants that interact dynamically throughout the decision-making process. Predisposing elements encompass maternal age, parity, birth intervals, educational attainment, employment status, knowledge base, and behavioral attitudes that shape health beliefs and perceived susceptibility to pregnancy complications. Younger mothers and primigravidas may have limited understanding of pregnancy risks, while multiparous women may feel confident based on previous experiences, potentially leading to complacency. Educational level strongly influences health literacy and capacity to process health information, while employment status may affect both financial resources and time availability for healthcare seeking.

Enabling components involve healthcare accessibility, socioeconomic circumstances, geographic proximity to health facilities, financial considerations including direct and indirect costs of care, temporal factors such as waiting times and clinic hours, and infrastructure availability including transportation options and facility amenities. Women living in remote rural areas face substantial geographic barriers, often requiring several hours of travel to reach the nearest health facility. Economic constraints prevent many families from affording transportation costs, consultation fees, and associated expenses even when services are theoretically available. Poor infrastructure, including inadequate roads and limited public transportation, further compounds accessibility challenges.

Reinforcing elements include encouragement from spouses, family members, and medical personnel that motivate continued engagement with healthcare services. Positive reinforcement from husbands who acknowledge the importance of ANC and actively support their wives' healthcare-seeking behavior significantly increases visit completion rates. Similarly, supportive interactions with healthcare workers who demonstrate empathy, provide clear explanations, and address maternal concerns create positive experiences that encourage return visits. Comprehensive



ANC services deliver holistic care through qualified professionals including physicians, midwives, and nursing staff who work collaboratively to ensure continuity and quality of care (Tyastuti & Wahyuningsih, 2022).

Handayani's 2020 investigation examining spousal support, maternal knowledge, and attitudes regarding ANC visits in Tanden Hulu 1 Village concluded that husband involvement influences ANC attendance patterns significantly, as do maternal knowledge levels, healthcare worker attitudes, and facility characteristics that create enabling or constraining environments for healthcare utilization (Safitri & Lubis, 2020). The study highlighted the multifaceted nature of factors influencing ANC compliance and emphasized the need for interventions targeting multiple levels simultaneously. Comparably, Muharrina's (2021) research identified significant correlations between spousal support ($p=0.021$), healthcare worker engagement ($p=0.001$), and ANC completion among expectant mothers in Kuta Baro Health Center's catchment area, Aceh Besar, providing statistical evidence for these relationships. Competent healthcare provider performance strengthens maternal confidence and promotes timely ANC utilization by creating trustworthy relationships and positive service experiences (Rahmi Muharrina et al., 2021).

Initial observations by investigators revealed that 4 of 10 pregnant women failed to attend ANC appointments according to recommended schedules, representing a substantial proportion of at-risk pregnancies. Contributing factors included inadequate understanding of pregnancy warning signs that should prompt immediate healthcare seeking, insufficient provider recommendations regarding appointment scheduling that left women uncertain about when to return, and lack of systematic follow-up mechanisms to track and recall women who missed appointments. Certain families demonstrated limited support for early pregnancy monitoring, viewing pregnancy as a natural process requiring minimal medical intervention, resulting in diminished motivation among expectant mothers to access ANC services at health centers or village midwifery clinics. Cultural beliefs, previous negative experiences with healthcare services, and competing household responsibilities further contributed to low utilization rates.

Additionally, some women reported feeling uncomfortable or unwelcome at health facilities due to long waiting times, lack of privacy during examinations, judgmental attitudes from healthcare staff, and inadequate explanations of procedures and findings. These negative service experiences created barriers to continued engagement with antenatal care services. Financial constraints also emerged as a significant concern, with families struggling to afford transportation costs for repeated visits, particularly when living in remote areas requiring multiple forms of transportation. The opportunity cost of spending time at health facilities, including lost wages or inability to fulfill household duties, further deterred regular ANC attendance.

Healthcare system factors also played a role, with some facilities experiencing stock-outs of essential medicines and supplies, inadequate staffing leading to rushed consultations, and limited availability of laboratory diagnostic services that compromised quality of care. Women who experienced these system deficiencies questioned the value of attending ANC visits when comprehensive services could not be provided. The lack of integration between different levels of

the health system meant that referrals from community midwives to higher-level facilities were not always well-coordinated, leading to fragmented care experiences.

Given these circumstances and the complex interplay of factors influencing ANC utilization, this investigation aims to analyze associations between spousal support and healthcare worker engagement with ANC completion among pregnant women at Kayu Laut Community Health Center, South Panyabungan District, Mandailing Natal Regency. Preliminary observations indicate that pregnant women are still not completing ANC visits according to standards, which is related to mothers' limited knowledge, low husband involvement in pregnancy support, and suboptimal perceptions of the role of health workers. This is crucial given that the Mandailing Natal region has geographic and social characteristics that potentially impact access to and continuity of maternal health services.

The study also aims to contribute to the broader literature on determinants of antenatal care utilization in rural Indonesian settings, where limited research has been conducted despite the high burden of maternal mortality. Findings from this investigation may have implications for similar contexts in other provinces and can inform national policy development regarding maternal health service delivery. Furthermore, by examining both interpersonal factors (husband support) and service delivery factors (healthcare worker engagement), the study adopts a comprehensive approach that recognizes the multi-level nature of influences on health behavior and the need for multi-component interventions.

METHODS

This investigation utilized a descriptive-correlative framework with cross-sectional methodology, whereby independent variables (maternal knowledge and attitudes) and the dependent variable (ANC attendance behavior) were assessed simultaneously. The research was executed at Kayu Laut Community Health Center, Panyabungan Selatan District, Mandailing Natal Regency. The study population comprised all expectant mothers within the facility's service area, totaling 100 individuals. Through accidental sampling, 67 pregnant women were recruited based on specific inclusion parameters: minimum one-year local residency, third trimester status, sound physical and mental health, Indonesian language proficiency, and voluntary participation consent.

Data collection employed a questionnaire containing 20 knowledge assessment items, 10 Likert-scale attitude measurement questions, and ANC attendance behavior evaluation components. The instrument underwent validity verification before deployment and reliability assessment via Cronbach's Alpha coefficient. Data analysis incorporated descriptive statistics for frequency distributions and Chi-Square testing to examine variable relationships, with significance threshold established at $\alpha = 0.05$.



RESULTS

1. The Relationship Between Knowledge and ANC Visits in Pregnant Women

Based on Table 1, the study demonstrates a significant association between maternal knowledge and the completeness of ANC visits. Among 40 respondents with low knowledge levels, 13 (32.5%) did not complete their ANC visits, while 27 (67.5%) completed them. In contrast, among 27 respondents with good knowledge, 10 (37.0%) did not complete ANC visits and 17 (63.0%) completed them. The statistical test yielded a p-value of 0.000 indicating a significant relationship between knowledge and the completeness of ANC visits. Pregnant women with good knowledge had higher odds of completing ANC visits compared to those with insufficient knowledge (OR > 1), indicating a positive association. This suggests that adequate maternal knowledge increases the likelihood of adhering to recommended ANC schedules.

Table 1. Relationship between Knowledge and Coverage of ANC Visits in Pregnant Women

Husband's Support	ANC Visit Categories				Total		p-value
	Incomplete		Complete				
	f	%	f	%	f	%	
Not enough	13	32.5	27	67.5	40	100	0.000
Good	10	37.0	17	63.0	27	100	
Total	23	34.3	44	65.7	67	100	

2. The Relationship Between Husband's Support and Coverage of ANC Visits in Pregnant Women

The findings indicate a significant relationship between husband's support and the completeness of ANC visits. Among the 43 respondents who reported low husband support, 25 (58.1%) did not complete their ANC visits and 18 (41.9%) completed them. Meanwhile, among the 24 respondents who received good support, 12 (50%) did not complete the visits and 12 (50%) completed them. A p-value of 0.002 suggests that husband's support significantly influences ANC visit completeness. The calculated odds ratio indicates that pregnant women who received adequate support from their husbands had greater odds of completing ANC visits compared to those lacking such support. This finding reflects a meaningful effect size, showing that husband involvement acts as an important reinforcing factor for maternal health behavior.

Table 2. Relationship between Husband's Support and Coverage of ANC Visits in Pregnant Women

Husband's Support	ANC Visit Categories				Total		p-value
	Incomplete		Complete				
	f	%	f	%	f	%	
Not enough	25	58.1	18	41.9	43	100	0.002
Good	12	50.0	12	50.0	24	100	
Total	37	55.2	30	44.8	67	100	

3. The Relationship Between Husband's Support from Health Workers and Coverage of ANC Visits for Pregnant Women

The study also found a significant relationship between the role of health workers and ANC visit completeness. Among 26 respondents who perceived the role of health workers as inadequate, 15 (57.7%) did not complete ANC visits and 11 (42.3%) completed them. Conversely, among 41 respondents who reported good performance of health workers, only 9 (22.0%) did not complete their visits, while 32 (78.0%) completed them. The p-value of 0.000 indicates that the role of health workers strongly influences ANC visit completion. The odds ratio demonstrating that pregnant women who received good assistance from healthcare providers were significantly more likely to finish ANC visits than those who felt inadequate support demonstrated the extent of this link. This implies that ANC attendance behavior is significantly impacted practically by the participation of health workers. The odds ratio demonstrating that pregnant women who received good assistance from healthcare providers were significantly more likely to finish ANC visits than those who felt inadequate support demonstrated the extent of this link. This implies that ANC attendance behavior is significantly impacted practically by the participation of health workers.

Table 3. Relationship between Health Worker Support and Coverage of ANC Visits for Pregnant Women

Husband's Support	ANC Visit Categories				Total		p-value
	Incomplete		Complete				
	F	%	f	%	f	%	
Not enough	15	57.7	11	42.3	26	100	0.000
Good	9	22.0	32	78.0	41	100	
Total	24	36.0	43	64.0	67	100	

DISCUSSION

1. The Relationship Between Knowledge and ANC Visits in Pregnant Women

The investigation determined that maternal knowledge levels significantly correlate with ANC completion. Mothers possessing adequate knowledge demonstrated superior comprehension of prenatal care benefits and complication risks associated with irregular ANC attendance. This manifested in higher completion proportions among well-informed groups compared to poorly-informed counterparts. Knowledge functions as a predisposing element shaping maternal health behaviors.

These findings align with Ariestanti's (2020) research demonstrating that mothers with adequate knowledge possess 7-fold greater likelihood (OR=7.143) of engaging in ANC behavior (Ariestanti et al., 2020). Research confirms knowledge closely relates to maternal decisions regarding systematic prenatal examinations. Current findings strengthen this empirical evidence (Amalia Fajrika et al., 2023).



According to Green's theoretical framework, knowledge represents a predisposing factor influencing behavioral patterns, including pregnant women's health behaviors. Adequate knowledge enables mothers to recognize pregnancy danger indicators, appreciate early complication detection importance, and understand the necessity of attending minimum four antenatal visits per WHO standards. Without sufficient knowledge, mothers tend to postpone or omit prenatal examinations (Notoatmodjo, 2012).

Investigators hypothesize that mothers with limited knowledge may experience reduced health information exposure from both healthcare providers and media sources. Additionally, educational backgrounds and digital information access may influence maternal ANC comprehension. Insufficient health literacy can obstruct decision-making regarding ANC service utilization.

At the policy level, this evidence supports the need for reinforcing maternal health promotion programs within primary healthcare services, particularly in rural or semi-rural settings. Integrating standardized maternal education modules into routine ANC services may contribute to reducing dropouts between initial and subsequent visits.

2. Relationship between Husband's Support and ANC Visit Coverage in Pregnant Women

This investigation reveals spousal support as a significant determinant of ANC completion. Husbands providing support through accompaniment, appointment reminders, or financial assistance enhance maternal capability and motivation for regular ANC attendance. Incomplete ANC visit percentages are elevated among mothers lacking husband support.

This corresponds with Mulu, Gebremedhin, & Haftu's (2020) research, which determined that mothers receiving spousal support demonstrated 2.56 times greater likelihood of completing four ANC visits. Additional research identified significant associations between husband support and ANC adherence among pregnant women in Karanganom Community Health Center's area, indicating a positive relationship whereby enhanced spousal support correlates with improved ANC adherence (Sulistiyowati et al., 2022).

Spousal support constitutes the most crucial motivational factor for pregnant women, facilitating behavioral modifications in compliance. Support motivates expectant mothers to pursue appropriate healthcare for maintaining maternal and fetal wellbeing. The psychological benefits of positive husband support for pregnant women positively influence fetal development, promoting healthy growth (Mandey et al., 2020).

Investigators suspect that husbands providing limited support may face time constraints, possess insufficient ANC knowledge, or lack awareness of its pregnancy importance. Cultural elements may contribute, particularly in regions where pregnancy is viewed exclusively as women's responsibility, yielding minimal husband participation.

Findings emphasize the importance of educational initiatives targeting husbands, such as alert father programs or family counseling during initial ANC visits. By enhancing husbands'

pregnancy risk awareness, increased involvement is anticipated, thereby improving ANC completion rates.

3. Relationship between Support from Health Workers and Coverage of ANC Visits for Pregnant Women

Study outcomes demonstrated that healthcare worker engagement significantly influenced ANC completion. Mothers rating provider engagement positively tended to complete ANC visits according to established standards. This suggests that effective communication, approachable demeanor, and professional service enhance maternal ANC compliance.

These results correspond with prior research identifying healthcare service quality as significantly associated with ANC compliance. Furthermore, this study aligns with previous investigations emphasizing that healthcare workers constitute the frontline, capable of motivating mothers through persuasive education and psychological support (Rahmi Muharrina et al., 2021; Tyastuti & Wahyuningsih, 2022).

According to healthcare theory, positive interactions between medical personnel and expectant mothers increase maternal confidence and prenatal care readiness. Healthcare workers function as educators, counselors, and medical service providers; therefore, their role quality substantially determines maternal health behavior. Adequate healthcare worker support can increase antenatal care visits; consequently, provider support must be maximized to ensure ANC visit success. Healthcare workers must actively motivate mothers to undergo prenatal examinations and guide pregnant women to act optimally to avoid dangers threatening maternal and fetal life (Wulandari & Suryani, 2025).

Investigators assume that mothers assessing healthcare worker engagement unfavorably may have experienced negative encounters, such as poor communication, insufficient empathy, or inadequate education during previous visits. This can diminish their motivation for subsequent ANC attendance.

The implication suggests that enhancing interpersonal communication capabilities and counseling training for healthcare personnel requires prioritization. Community health centers must improve service workflows so mothers feel more comfortable during ANC visits. Quality services not only improve maternal satisfaction but also increase complete ANC visit numbers.

CONCLUSIONS

This study shows a significant relationship between the knowledge level of pregnant women, spousal support, and the role of healthcare workers with the completeness of Antenatal Care (ANC) visits. Pregnant women with good knowledge, adequate spousal support, and a positive perception of healthcare workers' roles are more likely to adhere to ANC visits according to established standards. These three factors play an important role in shaping the health behavior of pregnant women and collectively contribute to efforts to improve the health of mothers and fetuses and prevent pregnancy complications.



Nevertheless, this study still has limitations because it uses a cross-sectional design, which only describes the relationship between variables at a specific point in time. Therefore, future research is recommended to use a longitudinal design to observe changes in ANC visit behavior over time, as well as to examine the effectiveness of interventions based on education, husband involvement, and strengthening the role of healthcare workers. These intervention studies are expected to provide stronger evidence for designing sustainable promotive and preventive programs to improve ANC visit compliance at the primary healthcare level. Overall, maternal knowledge, spousal support, and healthcare worker engagement collectively contribute to ANC attendance behavior. Strengthening health education, increasing husband involvement, and optimizing healthcare service quality constitute crucial strategies for enhancing maternal and neonatal health outcomes and reducing pregnancy-related risks.

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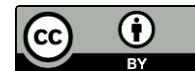
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