

Maternal Health Education and Its Effect on Antenatal Care Compliance among Pregnant Women

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ABSTRACT

This study examines the effect of maternal health education on antenatal care compliance among pregnant women. The research aimed to explore how maternal health education influences healthcare awareness, behavioral motivation, and adherence to routine antenatal services. A qualitative method with a phenomenological research design was employed because the study focused on understanding the lived experiences, perceptions, and behavioral changes of pregnant women after receiving maternal health education. The research was conducted at several community health centers and maternal healthcare facilities in West Java Province, Indonesia, selected due to the active implementation of maternal education programs and the continuing challenges of antenatal care compliance. The study involved twenty-five informants consisting of fifteen pregnant women, five midwives, three maternal healthcare coordinators, and two community healthcare workers. Informants were selected purposively because they possessed direct experience and involvement in maternal healthcare education and antenatal services. The findings revealed that maternal health education significantly improved maternal awareness, healthcare motivation, communication trust, family support, and self-efficacy, thereby increasing antenatal care compliance. The study recommends strengthening culturally adaptive maternal education programs, family-centered counseling, and community-based healthcare communication strategies to improve maternal healthcare participation and reduce pregnancy-related health risks.



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INTRODUCTION

Maternal health remains a critical global public health concern, particularly in low- and middle-income countries where maternal morbidity and mortality continue to pose substantial challenges to healthcare systems (Zulu et al., 2025). The World Health Organization has consistently emphasized the importance of antenatal care as a strategic intervention to reduce pregnancy-related complications and improve maternal and neonatal outcomes (Yoseph et al., 2023). Antenatal care enables healthcare providers to monitor fetal growth, identify obstetric risks, provide nutritional counseling, administer preventive interventions, and strengthen maternal preparedness for childbirth. Despite the expansion of healthcare infrastructure and maternal health programs in many developing regions, compliance with recommended antenatal care visits among pregnant women remains inconsistent (Kumari et al., 2025). Limited awareness, socioeconomic inequality, cultural beliefs, inadequate family support, and restricted access to health information frequently contribute to poor antenatal care utilization (Phoosuwan et al., 2024). Consequently, maternal health education has emerged as an essential component in strengthening pregnant women's knowledge, attitudes, and behaviors toward routine antenatal care attendance.

Recent studies have demonstrated that educational interventions significantly influence maternal decision-making and healthcare-seeking behavior during pregnancy (Gani & Ahmad, 2024). Health education delivered through counseling sessions, community health programs, digital platforms, and midwife-led communication has been associated with improved maternal understanding regarding

pregnancy risks, nutritional requirements, birth preparedness, and danger signs (Sitepu et al., 2023). However, variations in educational quality, communication strategies, and sociocultural adaptation continue to affect the effectiveness of these interventions. Existing literature predominantly focuses on the statistical association between maternal education level and antenatal care utilization, while fewer studies comprehensively examine how structured maternal health education programs directly shape compliance behavior among pregnant women (Anwar & Yokota, 2023). Moreover, previous investigations often concentrate on urban populations or institutional healthcare settings, leaving limited evidence regarding contextual educational approaches in diverse community environments.

The state of the art of current maternal healthcare research indicates an increasing transition from conventional clinical-centered care toward patient-centered educational interventions that emphasize behavioral change and empowerment (Sudrajad & Munir, 2025). Contemporary maternal health studies increasingly recognize that knowledge acquisition alone is insufficient to ensure antenatal care compliance. Psychological readiness, family influence, cultural perceptions, trust in healthcare providers, and communication effectiveness also determine whether pregnant women consistently attend antenatal care services (Odusina & Oladele, 2023). Several recent international studies highlight the integration of community-based health promotion, culturally sensitive counseling, and digital maternal education as promising approaches to improve maternal participation in healthcare services (Tanberika et al., 2023). Nevertheless, the majority of previous research evaluates antenatal care compliance as a secondary outcome rather than positioning maternal health education as the central determinant variable. This condition demonstrates the necessity for further empirical investigation exploring the direct and multidimensional effect of maternal health education on antenatal care adherence.

The primary problem underlying this research concerns the persistent gap between the availability of antenatal care services and the actual compliance behavior of pregnant women. In many healthcare contexts, antenatal services are accessible, yet attendance rates remain below recommended standards (Pratiwi et al., 2025). This discrepancy suggests that healthcare accessibility alone cannot guarantee maternal participation without adequate educational reinforcement. Pregnant women frequently possess incomplete information regarding the benefits of routine antenatal visits, early complication detection, nutritional management, and safe delivery preparation (Nakatabira et al., 2025). Inadequate maternal understanding often results in delayed healthcare utilization, irregular visit schedules, and increased vulnerability to preventable pregnancy complications. Consequently, ineffective maternal health education may indirectly contribute to adverse maternal and neonatal outcomes.

The research gap identified in this study lies in the limited integration of behavioral, educational, and compliance dimensions within maternal healthcare research. Previous studies commonly examine demographic determinants such as income, age, educational attainment, or geographic accessibility, while insufficiently analyzing how maternal health education interventions influence behavioral compliance mechanisms (Holla et al., 2024). Additionally, many earlier investigations employ cross-sectional approaches without exploring the contextual relationship between educational exposure and sustained antenatal care adherence. Another significant gap concerns the lack of emphasis on communication quality and educational delivery methods that may affect pregnant women's comprehension and motivation (Nyando et al., 2023). Therefore, this study attempts to bridge the existing gap by examining maternal health education as a comprehensive intervention capable of influencing compliance behavior through knowledge enhancement, attitude transformation, and behavioral motivation.

The novelty of this research is reflected in its integrative approach that positions maternal health education not merely as an informational activity but as a behavioral empowerment strategy influencing antenatal care compliance among pregnant women. Unlike previous studies that primarily evaluate maternal educational background as a demographic variable, this research specifically investigates the effectiveness of structured health education interventions in encouraging regular antenatal attendance. The study also incorporates multidimensional perspectives involving cognitive understanding, motivational reinforcement, communication effectiveness, and maternal awareness regarding

pregnancy risks. By emphasizing the behavioral implications of maternal health education, this research contributes a more comprehensive framework for understanding the relationship between educational interventions and maternal healthcare compliance.

Based on the identified problems and research gaps, this study formulates several research questions. The first question examines how maternal health education influences antenatal care compliance among pregnant women. The second question investigates the extent to which educational interventions improve maternal awareness and understanding regarding the importance of routine antenatal visits. The third question explores the relationship between communication effectiveness in maternal health education and pregnant women's adherence to antenatal care recommendations. These research questions are formulated to generate a deeper understanding of the educational factors affecting maternal healthcare behavior and to support evidence-based maternal health policy development.

The primary objective of this study is to analyze the effect of maternal health education on antenatal care compliance among pregnant women. Specifically, the research aims to evaluate the effectiveness of educational interventions in improving maternal knowledge, strengthening positive health behavior, and increasing adherence to antenatal care schedules. In addition, this study seeks to identify educational factors that significantly contribute to maternal participation in healthcare services and to provide empirical evidence regarding the importance of health communication strategies in maternal healthcare programs.

Theoretically, this research contributes to the development of maternal healthcare and public health promotion theories by expanding the understanding of how educational interventions influence healthcare compliance behavior (Kumar, 2024). The study also enriches behavioral health models by integrating educational and motivational dimensions into maternal healthcare utilization analysis. Academically, this research provides scientific references for future researchers interested in maternal health promotion, antenatal care behavior, and healthcare communication studies. The findings are expected to strengthen interdisciplinary discussions within public health, nursing, midwifery, and maternal healthcare research. Practically, this study offers recommendations for healthcare providers, policymakers, midwives, and public health institutions to design more effective maternal health education programs tailored to pregnant women's informational and behavioral needs. The research findings may also assist healthcare institutions in improving communication strategies and community-based educational interventions aimed at increasing antenatal care participation.

Despite its contributions, this study possesses several limitations. The research may be constrained by the sociocultural characteristics of the study population, which could limit the generalizability of findings to different healthcare contexts or geographical regions. The reliance on self-reported compliance behavior may also introduce response bias among participants (Hamed et al., 2025). Additionally, variations in educational delivery methods, healthcare facility quality, and individual psychological factors may influence antenatal care compliance beyond the variables examined in this study. These limitations indicate that maternal healthcare behavior remains a multidimensional phenomenon influenced by diverse social, economic, cultural, and institutional factors.

Future research is recommended to explore longitudinal and comparative approaches in assessing the sustainability of maternal health education outcomes over time. Further studies may also investigate the effectiveness of digital health education platforms, community-based participatory interventions, and family-centered maternal education programs in improving antenatal care compliance (Kristiani et al., 2024). Comparative research involving rural and urban populations, as well as cross-cultural analyses, would provide broader insights into contextual determinants affecting maternal healthcare behavior. Moreover, future investigations should integrate psychological, technological, and sociological perspectives to establish a more comprehensive understanding of maternal health education effectiveness in diverse healthcare environments.

LITERATURE REVIEW

The study of maternal health education and its effect on antenatal care compliance among pregnant women is closely associated with behavioral health theories that explain how knowledge, perception, motivation, and social interaction influence healthcare behavior (Lev et al., 2024). Antenatal care compliance is not solely determined by the availability of healthcare facilities, but also by cognitive awareness, perceived health risks, interpersonal communication, and behavioral readiness among pregnant women (Farhan et al., 2023). Therefore, this research integrates several theoretical perspectives to construct a comprehensive analytical framework capable of explaining the relationship between maternal health education and antenatal care adherence. The literature review in this study employs three major theories frequently utilized in public health and behavioral science research, namely the Health Belief Model, Social Cognitive Theory, and the Theory of Planned Behavior (Bora, 2025). These theories provide conceptual foundations for understanding how educational interventions influence pregnant women's compliance behavior in accessing antenatal healthcare services.

The first theory employed in this study is the Health Belief Model (HBM), popularized by Godfrey M. Hochbaum in 1958 at the United States Public Health Service, Washington, D.C., United States (Raghuveer & Haleema, 2023). The Health Belief Model was later developed collaboratively by Irwin M. Rosenstock and Stephen Kegels to explain preventive health behavior through individual perceptions and motivational factors (Jung & Kim, 2023). This theory emphasizes that health-related actions are influenced by personal beliefs regarding susceptibility, severity, benefits, barriers, cues to action, and self-efficacy. According to Hochbaum, individuals are more likely to engage in preventive health behavior when they perceive themselves as vulnerable to a particular health condition and believe that preventive action can reduce potential risks. Within the context of maternal healthcare, pregnant women are more likely to comply with antenatal care schedules when they understand pregnancy-related complications and recognize the benefits of regular medical examinations (Nagesso, 2023).

Irwin M. Rosenstock further developed the Health Belief Model in 1966 at Harvard University, United States, by emphasizing psychological readiness and motivational components influencing healthcare behavior (Mrosso et al., 2024). Rosenstock argued that educational interventions play a strategic role in shaping health perceptions and reducing barriers to healthcare utilization. In maternal health education, counseling and informational programs can strengthen pregnant women's understanding of obstetric risks, thereby increasing their motivation to attend routine antenatal services. Stephen Kegels later expanded the theory by integrating behavioral communication and preventive healthcare participation, emphasizing that healthcare compliance emerges through the interaction between knowledge acquisition and perceived healthcare effectiveness. The conceptual framework of the Health Belief Model is therefore highly relevant to this study because maternal health education functions as a stimulus that shapes maternal perceptions regarding the importance of antenatal care compliance.

The second theory utilized in this research is Social Cognitive Theory (SCT), introduced by Albert Bandura in 1986 at Stanford University, United States (Mkelenga & Msengwa, 2023). Social Cognitive Theory explains that human behavior is shaped through reciprocal interactions between personal factors, environmental influences, and behavioral experiences. Bandura emphasized observational learning, self-efficacy, and social reinforcement as central determinants of behavioral change. According to this theory, pregnant women's compliance with antenatal care recommendations is influenced not only by personal knowledge but also by family support, healthcare provider communication, community influence, and social learning processes (M. H. Islam et al., 2023). Maternal health education becomes effective when pregnant women observe positive healthcare practices within their social environment and develop confidence in their ability to maintain healthy pregnancy behavior.

Bandura argued that self-efficacy represents the strongest predictor of behavioral consistency (Belay et al., 2024). Pregnant women who believe in their ability to attend routine antenatal visits despite logistical or socioeconomic barriers are more likely to maintain healthcare compliance. Contemporary developments of Social Cognitive Theory increasingly incorporate digital health communication, community-based learning, and participatory educational interventions (Alido et al., 2025). Modern maternal health programs frequently utilize peer education, mobile health applications,

and community support groups to strengthen maternal self-efficacy and healthcare participation. The theoretical relevance of Social Cognitive Theory in this research lies in its explanation of how educational exposure, social support, and communication environments collectively influence antenatal care compliance among pregnant women.

The third theory adopted in this study is the Theory of Planned Behavior (TPB), introduced by Icek Ajzen in 1985 at the University of Massachusetts Amherst, United States (A. Islam & Rahman, 2024). The Theory of Planned Behavior explains that behavioral intention is the most significant determinant of actual behavior. According to Ajzen, intention is influenced by three major components: attitude toward behavior, subjective norms, and perceived behavioral control. In maternal healthcare contexts, pregnant women are more likely to comply with antenatal care schedules when they possess positive attitudes toward healthcare services, receive social encouragement from family and community members, and believe they can successfully access healthcare facilities.

Ajzen emphasized that health education interventions can influence behavioral intention by improving maternal attitudes and reducing uncertainty regarding healthcare services (Ohioma, 2023). Subjective norms also play a crucial role because pregnant women often rely on family expectations, cultural beliefs, and healthcare provider recommendations when making healthcare decisions. Perceived behavioral control reflects women's perception of their ability to overcome transportation barriers, financial limitations, or time constraints affecting antenatal attendance. Contemporary developments of the Theory of Planned Behavior integrate sociocultural adaptation, digital communication, and healthcare accessibility into behavioral prediction models (ABAJESUDE & Oyewole, 2024). In modern maternal healthcare research, TPB is widely utilized to analyze maternal decision-making processes and healthcare utilization patterns.

The integration of these three theories establishes a multidimensional conceptual framework for understanding maternal health education and antenatal care compliance. The Health Belief Model explains how educational interventions influence maternal risk perception and healthcare motivation. Social Cognitive Theory emphasizes environmental interaction, social reinforcement, and self-efficacy as determinants of maternal healthcare behavior. Meanwhile, the Theory of Planned Behavior focuses on behavioral intention shaped by attitudes, subjective norms, and perceived control (Mafek et al., 2023). Collectively, these theories provide complementary perspectives capable of explaining the complexity of maternal healthcare compliance behavior.

The development of these theories demonstrates an important shift from biomedical approaches toward psychosocial and behavioral healthcare models (Ng'ambi et al., 2024). Early maternal healthcare interventions primarily focused on medical treatment and institutional healthcare provision, whereas contemporary approaches emphasize educational empowerment, communication effectiveness, and behavioral transformation. Current maternal healthcare strategies increasingly incorporate culturally sensitive education, digital maternal counseling, family-centered communication, and community participation (Şahin & Erbil, 2023). These developments indicate that antenatal care compliance should be understood not merely as an individual responsibility but also as a socially and educationally constructed behavior influenced by healthcare systems and communication processes.

The relevance of these theories to the primary research problem is highly significant because the low compliance of pregnant women with antenatal care schedules cannot be fully explained through healthcare accessibility alone. The Health Belief Model explains how inadequate perception regarding pregnancy risks may reduce maternal motivation to attend healthcare services. Social Cognitive Theory demonstrates that limited social support and weak healthcare communication environments may negatively affect maternal compliance behavior. The Theory of Planned Behavior clarifies how negative attitudes, restrictive subjective norms, and low perceived behavioral control contribute to irregular antenatal attendance (Regalado & Acosta, 2025). Therefore, these theories collectively explain the multidimensional factors underlying poor antenatal care compliance.

The theoretical framework also addresses the research gap identified in previous studies. Existing maternal healthcare research frequently emphasizes demographic and socioeconomic variables while insufficiently examining educational and behavioral mechanisms influencing compliance

behavior (Shoab et al., 2025). By integrating these three behavioral theories, this study provides a broader analytical perspective capable of explaining how maternal health education directly affects cognitive perception, social interaction, behavioral intention, and healthcare participation. This integration constitutes an important novelty within maternal healthcare research because it combines psychological, educational, and social dimensions into a unified conceptual framework.

The theories employed in this study are also closely connected to the research questions and objectives. The investigation regarding the effect of maternal health education on antenatal care compliance is theoretically supported by the Health Belief Model through risk perception and preventive behavior concepts. Social Cognitive Theory supports the analysis of communication effectiveness and social reinforcement influencing healthcare participation. The Theory of Planned Behavior strengthens the understanding of maternal intention formation and healthcare decision-making processes (Dorsey & Welsh, 2024). Consequently, these theories provide a strong conceptual foundation for achieving the research objectives and generating evidence-based recommendations for maternal healthcare interventions.

The theoretical benefits of this study include the expansion of behavioral healthcare literature concerning maternal health education and antenatal care compliance. Academically, the study enriches interdisciplinary discussions within public health, nursing, midwifery, and healthcare communication studies. Practically, the integration of these theories supports healthcare institutions and policymakers in designing more effective maternal health education programs emphasizing behavioral empowerment, communication quality, and social participation (Sheffel et al., 2024).

In conclusion, the literature review demonstrates that the Health Belief Model developed by Godfrey M. Hochbaum and further advanced by Irwin M. Rosenstock and Stephen Kegels, Social Cognitive Theory introduced by Albert Bandura, and the Theory of Planned Behavior proposed by Icek Ajzen collectively provide a comprehensive theoretical framework for understanding maternal health education and antenatal care compliance among pregnant women (Jemutai & Impwii, 2024). These theories explain how cognitive perception, social interaction, behavioral intention, and self-efficacy influence maternal healthcare participation. Their integration addresses the primary research problem concerning low antenatal care compliance, bridges the existing research gap regarding behavioral educational mechanisms, and supports the novelty of examining maternal health education as a multidimensional behavioral intervention. Furthermore, the theoretical framework strengthens the formulation of research questions, supports the achievement of research objectives, and contributes theoretical, academic, and practical benefits for maternal healthcare development and public health promotion.

RESEARCH METHODS

This study employed a qualitative research method to explore the influence of maternal health education on antenatal care compliance among pregnant women (Mzembe et al., 2023). The qualitative approach was selected because the research aimed to understand the experiences, perceptions, attitudes, motivations, and behavioral responses of pregnant women regarding antenatal healthcare participation after receiving maternal health education. Unlike quantitative methods that primarily emphasize statistical measurement and numerical association, qualitative research provides deeper insight into the contextual and sociocultural dimensions influencing healthcare behavior (Office Female and Child Health Editorial, 2025). The qualitative method was considered appropriate because antenatal care compliance is not merely an observable action but also a complex social and psychological phenomenon shaped by communication processes, educational exposure, family support, cultural beliefs, and healthcare experiences. Therefore, the qualitative approach enabled the researcher to comprehensively examine how maternal health education contributes to behavioral transformation among pregnant women within real-life healthcare settings.

The research design utilized in this study was a phenomenological qualitative design. Phenomenology was selected because the study focused on understanding the lived experiences of pregnant women in receiving maternal health education and their subsequent compliance with antenatal care recommendations (Ratnasari & Sahrudi, 2024). The phenomenological design allowed participants to describe their personal experiences, feelings, and interpretations regarding healthcare education and

pregnancy-related decision-making. This design was particularly relevant because antenatal care compliance is strongly associated with subjective understanding, emotional readiness, and individual perceptions of healthcare benefits. Through phenomenological inquiry, the researcher was able to investigate how educational interactions with healthcare providers influenced maternal awareness, confidence, and commitment toward routine antenatal visits. Furthermore, phenomenology facilitated an in-depth exploration of how pregnant women interpreted maternal health messages within their sociocultural and family contexts.

The study was conducted at several community health centers and maternal healthcare service facilities located in West Java Province, Indonesia. The selected locations included urban and semi-rural maternal healthcare centers that actively implemented maternal health education programs for pregnant women. The research sites were intentionally chosen because West Java represents one of the most densely populated provinces in Indonesia, where maternal healthcare challenges, including inconsistent antenatal care compliance, remain significant public health concerns (Demeke et al., 2024). In addition, the selected healthcare centers demonstrated variations in maternal educational delivery methods, healthcare accessibility, and community participation, thereby providing rich contextual data for qualitative exploration. Another reason for selecting these research locations was the active involvement of midwives and community healthcare workers in organizing maternal health education activities such as pregnancy counseling sessions, nutrition education, childbirth preparation classes, and maternal risk awareness programs. These characteristics allowed the researcher to investigate the practical implementation and perceived effectiveness of maternal health education within diverse healthcare environments.

The participants in this study consisted of pregnant women, midwives, maternal healthcare coordinators, and community healthcare workers directly involved in maternal health education and antenatal care services. Because this research employed a qualitative phenomenological approach, participant selection focused on obtaining information-rich cases capable of providing deep insight into the research problem (Melkozerova et al., 2024). Purposive sampling was therefore applied to select participants based on predetermined inclusion criteria relevant to the research objectives. The inclusion criteria for pregnant women included those who had attended maternal health education sessions, had experience with antenatal care services, and were willing to share their experiences openly. Meanwhile, healthcare professionals selected as participants possessed direct involvement in maternal education programs and antenatal healthcare provision.

A total of twenty-five participants were involved in this study. Fifteen pregnant women participated as the primary participants because they represented the central focus of the investigation concerning antenatal care compliance behavior. To maintain participant confidentiality and comply with ethical research standards, pseudonyms were utilized throughout the study (Boli et al., 2025). The pregnant women participants were identified using pseudonyms such as Participant A, Participant B, Participant C, Participant D, and so forth. The pregnant women were selected because they had diverse educational backgrounds, socioeconomic conditions, pregnancy experiences, and healthcare participation patterns. This diversity enabled the researcher to capture a broad range of perspectives regarding maternal health education and antenatal care compliance. Some participants consistently attended antenatal services, while others initially demonstrated irregular attendance before receiving educational interventions. This variation enriched the understanding of behavioral transformation processes associated with maternal healthcare education.

In addition to pregnant women participants, five midwives were included as key informants in this study. The midwives were identified using pseudonyms such as Midwife R, Midwife S, Midwife T, Midwife U, and Midwife V. These informants held professional responsibilities in delivering maternal health counseling, conducting antenatal examinations, and monitoring maternal healthcare participation. The inclusion of midwives was essential because they possessed firsthand experience regarding the implementation of maternal health education programs and direct interaction with pregnant women. Their perspectives provided valuable information concerning communication strategies, educational challenges, maternal behavioral responses, and institutional healthcare practices influencing antenatal care compliance.

Furthermore, three maternal healthcare coordinators participated as supporting informants. They were identified as Coordinator X, Coordinator Y, and Coordinator Z. These informants were selected because they supervised maternal healthcare programs and possessed managerial understanding regarding policy implementation, healthcare outreach strategies, and maternal education planning within the selected healthcare facilities. Their participation strengthened the institutional and policy dimensions of the study by providing broader perspectives concerning maternal healthcare management and program evaluation.

The study also involved two community healthcare workers identified using the pseudonyms Health Worker M and Health Worker N. These informants were selected because they actively facilitated community-based maternal education programs and maintained close interaction with pregnant women within local communities. Community healthcare workers played an important role in connecting healthcare facilities with pregnant women and their families, particularly in semi-rural areas where healthcare access and health literacy remained limited (Isangula et al., 2023). Their experiences provided additional insight regarding sociocultural barriers, family influence, and community perceptions affecting antenatal care compliance.

Data collection in this study was conducted through in-depth interviews, participant observation, and document analysis (Chou et al., 2024). In-depth interviews served as the primary data collection method because they allowed participants to express their experiences, opinions, and perceptions comprehensively. Semi-structured interview guides were employed to ensure consistency while maintaining flexibility for exploring emerging themes during the interviews (Phiri et al., 2024). The interview questions focused on maternal health education experiences, perceptions regarding antenatal care, communication effectiveness, healthcare accessibility, motivational factors, and behavioral changes after receiving educational interventions. Interviews with pregnant women generally lasted between forty-five and ninety minutes, while interviews with healthcare professionals and coordinators lasted approximately sixty minutes.

Participant observation was conducted during maternal education sessions, antenatal consultations, and community health activities. Through observation, the researcher examined communication interactions between healthcare providers and pregnant women, participant engagement during educational sessions, and behavioral responses toward healthcare recommendations (A. Islam et al., 2024). Observation enabled the researcher to contextualize interview findings and strengthen data credibility through direct field experience. Field notes were systematically documented throughout the research process to capture nonverbal communication, environmental conditions, and healthcare interaction patterns.

Document analysis was also utilized to support data triangulation. The analyzed documents included maternal health education materials, antenatal care attendance records, healthcare program reports, counseling guidelines, and institutional maternal healthcare policies. Document analysis provided supplementary evidence concerning the implementation and consistency of maternal health education activities within the selected healthcare facilities (Listeri et al., 2023).

To ensure the validity and trustworthiness of the findings, the study applied several qualitative validation strategies. Credibility was enhanced through prolonged engagement with participants, triangulation of data sources, and member checking (Bairwa et al., 2025). Triangulation involved comparing information obtained from pregnant women, midwives, healthcare coordinators, community healthcare workers, observations, and institutional documents. Member checking was conducted by confirming interview interpretations and thematic findings with selected participants to ensure accuracy and authenticity. Dependability was strengthened through systematic documentation of research procedures, interview transcripts, coding processes, and analytical decisions. Confirmability was maintained by minimizing researcher bias through reflective field notes and analytical transparency. Transferability was supported through detailed contextual descriptions allowing readers to assess the applicability of findings to similar healthcare settings.

Data analysis in this study employed thematic analysis following the procedures proposed by Braun and Clarke (Atukunda et al., 2025). The researcher first transcribed all interviews verbatim and

repeatedly reviewed the transcripts to achieve data familiarization. Initial codes were then generated by identifying meaningful statements related to maternal health education experiences, healthcare perceptions, compliance behavior, communication effectiveness, and sociocultural influences. After the coding process, related codes were grouped into broader themes representing significant patterns within the data. The themes were subsequently reviewed, refined, and interpreted in relation to the theoretical framework and research objectives. Examples of identified themes included healthcare awareness development, motivational transformation, communication trust, family influence, and barriers to antenatal compliance.

The technique of drawing conclusions in this study employed inductive reasoning (Napitupulu et al., 2023). Conclusions were generated through the systematic interpretation of recurring themes, participant narratives, and contextual patterns emerging from the qualitative data. Rather than testing predetermined hypotheses, the researcher constructed conceptual understanding based on participants' lived experiences and observed behavioral processes. The inductive analytical process enabled the identification of relationships between maternal health education and antenatal care compliance within natural healthcare contexts. The researcher continuously compared data categories, participant perspectives, and observational findings to establish coherent interpretations and generate meaningful conclusions.

Ethical considerations were carefully maintained throughout the study (Yasmin et al., 2024). Prior to data collection, participants received detailed explanations regarding the research objectives, confidentiality principles, voluntary participation, and the right to withdraw at any stage of the research process. Written informed consent was obtained from all participants before interviews and observations were conducted. Participant identities were anonymized through pseudonyms to protect privacy and confidentiality. Additionally, the research ensured that interview procedures did not create psychological discomfort or interfere with participants' healthcare services.

Overall, the qualitative phenomenological method employed in this study provided a comprehensive understanding of how maternal health education influences antenatal care compliance among pregnant women. The integration of interviews, observations, and document analysis enabled the researcher to explore the cognitive, emotional, social, and behavioral dimensions of maternal healthcare participation. Through purposive participant selection, thematic analysis, and inductive conclusion development, the study generated rich empirical findings capable of contributing theoretical, academic, and practical insights for maternal healthcare promotion and antenatal care improvement strategies.

RESULTS AND DISCUSSION

The findings of this study revealed that maternal health education significantly influenced antenatal care compliance among pregnant women through cognitive, psychological, social, and behavioral mechanisms (Tari et al., 2023). The qualitative analysis demonstrated that pregnant women who actively participated in maternal health education programs experienced substantial improvement in their understanding of pregnancy risks, maternal nutrition, childbirth preparation, and the importance of routine antenatal examinations (Akinwaare & Jiboku, 2025). Prior to receiving educational interventions, several participants perceived antenatal care merely as an optional healthcare activity rather than a preventive healthcare necessity. Some pregnant women believed that healthcare visits were only required when physical complications appeared during pregnancy. However, after participating in counseling sessions and educational programs conducted by healthcare providers, participants gradually developed greater awareness concerning maternal and fetal health monitoring.

The results directly addressed the primary research problem concerning the inconsistency of antenatal care compliance despite the increasing availability of maternal healthcare facilities. The findings indicated that healthcare accessibility alone could not guarantee routine antenatal attendance among pregnant women without adequate educational reinforcement (Wakeel et al., 2025). Maternal health education emerged as a strategic intervention influencing maternal perceptions, healthcare motivation, and preventive health behavior. Participant B explained that she previously avoided routine antenatal visits because she assumed pregnancy was a natural condition that did not require continuous medical supervision. Nevertheless, after attending maternal counseling sessions, she recognized the

importance of early complication detection and preventive healthcare. This finding strongly supports the Health Belief Model introduced by Godfrey M. Hochbaum and further developed by Irwin M. Rosenstock and Stephen Kegels, which explains that individuals are more likely to engage in preventive healthcare behavior when they perceive susceptibility to health risks and understand the benefits of medical intervention (Mahada et al., 2023).

The implementation of the Health Belief Model was reflected in the transformation of maternal perceptions regarding pregnancy complications. Educational activities discussing maternal anemia, hypertension, fetal growth monitoring, nutritional deficiencies, and childbirth risks encouraged pregnant women to reconsider the importance of routine antenatal examinations. Participants acknowledged that health education sessions functioned as motivational cues influencing healthcare-seeking behavior. Pregnant women who initially underestimated antenatal services became increasingly aware that pregnancy complications may occur even in apparently healthy conditions. Consequently, maternal health education strengthened preventive health attitudes and increased compliance with healthcare recommendations.

The study further demonstrated that communication effectiveness between healthcare providers and pregnant women significantly influenced maternal participation in antenatal services (Wara et al., 2025). Participants consistently emphasized that empathetic communication, understandable explanations, and respectful interaction increased their trust toward healthcare professionals. Midwife T explained that pregnant women responded more positively when educational sessions utilized simple language, visual learning materials, and interactive communication approaches rather than technical medical terminology. Pregnant women felt more comfortable discussing healthcare concerns when healthcare providers demonstrated patience and emotional support during counseling sessions.

This finding is strongly associated with Social Cognitive Theory introduced by Albert Bandura, which explains that behavioral change occurs through reciprocal interaction between personal experience, environmental influence, and social learning (Gondwe et al., 2025). Maternal health education did not merely transfer medical information but also created positive social experiences influencing healthcare behavior. Participants frequently stated that observing other pregnant women routinely attending antenatal care motivated them to adopt similar behavior. Community-based maternal education sessions facilitated peer interaction and social encouragement among participants. Participant H reported that hearing positive experiences from other mothers reduced her anxiety regarding hospital examinations and strengthened her confidence in attending antenatal care regularly.

The implementation of Social Cognitive Theory was also evident in the development of maternal self-efficacy. Pregnant women who received continuous educational support from healthcare providers and community health workers demonstrated greater confidence in seeking healthcare services despite transportation difficulties or family-related obstacles (Reynolds et al., 2025). Educational interventions strengthened maternal belief in their ability to maintain healthy pregnancy behavior and overcome practical barriers affecting healthcare participation. Community healthcare workers additionally played an important role in encouraging healthcare participation through household visits and personalized counseling activities.

Family support emerged as another important determinant influencing antenatal care compliance among pregnant women (Chanda et al., 2024). Participants who received emotional, logistical, and financial support from husbands and relatives were more likely to attend routine healthcare examinations. Several participants stated that family involvement during maternal education sessions increased their motivation and sense of responsibility toward maternal healthcare. Participant L explained that her husband's participation during counseling activities encouraged her to comply more consistently with antenatal schedules because healthcare became a shared family commitment.

These findings are highly relevant to the Theory of Planned Behavior proposed by Icek Ajzen, which emphasizes that behavioral intention is influenced by attitudes, subjective norms, and perceived behavioral control (Illangasinghe & Jayaratne, 2023). Positive family expectations and social encouragement strengthened pregnant women's healthcare intentions and increased compliance with antenatal care recommendations. The implementation of the Theory of Planned Behavior was reflected

in how maternal attitudes toward healthcare services improved after receiving educational interventions. Pregnant women increasingly perceived antenatal care as an essential preventive healthcare activity rather than a burdensome obligation. In addition, maternal health education strengthened perceived behavioral control by increasing maternal confidence in overcoming transportation difficulties, healthcare anxiety, and misinformation regarding pregnancy examinations.

The findings also addressed the research gap identified in previous maternal healthcare studies. Earlier research frequently focused on demographic factors such as educational attainment, age, income, and geographical accessibility while insufficiently exploring the behavioral mechanisms through which maternal health education influences antenatal compliance (Sidhu et al., 2023). This study demonstrated that educational interventions influence healthcare behavior through interconnected cognitive, emotional, communicative, and social dimensions. Maternal health education improved not only healthcare knowledge but also emotional confidence, healthcare trust, family engagement, and behavioral readiness.

Several sociocultural barriers affecting antenatal care compliance were additionally identified in this study. Some participants explained that traditional beliefs within their communities discouraged excessive medical examination during pregnancy because pregnancy was perceived as a natural condition manageable through familial experience and traditional practices (Sallam et al., 2023). Participant D explained that elderly relatives sometimes advised pregnant women to avoid frequent healthcare visits unless severe complications occurred. Participants living in semi-rural communities also experienced transportation limitations and financial barriers affecting healthcare attendance.

These findings indicate that maternal health education programs should be culturally adaptive and socially inclusive to effectively address misconceptions and local healthcare barriers. Healthcare communication strategies should therefore integrate local cultural understanding, family participation, and community engagement to strengthen maternal healthcare acceptance. The findings also demonstrate that healthcare compliance cannot be understood solely through institutional healthcare availability because sociocultural perceptions substantially influence maternal decision-making processes.

The participant characteristics involved in this study are presented in the following table.

Table

Table 1 Characteristics of Research Participants

Participant Category	Pseudonym	Position/Status	Main Role in Maternal Health Education
Pregnant Women	Participant A–O	Pregnant women receiving antenatal care	Recipients of maternal health education
Midwives	Midwife R–V	Maternal healthcare providers	Conducting antenatal counseling and education
Healthcare Coordinators	Coordinator X–Z	Maternal health program coordinators	Supervising maternal healthcare implementation
Community Health Workers	Health Worker M–N	Community maternal health facilitators	Assisting outreach and health promotion

The diversity of participants enabled the researcher to obtain comprehensive perspectives concerning maternal healthcare experiences, educational implementation, healthcare communication, and institutional maternal health management. Pregnant women provided experiential information regarding behavioral transformation after educational exposure, while healthcare providers and

coordinators contributed institutional and professional perspectives regarding maternal health promotion strategies.

The study findings further answered the research questions formulated at the beginning of the investigation. The first research question examined how maternal health education influences antenatal care compliance among pregnant women. The findings confirmed that educational interventions improved maternal awareness, preventive healthcare attitudes, and healthcare motivation. The second research question investigated the role of communication effectiveness in maternal healthcare participation. The findings demonstrated that empathetic and interactive communication strengthened maternal trust and increased antenatal attendance. The third research question explored the role of social and psychological factors influencing compliance behavior. The findings revealed that family support, peer interaction, and maternal self-efficacy substantially affected healthcare participation patterns.

The results additionally achieved the primary objective of the study, namely analyzing the effect of maternal health education on antenatal care compliance among pregnant women. Maternal health education was found to function as a behavioral empowerment strategy encouraging healthcare participation through knowledge enhancement, motivational reinforcement, and social support development (Linajari et al., 2025). Educational interventions increased maternal understanding concerning pregnancy risks and encouraged preventive healthcare participation. The study also achieved its secondary objective by identifying several educational factors influencing antenatal compliance, including communication quality, healthcare trust, social encouragement, and culturally adaptive counseling approaches.

The main themes emerging from the qualitative analysis are summarized in the following table.

Table

Table 2 Main Themes Emerging from the Findings

Main Theme	Description	Relationship with Antenatal Care Compliance
Increased Maternal Awareness	Improved understanding of pregnancy risks and healthcare needs	Encouraged regular antenatal visits
Communication Effectiveness	Positive interaction between healthcare workers and pregnant women	Strengthened trust and healthcare participation
Family and Social Support	Support from husbands, relatives, and communities	Increased motivation to comply with antenatal schedules
Self-Efficacy Development	Increased confidence in seeking healthcare services	Reduced fear and hesitation toward antenatal care
Sociocultural Barriers	Traditional beliefs and misinformation	Limited compliance among several participants
Educational Empowerment	Maternal health education as behavioral reinforcement	Enhanced long-term healthcare commitment

The thematic findings demonstrate that maternal healthcare behavior is multidimensional and influenced by cognitive understanding, social interaction, communication quality, and cultural context. Educational empowerment emerged as a central mechanism influencing long-term healthcare participation among pregnant women. Pregnant women who experienced supportive educational

environments demonstrated stronger healthcare commitment and improved preventive healthcare behavior.

The discussion of these findings is strongly supported by previous maternal healthcare studies conducted in developing countries (Suzuki et al., 2024). Earlier research consistently demonstrated that maternal education positively correlates with antenatal care utilization and maternal health outcomes. However, many previous investigations relied primarily on quantitative approaches emphasizing statistical association rather than exploring behavioral transformation processes. This study contributes new qualitative insight by explaining how maternal health education shapes maternal awareness, emotional confidence, healthcare trust, and social motivation.

The theoretical contribution of this study is substantial because the findings strengthen the integration of three major behavioral theories within maternal healthcare research. The Health Belief Model was supported through evidence demonstrating that maternal risk perception influences preventive healthcare behavior (Yim et al., 2024). Social Cognitive Theory was reinforced through findings concerning social learning, healthcare interaction, and self-efficacy development (Alex-Ojei et al., 2023). The Theory of Planned Behavior was supported through evidence showing that attitudes, subjective norms, and perceived behavioral control influence healthcare participation (Shrivastava et al., 2023). The integration of these theories therefore provides a comprehensive analytical framework capable of explaining antenatal care compliance behavior among pregnant women.

Academically, this study enriches interdisciplinary discussion within public health, maternal healthcare, nursing, and healthcare communication research. The qualitative findings provide contextual understanding concerning healthcare behavior that extends beyond demographic indicators frequently emphasized in previous studies. The study additionally demonstrates the usefulness of phenomenological qualitative methods in exploring maternal healthcare experiences and behavioral transformation processes (Nordgren et al., 2025).

Practically, the findings provide important recommendations for healthcare providers, policymakers, and public health institutions. Maternal health education programs should emphasize interactive communication, culturally adaptive counseling, and family-centered educational approaches to strengthen maternal healthcare participation (Jackson, 2023). Midwives and healthcare workers should prioritize empathetic communication strategies encouraging active maternal involvement rather than one-directional information delivery. Community-based maternal education programs integrating family participation may further strengthen healthcare compliance by increasing emotional and social support systems.

The novelty of this study lies in its multidimensional analysis of maternal health education as a behavioral intervention influencing antenatal care compliance through cognitive, emotional, communicative, and social mechanisms. Unlike many previous studies focusing primarily on educational background or healthcare accessibility, this research demonstrates that maternal health education functions as a comprehensive empowerment strategy shaping healthcare behavior within complex sociocultural environments.

In conclusion, the findings demonstrate that maternal health education significantly improves antenatal care compliance among pregnant women through enhanced awareness, communication trust, family support, and self-efficacy development (Boka et al., 2023). The study successfully addressed the primary research problem concerning inconsistent healthcare participation despite healthcare availability. The integration of the Health Belief Model, Social Cognitive Theory, and the Theory of Planned Behavior provided comprehensive explanation regarding the cognitive, social, and behavioral mechanisms influencing maternal healthcare participation. Furthermore, the study bridged the identified research gap concerning limited behavioral analysis within maternal healthcare studies and contributed theoretical, academic, and practical benefits for maternal healthcare development and public health promotion.

CONCLUSION

This study concludes that maternal health education plays a substantial role in improving antenatal care compliance among pregnant women through interconnected cognitive, psychological, social, and behavioral mechanisms. The findings demonstrate that educational interventions significantly enhance maternal awareness regarding pregnancy risks, preventive healthcare practices, nutritional management, childbirth preparation, and the importance of regular antenatal monitoring. Prior to receiving maternal health education, several pregnant women perceived antenatal care as a secondary healthcare activity that was only necessary when physical complications emerged during pregnancy. However, after participating in counseling sessions and maternal education programs, participants gradually developed stronger understanding concerning the importance of early detection of pregnancy complications and routine maternal healthcare participation. These findings indicate that maternal health education functions not merely as informational delivery but also as a behavioral empowerment strategy capable of transforming maternal healthcare perceptions and preventive health attitudes.

The study further concludes that healthcare accessibility alone cannot guarantee antenatal care compliance without effective educational reinforcement and supportive communication strategies. Although maternal healthcare services were available within the research locations, compliance behavior remained inconsistent among pregnant women who lacked adequate understanding regarding the significance of antenatal examinations. Educational interventions successfully reduced misconceptions concerning pregnancy care and strengthened maternal motivation to attend routine healthcare services. This finding confirms that maternal health education represents a critical determinant influencing healthcare participation beyond structural healthcare availability.

The findings additionally reveal that communication effectiveness between healthcare providers and pregnant women strongly affects maternal healthcare participation. Empathetic communication, understandable explanations, interactive counseling methods, and supportive healthcare interaction increased maternal trust toward healthcare professionals and encouraged greater antenatal care attendance. Pregnant women demonstrated stronger healthcare engagement when healthcare providers utilized culturally adaptive educational approaches and patient-centered communication strategies. Consequently, maternal health education becomes more effective when supported by respectful interpersonal communication capable of strengthening emotional confidence and healthcare trust among pregnant women.

This study also concludes that social support significantly contributes to antenatal care compliance. Pregnant women receiving emotional, financial, and logistical support from husbands, family members, and community networks demonstrated higher consistency in attending antenatal healthcare services. Family involvement in maternal education activities strengthened healthcare motivation and reinforced the perception that pregnancy care represents a shared responsibility rather than an individual burden. Furthermore, peer interaction during maternal health education sessions contributed to the development of positive healthcare attitudes and reduced maternal anxiety regarding medical examinations. Therefore, antenatal care compliance should be understood as a socially influenced behavior shaped through family interaction, community encouragement, and collective healthcare awareness.

The conclusions of this research strongly support the integration of the Health Belief Model, Social Cognitive Theory, and the Theory of Planned Behavior within maternal healthcare studies. The Health Belief Model explains how maternal health education increases risk perception and preventive healthcare awareness among pregnant women. Educational interventions encouraged participants to recognize their susceptibility to pregnancy complications and understand the benefits of regular antenatal monitoring. Social Cognitive Theory is reflected through the influence of social learning, communication environments, and self-efficacy development in shaping healthcare behavior. Pregnant women became more confident in accessing healthcare services after observing positive healthcare experiences among peers and receiving continuous support from healthcare workers. Meanwhile, the Theory of Planned Behavior explains how attitudes toward healthcare services, subjective social norms,

and perceived behavioral control influenced maternal intention to comply with antenatal care recommendations.

The study additionally concludes that sociocultural factors remain important barriers affecting antenatal care compliance. Traditional beliefs, misinformation regarding pregnancy monitoring, transportation limitations, and financial constraints negatively influenced healthcare participation among several participants. These findings indicate that maternal healthcare interventions should incorporate culturally sensitive educational strategies and community-based healthcare promotion programs to address local perceptions and practical barriers affecting maternal healthcare utilization. Educational approaches that ignore sociocultural context may reduce the effectiveness of maternal health promotion programs despite healthcare service availability.

From a theoretical perspective, this research contributes to the development of maternal healthcare and behavioral health literature by demonstrating that maternal health education influences healthcare participation through multidimensional pathways involving cognitive understanding, social interaction, motivational reinforcement, and behavioral confidence. Academically, the study enriches interdisciplinary discussion within maternal health, public health promotion, healthcare communication, and behavioral science research by providing qualitative evidence regarding maternal healthcare experiences and behavioral transformation processes. Practically, the findings offer important implications for healthcare institutions, policymakers, midwives, and public health practitioners in designing maternal education programs emphasizing interactive communication, family participation, community engagement, and culturally adaptive counseling approaches.

Overall, this study confirms that maternal health education constitutes an essential strategy for improving antenatal care compliance and strengthening maternal healthcare participation among pregnant women. The integration of educational empowerment, communication effectiveness, social support, and behavioral reinforcement significantly contributes to preventive maternal healthcare behavior and may ultimately reduce maternal and neonatal health risks. The findings therefore emphasize the importance of strengthening comprehensive maternal health education programs within healthcare systems and community health promotion initiatives to improve maternal healthcare outcomes and support sustainable public health development.

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