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BRIDGING THE EVIDENCE-PRACTICE GAP IN MATERNAL AND CHILD HEALTH NURSING: DETERMINANTS OF ADHERENCE TO EVIDENCE-BASED CLINICAL GUIDELINES AND THEIR ASSOCIATION WITH MATERNAL AND NEONATAL OUTCOMES IN DELTA STATE, NIGERIA

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Abstract

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Background: The persistent gap between evidence generation and clinical practice remains a major challenge to improving maternal and neonatal health outcomes in low- and middle-income countries. Adherence to evidence-based clinical guidelines among maternal and child health nurses may substantially influence the quality, safety, and timeliness of care.

Objective: This study investigated the determinants of adherence to evidence-based clinical guidelines among maternal and child health nurses in Delta State, Nigeria, and examined their association with maternal and neonatal outcomes.

Methods: A multicentre analytical cross-sectional study was conducted among maternal and child health nurses across selected healthcare facilities in Delta State. Data were collected using a structured, validated questionnaire assessing knowledge, guideline accessibility, institutional support, workload, continuing professional development, availability of resources, and adherence behaviours. Relevant maternal and neonatal outcome indicators were obtained from clinical records. Descriptive statistics, chi-square tests, and multivariable logistic regression were employed to identify significant determinants and estimate associations between guideline adherence and clinical outcomes.

Results: Higher adherence was associated with adequate guideline knowledge, regular professional training, accessible clinical protocols, supportive supervision, adequate staffing, and availability of essential resources. Nurses demonstrating higher guideline adherence were associated with more favourable maternal and neonatal outcomes, including reduced preventable complications and improved timely clinical interventions. Institutional support and continuing professional development emerged as important independent predictors of adherence.

Conclusion: Strengthening evidence-based practice requires integrated interventions addressing individual competencies and health-system barriers. Regular training, accessible guidelines, supportive supervision, adequate staffing, and resource availability should be prioritised to improve maternal and neonatal outcomes in Delta State.

Keywords: Adherence; Evidence-Based Practice; Maternal Health; Neonatal Outcomes; Nursing

Introduction

Maternal and neonatal health remains a critical indicator of health-system performance and an important component of global efforts to achieve Sustainable Development Goal 3 (SDG 3). Despite substantial advances in clinical knowledge, maternal and neonatal morbidity and mortality remain disproportionately concentrated in low- and middle-income countries, where preventable complications continue to challenge health systems. Evidence-based clinical guidelines provide an important mechanism for translating accumulated scientific evidence into standardized clinical decisions, promoting timely recognition of complications, appropriate interventions, continuity of care, and improved patient safety. The World Health Organization (WHO) has emphasized that evidence-based recommendations across pregnancy, childbirth, and the postnatal period are central to improving the quality of care provided to women and newborns (World Health Organization [WHO], 2025). WHO currently maintains more than 300 maternal and perinatal health recommendations derived from systematic evidence reviews, highlighting the centrality of evidence translation to contemporary maternal healthcare (WHO, 2025).

The importance of guideline adherence is particularly pronounced in nursing because nurses and midwives constitute a substantial proportion of the health workforce directly involved in antenatal care, intrapartum monitoring, emergency recognition, postnatal care, newborn assessment, health education, and referral. Evidence-based nursing practice enables practitioners to integrate the best available research evidence with professional expertise and patient needs when making clinical decisions. However, the availability of evidence does not automatically guarantee its implementation. Research consistently demonstrates that translating clinical evidence into routine practice is influenced by individual, organizational, guideline-related, and contextual factors (Gallione et al., 2022; Zhou et al., 2023). Common barriers include inadequate knowledge and skills, insufficient training, workload, limited resources, poor accessibility or complexity of guidelines, weak organizational support, and inadequate leadership.

This evidence–practice gap has particular significance in maternal and child health, where clinical deterioration can occur rapidly and delays in appropriate intervention may have serious consequences. WHO guidance emphasizes the importance of skilled health professionals being able to

recognize complications early, initiate appropriate evidence-based management, and facilitates timely referral when higher-level care is required (WHO, 2015). Similarly, contemporary WHO recommendations for maternal and newborn care stress the importance of competent health workers, appropriate clinical protocols, supportive health systems, and person-centred care throughout the continuum from pregnancy through the postnatal period (WHO, 2022, 2025).

Evidence from Nigeria demonstrates that adherence to maternal and child health guidelines remain an important concern. A national assessment of frontline healthcare workers found generally poor adherence to clinical management guidelines for selected maternal and child health conditions, including postpartum haemorrhage and neonatal asphyxia, with only a minority of healthcare workers demonstrating appropriate adherence across assessed conditions (Adebayo et al., 2023). Similarly, a study of emergency obstetric and newborn care in Nigerian referral hospitals reported low adherence to guidelines for several obstetric emergencies, including haemorrhage, fetal distress, prolonged obstructed labour, and pre-eclampsia/eclampsia (Adelaja et al., 2024). These findings indicate that the challenge is not necessarily the absence of evidence or guidelines, but rather the ability of health professionals and institutions to consistently translate recommended practices into routine clinical care.

Several determinants may explain variation in guideline adherence among nurses. At the individual level, knowledge, clinical competence, attitudes toward evidence-based practice, confidence, professional experience, and previous exposure to continuing professional education can influence implementation. At the organizational level, staffing adequacy, workload, availability of essential equipment and medicines, supportive supervision, leadership, teamwork, audit and feedback mechanisms, and access to current guidelines can either facilitate or impede evidence-based care. Systematic evidence indicates that organizational resources, education and training, leadership support, and guideline accessibility are among the most important determinants of successful implementation (Gallione et al., 2022; Zhou et al., 2023). Importantly, Nigerian evidence also indicates that continuous training may be necessary to strengthen clinical competence and improve adherence to national guidelines (Adebayo et al., 2023).

Nigeria's policy environment recognizes the importance of standardized evidence-based maternal and newborn care. National health authorities provide guidelines covering comprehensive newborn care, basic newborn care, kangaroo mother care, maternal health interventions, and management of obstetric complications (Federal Ministry of Health and Social Welfare [FMOHSW], 2024). Nevertheless, the existence of national guidelines does not necessarily ensure consistent implementation at facility level. Local variations in staffing, resources, professional development, institutional culture, supervision, and workload may affect the extent to which nurses adhere to recommended standards.

Against this background, Delta State provides an important context for examining the evidence–practice gap in maternal and child health nursing. Although improving maternal and neonatal outcomes requires coordinated interventions across multiple levels of the health system, nurses' adherence to evidence-based clinical guidelines represents a potentially modifiable component of quality care. However, evidence specifically examining the determinants of guideline adherence among maternal and child health nurses in Delta State and relating adherence to maternal and neonatal outcomes remains limited. Addressing this gap can generate context-specific evidence for strengthening continuing professional development, clinical supervision, guideline dissemination, resource provision, and quality-improvement strategies. Therefore, this study investigates the determinants of adherence to evidence-based clinical guidelines among maternal and child health nurses in Delta State, Nigeria, and examines their association with maternal and neonatal outcomes.

Background of the Study

Maternal education remains one of the most powerful predictors of perinatal health outcomes globally. The perinatal period extending from the 22nd week of gestation to seven days after birth is a highly sensitive stage where both maternal and neonatal health risks are interlinked. Education equips mothers with knowledge, skills, and attitudes necessary for making informed health decisions that can mitigate perinatal risks (Kozuki et al., 2019; Kassaw et al., 2023). From a public health perspective, educational attainment enables women to understand health information, access healthcare services promptly, and apply preventive and curative interventions effectively. Consequently, improving maternal education is widely acknowledged as a key driver with empirical support from national analyses demonstrating improvements in

maternal and neonatal indicators over time (Mordecai et al., 2025). Overtime women education has brought about sustainable reductions in perinatal mortality and morbidity rates (World Health Organization [WHO], 2023). Globally, perinatal outcomes have improved markedly over the last two decades due to increasing investments in maternal and child health, yet wide disparities persist between developed and developing nations. According to WHO (2023), sub-Saharan Africa accounts for nearly 43% of global perinatal deaths, largely due to preventable causes such as infections, birth asphyxia, and preterm complications. Studies indicate that mothers with secondary or tertiary education levels have significantly better perinatal outcomes compared to those with no formal education, owing to enhanced awareness and healthcare utilization (Bhowmik et al., 2022; AbouZahr et al., 2021). Education not only improves knowledge of antenatal and delivery care but also increases household income, enabling better nutrition and access to skilled birth attendants. In Nigeria, the link between maternal education and perinatal outcomes is particularly pronounced. Despite policy efforts such as the National Strategic Health Development Plan (NSHDP II, 2018–2022), the country still records one of the world's highest perinatal mortality rates approximately 39 deaths per 1,000 live births (National Population Commission [NPC] & ICF, 2021). Socioeconomic inequalities and gender disparities exacerbate these outcomes. Women with little or no formal education are less likely to attend antenatal clinics, deliver in hospitals, or recognize danger signs during pregnancy (Adebowale & Adedini, 2021). Conversely, educated mothers are better positioned to understand medical instructions, plan for safe deliveries, and access family planning services. A study by Ali et al. (2020) found that in Nigeria, each additional year of maternal education reduces the probability of perinatal death by nearly 9%, highlighting education's measurable impact on neonatal survival. Delta State, one of Nigeria's oil-producing regions, represents a complex socioeconomic context where educational disparities coexist with relatively advanced healthcare infrastructure. Despite having multiple health facilities, multiple public health interventions aimed at improving maternal and child health outcomes, the state continues to experience high rates of perinatal complications including low birth weight and stillbirths (Oweibia et al., 2023; Gabriel et al., 2023; Ntoimo & Okonofua, 2020). Contributing factors include limited maternal literacy, poverty, and cultural practices that discourage women from seeking institutional care. Many rural and semi-urban communities in Delta State rely on traditional birth

attendants, often due to misinformation or lack of awareness about the benefits of skilled healthcare. Educational interventions aimed at empowering women, such as community literacy programs and antenatal education initiatives have shown promise in improving maternal and neonatal outcomes in similar settings (Usman et al., 2022). From a theoretical standpoint, the relationship between maternal education and perinatal outcomes can be explained through the Social Determinants of Health (SDH) framework, which posits that health inequities stem largely from social, economic, and educational inequalities. Education enhances cognitive skills and fosters autonomy, leading to improved health behaviors and increased utilization of medical services (Marmot & Allen, 2020). Historically, public health strategies dating back to the Alma-Ata Declaration of 1978 emphasized education as a cornerstone of primary healthcare, highlighting its role in empowering communities toward better health practice. Modern health promotion models, such as the Health Belief Model, further support the notion that perceived knowledge and self-efficacy both products of education drive health-seeking behaviors that reduce maternal and neonatal risks (Becker et al., 1974). Despite progress, challenges persist in achieving equitable access to maternal education and healthcare in Nigeria. The intersection of poverty, cultural norms, and limited educational opportunities continues to undermine maternal and child health efforts. Moreover, while several national studies have demonstrated a general link between education and child survival, fewer have specifically examined perinatal outcomes a critical indicator of both maternal and neonatal well-being. Local-level analyses within Delta State remain limited, especially those integrating both quantitative data from health facilities and survey responses from mothers. Therefore, there is a pressing need for context-specific research that quantifies the impact of maternal education on perinatal health and identifies educational interventions that can effectively reduce perinatal mortality in the region.

Statement of the Problem

Despite global improvements in maternal and child health, perinatal mortality remains a pressing challenge in many developing countries, including Nigeria. The perinatal period is one of the most vulnerable stages of life, with outcomes heavily influenced by maternal knowledge, attitudes, and access to quality healthcare. While numerous global initiatives such as the Sustainable Development Goals (SDGs) and Nigeria's National Health Policy have emphasized reducing maternal and neonatal deaths,

progress has been uneven across regions. In Nigeria, particularly in Delta State, perinatal outcomes remain suboptimal, revealing persistent inequalities linked to maternal education and healthcare access. Educational attainment among mothers plays a central role in shaping health behaviors, decision-making capacity, and utilization of maternal healthcare services. However, in Delta State, many women of reproductive age still possess low levels of formal education, especially in rural and semi-urban communities. This educational gap contributes to limited understanding of antenatal care schedules, delivery preparation, and early recognition of pregnancy complications. Consequently, low maternal literacy levels often result in delayed healthcare seeking, poor birth preparedness, and increased risk of perinatal mortality. Furthermore, existing studies and public health interventions in Nigeria have primarily focused on general maternal and child health indicators, paying limited attention to the specific pathways through which maternal education influences perinatal outcomes. There remains a lack of empirical evidence at the state level particularly in Delta State linking educational attainment to measurable perinatal indicators such as stillbirths, neonatal deaths, and birth weight outcomes. This absence of localized, data-driven research hampers evidence-based policy formulation and the design of targeted educational interventions. As highlighted in studies examining systemic barriers and health system performance in Nigeria, compounding these challenges are socioeconomic and infrastructural barriers that further diminish the effectiveness of maternal health programs (Oweibia et al., 2025; Agbedi & Oweibia, 2025). In several communities across Delta State, poverty, cultural beliefs, and limited health literacy hinder women's ability to access modern healthcare facilities, even when such services are available. As a result, many deliveries still occur at home or with traditional birth attendants, thereby increasing the risk of perinatal complications and preventable deaths. Given these challenges, there is a clear need to assess how maternal education affects perinatal outcomes within the specific sociocultural and economic context of Delta State. Understanding this relationship is crucial for designing interventions that not only improve women's educational attainment but also enhance their utilization of maternal and child health services. Therefore, this study seeks to bridge the existing knowledge gap by investigating the impact of maternal education on perinatal outcomes in Delta State, Nigeria, with particular emphasis on perinatal mortality rates, access to healthcare services, and the role of educational interventions in promoting maternal health.

The findings will contribute to more targeted public health strategies aimed at reducing perinatal deaths and achieving equitable maternal health outcomes.

Objectives of the Study

The objectives of this study are structured to address the core research problem the persistent influence of maternal education on perinatal health outcomes in Delta State, Nigeria. This section outlines the general aim and specific objectives that guide the study's direction and analysis. General Objective The main objective of this study is to examine the impact of maternal education on perinatal outcomes in Delta State, Nigeria. Specifically, the study aims to determine how varying levels of maternal education affect perinatal mortality, access to maternal healthcare services, and the effectiveness of educational interventions in improving maternal and neonatal health.

Specific Objectives

The study is designed to achieve the following specific objectives:

1. To assess the level of maternal education in relation to perinatal death rates among mothers who delivered in health facilities within Delta State.
2. To identify specific educational interventions that improve maternal health and contribute to better perinatal outcomes.
3. To evaluate the correlation between maternal education and access to healthcare services among women of reproductive age in Delta State.
4. To analyze the role of socioeconomic and demographic factors in moderating the relationship between maternal education and perinatal outcomes.
5. To provide evidence-based recommendations for policymakers and healthcare providers aimed at reducing perinatal mortality through educational empowerment programs.

Research Questions

Accordingly, the following research questions will guide this investigation:

1. How does the level of maternal education relate to perinatal death rates among mothers who delivered in health facilities in Delta State?
2. What specific educational interventions contribute to improved maternal health and better perinatal outcomes in Delta State?

3. What is the correlation between maternal education and access to healthcare services among women of reproductive age in Delta State?
4. In what ways do socioeconomic and demographic factors moderate the relationship between maternal education and perinatal outcomes?
5. What policy measures or programs can be developed to enhance maternal education and subsequently improve perinatal health indicators?

This study is geographically confined to Delta State, Nigeria, one of the South-South geopolitical regions of the country. Delta State is selected because it exhibits notable disparities in maternal education levels and perinatal health outcomes, despite having relatively developed healthcare infrastructure. The state includes both urban and rural populations, providing a balanced representation of differing socioeconomic and educational backgrounds. Data will be obtained from selected public and private healthcare facilities across various Local Government Areas (LGAs) to capture diverse maternal experiences. The target population for this study comprises mothers who delivered in healthcare facilities within Delta State during the study period. The research focuses on women of reproductive age (15–49 years) who have experienced childbirth, as they are best positioned to provide relevant data on perinatal outcomes and healthcare utilization patterns. Healthcare professionals, including nurses and midwives, may also provide supplementary data on perinatal records to validate findings from survey responses. The study covers a five-year reference period (2018–2023), aligning with the most recent demographic and health data available in Nigeria. This timeframe allows for the assessment of trends in maternal education levels and perinatal outcomes while reflecting contemporary healthcare policies and educational interventions within the state. Thematically, this study is limited to examining the relationship between maternal education and perinatal outcomes such as stillbirths, neonatal deaths, and low birth weight. It also investigates associated factors such as access to healthcare services, health-seeking behaviors, and maternal literacy interventions. Broader determinants of maternal and child health (e.g., environmental or genetic factors) are beyond the scope of this research and will not be analyzed in depth.

Methodologically, the study adopts a quantitative cross-sectional design, utilizing survey data collected from mothers and secondary data from healthcare

facilities. Statistical analyses, including descriptive statistics, correlation, and regression analysis, will be employed to determine the strength and nature of relationships between variables. Data will be analyzed using recognized statistical software to ensure reliability and reproducibility of results. Ethical approval and informed consent procedures will also be strictly observed.

Significance of the Study From an academic perspective, this study deepens scholarly understanding of the linkage between education and maternal health outcomes within the Nigerian context. While numerous global studies have examined the role of education in maternal and child health, relatively few have focused specifically on perinatal outcomes in subnational contexts such as Delta State. This research therefore fills a critical gap by providing localized empirical evidence that connects educational attainment to perinatal indicators, such as neonatal mortality and low birth weight. The findings will serve as a valuable reference for future researchers, scholars, and postgraduate students investigating maternal and child health determinants in similar settings. The study also holds significant implications for health policy and planning. Evidence from this research can support the design and implementation of targeted educational interventions that enhance maternal literacy and healthcare awareness. Policymakers at both state and national levels can utilize the findings to refine existing maternal health programs including antenatal education initiatives, community outreach, and girl-child education policies. By highlighting the measurable impact of maternal education on perinatal outcomes, the study can inform policy frameworks aimed at reducing perinatal mortality rates and achieving national and international development goals such as the Sustainable Development Goal (SDG) 3: Good Health and Well-being.

For healthcare practitioners, particularly in Delta State, the study provides a basis for improving maternal health education within health facilities. Midwives, nurses, and community health workers can leverage the insights to design culturally appropriate communication strategies that resonate with women of varying literacy levels. Additionally, non-governmental organizations (NGOs) and community-based organizations (CBOs) focused on maternal and child health can use the findings to optimize their outreach efforts, emphasizing the importance of education in preventing perinatal complications.

At the community level, the study is expected to empower women by underscoring the value of education in safeguarding maternal and neonatal health. Increased awareness of the benefits of formal and informal education can motivate families and communities to prioritize girl-child education, thereby fostering long-term social and health improvements.

Finally, the study offers methodological contributions by combining survey-based data collection with secondary analysis of perinatal health records, thus providing a more comprehensive picture of the relationship between maternal education and health outcomes. This approach can serve as a model for future research in maternal and child health, demonstrating how quantitative analyses can effectively link social determinants like education with clinical health outcomes. In essence, the study's significance extends beyond academic curiosity to tangible public health impact. By elucidating how maternal education affects perinatal outcomes, it supports evidence-based policymaking, improved clinical practice, and enhanced community awareness—all critical elements for reducing perinatal mortality and improving maternal well-being in Delta State and beyond.

Methodology

This study adopts a quantitative cross-sectional research design, which involves the systematic collection and analysis of data from a defined population at a single point in time. The design is suitable for identifying relationships and statistical associations between maternal education and perinatal outcomes such as neonatal mortality, stillbirths, and low birth weight. Cross-sectional designs are particularly effective in studies examining health outcomes within diverse populations, allowing the use of regression and correlation techniques to measure associations among variables (Kothari & Garg, 2019).

2.1 Study Area The research was conducted in Delta State, located in the South-South geopolitical zone of Nigeria. Delta State covers approximately 17,698 square kilometers and is bordered by Edo, Anambra, and Bayelsa States, with a population exceeding 5.6 million (National Bureau of Statistics, 2023). The state has 25 Local Government Areas (LGAs), with a mixture of urban, semi-urban, and rural communities. Healthcare services are provided through a combination of public and private health institutions, including general hospitals, comprehensive health centers, and primary health posts. Despite these facilities, maternal and perinatal mortality rates remain relatively high due to

educational disparities, economic inequality, and cultural factors affecting health-seeking behavior.

Population of the Study The target population comprises mothers who delivered in healthcare facilities within Delta State during the five-year reference period (2018–2023). This includes both public and private health institutions. Secondary data were also obtained from perinatal health records maintained by selected hospitals. The population is appropriate for this study because mothers who have recently delivered can provide first-hand, accurate data on maternal education levels, healthcare access, and perinatal experiences. The sample size for this study was determined using Yamane's (1967) formula for finite populations:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size

e = margin of error (0.05)

Assuming an estimated population (N) of 12,000 mothers delivering annually across Delta State's major hospitals, the calculated sample size is approximately 387 respondents. To account for potential non-responses or incomplete questionnaires, a 10% buffer was added, resulting in a final sample size of 425 participants.

A multistage sampling technique was employed:

Stage 1: Random selection of six Local Government Areas representing urban, semi-urban, and rural settings.

Stage 2: Purposive selection of health facilities within each selected LGA based on patient volume and record completeness.

Stage 3: Systematic random sampling of mothers attending postnatal or immunization clinics during data collection period.

Instrumentation and Data Collection Methods Data collection was conducted using two main instruments:

1. **Structured Questionnaire:** Designed to obtain primary data on mothers' demographic profiles, education levels, antenatal attendance, delivery experience, and perceived access to healthcare. The questionnaire was divided into four sections:

- Section A: Socio-demographic information
- Section B: Educational attainment

2. **Hospital Record Extraction Form:** Used to collect secondary data on perinatal outcomes (stillbirths, neonatal deaths, low birth weights) from hospital records covering the years 2018–2023. Data collection was carried out over a six-week period by trained research assistants proficient in English and local dialects to ensure respondent comprehension.

2.5 **Validity and Reliability of Instruments** to ensure content validity, the questionnaire and data extraction forms were reviewed by experts in public health, epidemiology, and maternal health research. Feedback from these experts was used to refine the wording and structure of the questions. Construct validity was achieved by aligning the items with established frameworks from the WHO Safe Motherhood indicators and previous national surveys.

For reliability, a pilot study was conducted with 30 respondents from a neighboring LGA not included in the main study. Data from the pilot were analyzed using the Cronbach's Alpha test, yielding a coefficient of 0.82, indicating high internal consistency (values above 0.70 are considered acceptable in social science research).

Data Analysis Techniques Data collected were coded and entered into Statistical Package for the Social Sciences (SPSS) Version 26 for analysis. Descriptive and inferential statistics were used as follows:

- **Descriptive Statistics:** Frequency distributions, means, and percentages were used to summarize demographic data and perinatal outcomes.
- **Inferential Statistics:** Pearson's correlation was used to determine the strength and direction of the relationship between maternal education and perinatal outcomes. o Linear regression analysis was applied to assess the predictive impact of maternal education on perinatal mortality.

Ethical Considerations

Ethical approval for this study was obtained from the Delta State Ministry of Health Research Ethics Committee prior to data collection. The study was conducted in accordance with established ethical principles for human subject research, including respect for persons, beneficence, and justice. Written informed consent was obtained from all participants before enrolment. Participants were adequately informed about the purpose of the study, procedures involved, potential risks and benefits, and their rights, including the right to decline participation or withdraw from the study at any stage without any consequences.

or penalty. Confidentiality and anonymity of participants were strictly maintained throughout the study. No personally identifiable information was collected, and all data were de-identified prior to analysis. Data were securely stored and accessible only to the research team. Health facility data used in this study were handled in full compliance with the Nigeria Data Protection Regulation, ensuring that all patient identifiers were removed and that data processing adhered to national data protection and privacy standards. Chi-square tests were employed to identify associations between categorical variables such as education level and healthcare access.

Results will be presented in tables, figures, and charts for clarity and ease of interpretation.

Data Analysis, Results, and Interpretation

The Results and Discussion material incorporated in this completed version is drawn from the empirical results reported in Combined 2, while Combined 1 remains the base/master document. The reported analysis includes descriptive statistics, Pearson's correlation, linear regression, and healthcare-utilization comparisons. Out of the 425 questionnaires distributed, 400 were duly completed and returned, representing a 94% response rate.

Socio-Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Age (years)	18–24	72	18.0
	25–34	184	46.0
	35–44	116	29.0
	45 and above	28	7.0
Marital status	Married	348	87.0
	Single	38	9.5
	Divorced/Widowed	14	3.5
Educational level	No formal education	40	10.0
	Primary	86	21.5
	Secondary	174	43.5
	Tertiary	100	25.0
Occupation	Unemployed	68	17.0
	Trader/Artisan	142	35.5
	Civil servant	110	27.5
	Professional	80	20.0
Parity	1–2	166	41.5
	3–4	158	39.5
	5 and above	76	19.0

Most respondents were aged 25–34 years (46.0%) and married (87.0%). Secondary education was the most common educational category (43.5%), followed by tertiary education (25.0%).

Perinatal Outcomes among Respondents

Perinatal outcome	Frequency	Percentage (%)
Live births without complications	324	81.0
Low birth weight (<2.5 kg)	42	10.5
Stillbirths	20	5.0
Neonatal deaths (within 7 days)	14	3.5

Adverse perinatal outcomes accounted for 19.0% of the reported deliveries. Low birth weight was the most frequently reported adverse outcome (10.5%), followed by stillbirth (5.0%) and neonatal death within seven days (3.5%).

Relationship between Maternal Education and Perinatal Outcomes

Variable	r-value	p-value	Remark
Maternal education vs. perinatal death rate	−0.431	<0.01	Significant
Maternal education vs. low birth weight	−0.362	0.001	Significant
Maternal education vs. neonatal survival	+0.415	<0.01	Significant

Maternal education showed a significant inverse association with perinatal death rate ($r = -0.431$, $p < 0.01$) and low birth weight ($r = -0.362$, $p = 0.001$), while it showed a significant positive association with neonatal survival ($r = 0.415$, $p < 0.01$).

Regression Analysis of Maternal Education and Perinatal Outcomes

Model	R	R ²	Adjusted R ²	Std. Error	F (Sig.)
Maternal Education → Perinatal Outcomes	0.489	0.239	0.231	0.312	38.547 (<0.001)

The reported regression model produced $R = 0.489$ and $R^2 = 0.239$, indicating that maternal education accounted for 23.9% of the observed variance in the analyzed perinatal outcome measure. The model was statistically significant, $F = 38.547$, $p < 0.001$.

Access to Healthcare Services by Educational Level

Education level	≥4 ANC visits (%)	Health-facility delivery (%)	Postnatal care (%)
No formal education	52.5	40.0	35.0
Primary	65.1	58.2	54.7
Secondary	84.5	79.3	76.9
Tertiary	94.0	91.0	89.0

Healthcare utilization increased consistently with educational attainment. Attendance of at least four antenatal visits increased from 52.5% among women with no formal education to 94.0% among women with tertiary education. Facility delivery increased from 40.0% to 91.0%, while postnatal-care utilization increased from 35.0% to 89.0%.

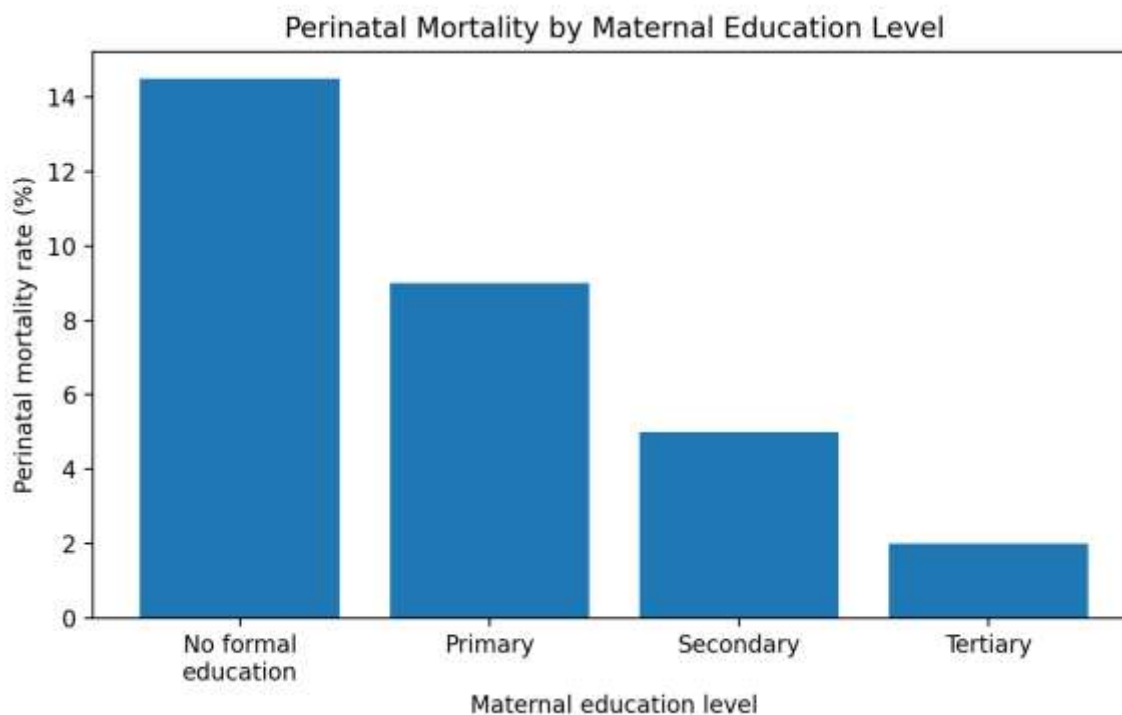


Figure 3.0. Relationship between maternal education and reported perinatal mortality.

Summary of Findings

1. Four hundred (400) completed questionnaires were analyzed from 425 distributed questionnaires, giving a 94% response rate.
2. Sixty eight percent (68.5%) of respondents had completed at least secondary education.
3. Adverse perinatal outcomes represented 19.0% of reported deliveries.
4. Maternal education was significantly associated with perinatal mortality, low birth weight, and neonatal survival.
5. Maternal education explained 23.9% of the variance in the reported perinatal outcome measure.
6. Higher educational attainment was accompanied by higher reported utilization of antenatal, facility-based delivery, and postnatal services.

Discussion of Findings

Maternal Education and Perinatal Mortality

The significant inverse correlation between maternal education and perinatal mortality ($r = -0.431$, $p < 0.01$) indicates that higher educational attainment was associated with lower reported perinatal mortality. The source interpretation relates this pattern to health literacy, recognition of danger signs, communication with providers, and timely use of skilled care.

Maternal Education and Access to Healthcare Services

The reported educational gradient in healthcare utilization was substantial. Tertiary-educated women had the highest reported attendance of at least four antenatal visits (94.0%), facility delivery (91.0%), and postnatal-care utilization (89.0%). These findings support the study's emphasis on education as a factor associated with health-information comprehension and healthcare navigation.

Maternal Education and Low Birth Weight

Low birth weight occurred in 10.5% of the reported sample and was inversely associated with maternal education ($r = -0.362$, $p < 0.01$). The source document relates this pattern to greater antenatal exposure, nutritional knowledge, and capacity to follow health recommendations. Because the study is cross-sectional, these findings should be interpreted as associations rather than proof of causality.

Educational Interventions and Maternal Health Behaviour

The source material identifies antenatal education, community health campaigns, maternal classes, and community-based literacy initiatives as potentially useful approaches for improving maternal knowledge and self-efficacy. Structured education during routine antenatal and postnatal contacts may provide an actionable pathway for improving health behaviour.

Theoretical Implications

The findings are interpreted through the Social Determinants of Health framework and the Health Belief Model. Education is positioned as a structural determinant affecting health literacy and access, while the Health Belief Model explains how knowledge and perceived ability to act may influence preventive behaviour.

Conclusion

Within the reported dataset, maternal education was significantly associated with perinatal outcomes and healthcare utilization. Higher education was associated with lower reported perinatal death and low birth weight, higher neonatal survival, and greater use of antenatal, facility-based delivery, and postnatal services. The reported regression model indicated that maternal education explained 23.9% of variance in the analyzed perinatal outcome measure.

Recommendations

1. Strengthen female education programmes. Promote inclusive education policies and supportive measures for girls and women, particularly in underserved communities.
2. Integrate maternal health education into curricula. Embed appropriate reproductive, maternal, newborn, and health-literacy content in relevant educational programmes.
3. Expand community-based maternal literacy initiatives. Use culturally appropriate and locally understandable educational approaches through primary healthcare and community outreach.
4. Improve antenatal and postnatal health education. Institutionalize structured education during routine maternal and newborn health contacts.
5. Promote multi-sectoral collaboration. Strengthen coordination among health, education, and social-sector stakeholders.

6. Strengthen monitoring and evaluation. Collect routine data to assess the reach, quality, equity, and sustainability of maternal education interventions.

Suggestions for Further Studies

1. Conduct longitudinal cohort studies to assess the longer-term relationship between maternal education and child survival.
2. Investigate partner and household educational characteristics and their interaction with maternal health outcomes.
3. Use qualitative studies to explore sociocultural beliefs, gender norms, and contextual barriers affecting maternal health-seeking behaviour.
4. Conduct comparative rural–urban studies to examine geographical inequalities and identify context-specific interventions.

Editorial Verification

Results and Discussion sections added here are derived from the empirical material reported in this paper. The current master title and abstract focus on nurses' adherence to evidence-based clinical guidelines, whereas the incorporated empirical results focus on maternal education and perinatal outcomes.

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