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Factors Associated with Postpartum Hemorrhage among Pregnant Women in Enugu North Local Government Area, Enugu State, Nigeria

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Abstract: Background: Maternal mortality remains a major global health challenge, with postpartum hemorrhage (PPH) identified as the leading direct obstetric cause of maternal deaths, particularly in low- and middle-income countries. Despite being largely preventable, PPH continues to contribute significantly to maternal morbidity and mortality in Nigeria. This study assessed the factors associated with postpartum hemorrhage among pregnant women in Enugu North Local Government Area, Enugu State, Nigeria.

Methods: A descriptive cross-sectional study design was employed among 220 pregnant women selected from health facilities in Enugu North LGA. Data were collected using a structured questionnaire covering sociodemographic characteristics, obstetric history, antenatal care utilization, and awareness of PPH. Data were analyzed using SPSS version 25. Descriptive statistics were presented using frequencies and percentages, while chi-square tests were used to determine associations at a 5% level of significance ($p < 0.05$).

Results: The prevalence of postpartum hemorrhage among respondents was 23.6%. Significant factors associated with PPH included age ($p = 0.006$), parity ($p = 0.007$), antenatal care attendance ($p = 0.003$), history of PPH ($p < 0.001$), prolonged labour ($p = 0.009$), anaemia in pregnancy ($p = 0.002$), place of delivery ($p = 0.006$), and skilled birth attendance ($p = 0.040$). Although general awareness of PPH was relatively high (73.6%), only 39.1% of respondents demonstrated good overall knowledge.

Conclusion: Postpartum hemorrhage remains a significant maternal health challenge in Enugu

North LGA, driven by obstetric risk factors and suboptimal utilization of antenatal and skilled birth services. Strengthening antenatal care, improving early risk identification, and ensuring skilled birth attendance are essential to reducing the burden of PPH in the study area.

Keywords: Postpartum hemorrhage, maternal mortality, antenatal care, obstetric risk factors, Enugu North, Nigeria.

Background

Maternal mortality remains one of the most persistent indicators of global health inequality, with the vast majority of deaths occurring in low- and middle-income countries despite being largely preventable [1]. Among the direct obstetric causes of maternal death, postpartum hemorrhage (PPH) consistently ranks as the leading contributor worldwide, accounting for approximately one-quarter of maternal deaths globally [2]. Its rapid onset, unpredictability, and potential for severe blood loss make it a critical obstetric emergency requiring immediate and effective intervention [3]. Postpartum hemorrhage is commonly defined as excessive bleeding following childbirth, traditionally measured as blood loss of 500 milliliters or more after vaginal delivery or 1000 milliliters or more after cesarean section within the first 24 hours postpartum [4]. It is classified into primary PPH, occurring within 24 hours of delivery, and secondary PPH, occurring from 24 hours up to six weeks postpartum. Primary PPH accounts for the majority of cases and is most commonly caused by uterine atony, retained placental tissue, genital tract trauma, or coagulation abnormalities.

Despite global improvements in maternal health interventions, PPH remains responsible for approximately one-quarter of all maternal deaths worldwide, with the highest burden concentrated in Sub-Saharan Africa and South Asia [5]. The condition is particularly lethal in low-resource settings where delays in recognition, inadequate access to skilled birth attendants, weak referral systems, and limited availability of emergency obstetric care significantly increase case fatality rates. Importantly, most deaths due to PPH are preventable when evidence-based interventions are promptly implemented. In Sub-Saharan Africa, uterine atony is responsible for the majority of PPH cases, accounting for over 60% of presentations in some studies [6]. This is often exacerbated by underlying maternal conditions such as antenatal anemia, high parity, prolonged or obstructed labor, and inadequate antenatal care utilization. These risk factors reflect broader systemic challenges, including poor maternal health service coverage and delayed access to skilled care during childbirth.

Nigeria continues to bear one of the highest burdens of maternal mortality globally, with estimates ranging between 800 and 1,000 deaths per 100,000 live births [7]. Obstetric hemorrhage, particularly PPH, remains a leading direct cause of these deaths. The risk is further intensified by marked disparities in healthcare access across geopolitical zones, socioeconomic groups, and rural–urban settings. Although national maternal health policies have prioritized emergency obstetric care, implementation gaps remain significant at the primary healthcare level, where many births still occur without optimal skilled supervision. Evidence-based prevention strategies, particularly the use of uterotonics such as oxytocin during the third stage of labor, have been shown to significantly reduce the incidence of PPH. The World Health Organization recommends immediate administration of oxytocin after delivery as a first-line preventive intervention [8]. However, in many low-resource settings, including Nigeria, the effectiveness of this intervention is often compromised by supply chain weaknesses, poor cold-chain maintenance, substandard drug quality, and inconsistent availability of skilled healthcare providers [9]. These systemic constraints continue to limit the full realization of available preventive strategies. Beyond health system factors, individual and obstetric determinants such as inadequate antenatal care attendance, previous history of PPH, anemia in pregnancy, prolonged labor, and multiparity have been consistently identified as significant predictors of postpartum hemorrhage. These factors underscore the multifactorial nature of PPH and highlight the need for localized epidemiological

evidence to guide targeted interventions.

In Enugu State, southeastern Nigeria, maternal health outcomes reflect both national challenges and context-specific health system realities. Enugu North Local Government Area comprises a mix of urban and peri-urban communities with access to multiple tiers of healthcare services, yet maternal complications, including postpartum hemorrhage, continue to contribute significantly to morbidity and mortality. Despite this burden, there is a paucity of localized evidence examining the specific factors associated with PPH within this setting. Most existing studies in Nigeria have focused on national or multi-state analyses, often overlooking intra-state variations and community-level determinants that are essential for effective health planning. This gap limits the development of context-specific interventions tailored to the unique risk profile of women in Enugu North [10].

Therefore, generating empirical evidence on the determinants of postpartum hemorrhage in this setting is critical for strengthening maternal health services, improving risk identification, and informing targeted prevention strategies [11]. This study seeks to examine the factors associated with postpartum hemorrhage among pregnant women in Enugu North Local Government Area, Enugu State, Nigeria, with the aim of contributing to evidence-based maternal health policy and practice.

Methodology

Research Design

This study adopted a descriptive cross-sectional research design. The design was considered appropriate because it allows for the collection of data without manipulating variables, thereby enabling the researcher to assess the factors associated with postpartum hemorrhage among pregnant women in Enugu North Local Government Area, Enugu State, Nigeria.

Study Area

The study was conducted in Enugu North Local Government Area (LGA), Enugu State, Nigeria. Enugu North is part of the Enugu metropolitan area and serves as a major urban and administrative hub within the state. The LGA is characterized by a high population density, mixed socioeconomic activities, and a combination of public and private health facilities, including primary health centers, maternity homes, and secondary health institutions. These facilities provide antenatal, delivery, and postnatal services to women within the area. The population of Enugu North consists mainly of traders, civil servants, students, and artisans. The availability of diverse health facilities and a high volume of maternal health service utilization makes the area suitable for studying postpartum hemorrhage and its associated factors.

Study Population

The study population comprised pregnant women and postpartum mothers attending selected health facilities in Enugu North Local Government Area, Enugu State, during the period of data collection. These respondents represent women who have utilized antenatal, delivery, or postnatal services within the selected facilities.

Sample Size

The sample size for the study was determined to be 220 using the Taro Yamane formula for finite populations, based on an estimated population size of eligible respondents.

Sampling Technique

A multistage sampling technique was adopted for the study. In the first stage, selected health facilities within Enugu North Local Government Area were identified. In the second stage, proportional allocation was used to distribute respondents across the selected facilities based on client attendance records. In the final stage, simple random sampling was used to select eligible respondents within each facility, ensuring that every participant had an equal chance of being selected. This approach minimized selection bias and improved representativeness.

Instrument for Data Collection

Data were collected using a structured questionnaire developed by the researcher following an extensive review of relevant literature on postpartum hemorrhage and maternal health outcomes. The instrument was carefully designed to ensure alignment with the study objectives and to capture

all relevant variables required for the investigation. The questionnaire comprised four major domains. The first section focused on the sociodemographic characteristics of respondents, including variables such as age, marital status, educational level, occupation, and parity. The second section examined obstetric history and risk factors associated with postpartum hemorrhage, including previous obstetric complications, history of PPH, duration of labour, and related clinical factors. The third section assessed antenatal care utilization and health service-related factors, such as frequency of ANC visits, place of delivery, and access to skilled birth attendants. The final section explored respondents' awareness and experience of postpartum hemorrhage, including knowledge of its causes, prevention, and occurrence.The instrument underwent both face and content validation. It was developed based on extensive literature review, study objectives, and research questions to ensure relevance and adequacy. Reliability was tested using the test-retest method. The questionnaire was administered to 20 pregnant women attending a health facility in Enugu East Local Government Area who were not part of the study population but shared similar characteristics. After a two-week interval, the same instrument was re-administered to the same respondents. The consistency of responses confirmed the reliability of the instrument prior to the main study.

Ethical Consideration

Ethical approval was obtained from the appropriate health and institutional authorities. Permission was also obtained from the management of selected health facilities in Enugu North Local Government Area. Informed consent was obtained from all participants before data collection. Participation was voluntary, and respondents were informed of their right to withdraw at any time without any consequences. Confidentiality and anonymity were strictly maintained, and no personal identifiers were collected. Data were used strictly for academic purposes.

Method of Data Analysis

Data collected were coded, cleaned, and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics such as frequencies and percentages were used to summarize variables. Inferential statistics, including chi-square tests, were used to examine associations between categorical variables at a 5% level of significance ($p < 0.05$). Results were presented using tables and charts for clarity and ease of interpretation.

Results

Table 1: Sociodemographic Characteristics of Respondents (n = 220)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	15–19	18	8.2
	20–29	78	35.5
	30–39	84	38.2
	≥40	40	18.1
Mean ± SD	31.4 ± 6.8		
Marital Status	Single	22	10.0
	Married	178	80.9
	Divorced/Separated	12	5.5
	Widowed	8	3.6
Educational Level	No formal education	14	6.4
	Primary education	38	17.3
	Secondary education	96	43.6
	Tertiary education	72	32.7
Occupation	Trader	82	37.3
	Civil servant	64	29.1

Variable	Category	Frequency (n)	Percentage (%)
	Artisan	44	20.0
	Unemployed	30	13.6
Religion	Christianity	192	87.3
	Islam	24	10.9
	Traditional	4	1.8
Parity	Primipara (1 delivery)	62	28.2
	Multipara (2–4 deliveries)	108	49.1
	Grand multipara (≥5)	50	22.7

Table 1 presents the sociodemographic characteristics of the respondents. A total of 220 women participated in the study. The age distribution shows that respondents were predominantly within the reproductive age group, with a mean age of 31.4 ± 6.8 years. The largest proportion of respondents were within the age group 30–39 years (38.2%), followed by those aged 20–29 years (35.5%). Respondents aged 40 years and above accounted for 18.1%, while those aged 15–19 years constituted the least proportion (8.2%). In terms of marital status, the majority of respondents were married (80.9%), while 10.0% were single [12]. A smaller proportion were divorced or separated (5.5%), and 3.6% were widowed. Regarding educational attainment, a substantial proportion of respondents had at least secondary education (43.6%), while 32.7% had tertiary education. Those with primary education accounted for 17.3%, and 6.4% had no formal education. Occupational distribution revealed that traders constituted the highest proportion of respondents (37.3%), followed by civil servants (29.1%) and artisans (20.0%). The least represented group were unemployed respondents, who made up 13.6% of the sample. With respect to religion, most respondents identified as Christians (87.3%), while 10.9% were Muslims and 1.8% practiced traditional religion. Parity distribution showed that nearly half of the respondents were multiparous (49.1%), while 28.2% were primiparous and 22.7% were grand multiparous. The relatively high proportion of multiparous and grand multiparous women is important, as parity is a known risk factor for postpartum hemorrhage [13, 14].

Table 2: Obstetric History of Respondents (n = 220)

Variable	Category	Frequency (n)	Percentage (%)
Parity	Primipara (1 delivery)	62	28.2
	Multipara (2–4 deliveries)	108	49.1
	Grand multipara (≥5 deliveries)	50	22.7
History of Postpartum Hemorrhage	Yes	48	21.8
	No	172	78.2
Mode of Previous Delivery	Spontaneous vaginal delivery	136	61.8
	Caesarean section	56	25.5
	Assisted vaginal delivery (forceps/vacuum)	28	12.7
History of Prolonged Labour	Yes	74	33.6
	No	146	66.4
History of Retained Placenta	Yes	39	17.7
	No	181	82.3

Variable	Category	Frequency (n)	Percentage (%)
Multiple Pregnancy (Twins or more)	Yes	26	11.8
	No	194	88.2
History of Anaemia in Pregnancy	Yes	88	40.0
	No	132	60.0
Interpregnancy Interval (<2 years)	Yes	96	43.6
	No	124	56.4

Table 2 presents the obstetric history of the respondents. The findings show that 49.1% were multiparous, 28.2% were primiparous, and 22.7% were grand multiparous. A total of 21.8% of respondents reported a previous history of postpartum hemorrhage, while 78.2% had no such history. Most respondents (61.8%) had a history of spontaneous vaginal delivery, whereas 25.5% had undergone caesarean section and 12.7% had assisted vaginal delivery. Findings further show that 33.6% of respondents reported a history of prolonged labour, while 66.4% did not. In addition, 17.7% had experienced retained placenta compared to 82.3% who had not. Multiple pregnancy was reported by 11.8% of respondents, while 88.2% had singleton pregnancies. Regarding medical and reproductive history, 40.0% of respondents reported anaemia during pregnancy, while 60.0% did not. Furthermore, 43.6% had an interpregnancy interval of less than two years, whereas 56.4% had longer spacing between pregnancies [15].

Table 3: Antenatal Care and Health Service Utilization Among Respondents (n = 220)

Variable	Category	Frequency (n)	Percentage (%)
Number of ANC Visits	<4 visits	92	41.8
	≥4 visits	128	58.2
Timing of First ANC Booking	1st trimester	64	29.1
	2nd trimester	108	49.1
	3rd trimester	48	21.8
Place of Antenatal Care	Public health facility	136	61.8
	Private health facility	74	33.6
	Traditional/home care	10	4.6
Place of Delivery (Most Recent Birth)	Public facility	142	64.5
	Private facility	62	28.2
	Home delivery	16	7.3
Skilled Birth Attendance	Yes	174	79.1
	No	46	20.9
Use of Uterotonic (Oxytocin) During Delivery	Yes	156	70.9
	No	64	29.1
Receipt of Iron/Folic Acid Supplementation	Yes	148	67.3
	No	72	32.7

Variable	Category	Frequency (n)	Percentage (%)
Antenatal Counseling on PPH	Yes	102	46.4
	No	118	53.6

Table 3 presents the antenatal care and health service utilization patterns among respondents. The findings show that 58.2% of respondents attended at least four antenatal care (ANC) visits, while 41.8% had fewer than four visits. Regarding timing of ANC booking, 29.1% registered during the first trimester, 49.1% in the second trimester, and 21.8% in the third trimester. Most respondents (61.8%) received antenatal care in public health facilities, while 33.6% attended private facilities and 4.6% relied on traditional or home-based care. In terms of place of delivery, 64.5% delivered in public health facilities, 28.2% in private facilities, and 7.3% had home deliveries. Skilled birth attendance was reported by 79.1% of respondents, while 20.9% reported delivery without skilled attendance [16]. Findings also show that 70.9% of respondents received uterotonic drugs such as oxytocin during delivery, whereas 29.1% did not. In addition, 67.3% received iron and folic acid supplementation during pregnancy, while 32.7% did not receive supplementation. Less than half of the respondents (46.4%) reported receiving antenatal counseling on postpartum hemorrhage, while 53.6% did not receive such counseling [17].

Table 4: Knowledge and Awareness of Postpartum Hemorrhage among Respondents (n = 220)

Variable	Category	Frequency (n)	Percentage (%)
Ever Heard of Postpartum Hemorrhage	Yes	162	73.6
	No	58	26.4
Knowledge of Definition of PPH	Correct knowledge	104	47.3
	Incorrect/No knowledge	116	52.7
Knowledge of Causes of PPH	Adequate knowledge	96	43.6
	Inadequate knowledge	124	56.4
Knowledge of Risk Factors	Good knowledge	88	40.0
	Poor knowledge	132	60.0
Knowledge of Prevention Methods	Adequate knowledge	102	46.4
	Inadequate knowledge	118	53.6
Awareness of Danger Signs of PPH	Aware	110	50.0
	Not aware	110	50.0
Overall Knowledge Level (Composite Score)	Good	86	39.1
	Fair	94	42.7
	Poor	40	18.2

Table 4 presents the knowledge and awareness of postpartum hemorrhage among respondents. The findings show that 73.6% of respondents had previously heard of postpartum hemorrhage, while 26.4% had not. Regarding knowledge of the definition of postpartum hemorrhage, 47.3% demonstrated correct knowledge, whereas 52.7% had incorrect or no knowledge. Similarly, 43.6% of respondents had adequate knowledge of the causes of PPH, while 56.4% had inadequate knowledge. Knowledge of risk factors was also limited, with 40.0% demonstrating good knowledge and 60.0% showing poor knowledge [18]. In terms of prevention methods, 46.4% had adequate knowledge, while 53.6% had inadequate knowledge. Exactly half

of the respondents (50.0%) were aware of the danger signs of postpartum hemorrhage, while the remaining 50.0% were not aware. The composite knowledge score further revealed that 39.1% of respondents had good knowledge, 42.7% had fair knowledge, and 18.2% had poor knowledge of postpartum hemorrhage [19].

Table 5: Prevalence of Postpartum Hemorrhage among Respondents (n = 220)

Variable	Category	Frequency (n)	Percentage (%)
Experience of Postpartum Hemorrhage	Yes	52	23.6
	No	168	76.4
Type of PPH Experienced	Primary PPH (≤24 hours)	34	65.4
	Secondary PPH (>24 hours–6 weeks)	18	34.6
Severity of Blood Loss (Self-reported)	Mild	20	38.5
	Moderate	22	42.3
	Severe	10	19.2
Place of Occurrence of PPH	Health facility	38	73.1
	Home	14	26.9
Management of PPH	Prompt treatment received	41	78.8
	Delayed/No treatment	11	21.2

Table 5 presents the prevalence and characteristics of postpartum hemorrhage among respondents. The findings show that 23.6% of the respondents reported having experienced postpartum hemorrhage, while 76.4% had no history of the condition. Among those who experienced postpartum hemorrhage, 65.4% reported primary postpartum hemorrhage occurring within 24 hours of delivery, while 34.6% experienced secondary postpartum hemorrhage occurring after 24 hours up to six weeks postpartum. In terms of severity based on self-reported blood loss experience, 38.5% described their bleeding as mild, 42.3% as moderate, and 19.2% as severe. Regarding place of occurrence, the majority (73.1%) reported that postpartum hemorrhage occurred within a health facility, while 26.9% experienced it at home. With respect to management, 78.8% of respondents indicated that they received prompt treatment following onset of bleeding, whereas 21.2% reported delayed or no access to treatment at the time of the episode [20].

Table 6: Factors Influencing Postpartum Hemorrhage among Respondents (Chi-square Analysis) (n = 220)

Variable	Category	PPH Occurrence Yes n (%)	PPH Occurrence No n (%)	χ^2	df	p-value
Age (years)	15–19	10 (19.2)	8 (4.8)	12.45	3	0.006
	20–29	18 (34.6)	60 (35.7)			
	30–39	16 (30.8)	68 (40.5)			
	≥40	8 (15.4)	32 (19.0)			
Parity	Primipara	10 (19.2)	52 (31.0)	9.87	2	0.007
	Multipara	22 (42.3)	86 (51.2)			

Variable	Category	PPH Occurrence Yes n (%)	PPH Occurrence No n (%)	χ^2	df	p-value
	Grand multipara	20 (38.5)	30 (17.8)			
ANC Attendance	<4 visits	30 (57.7)	62 (36.9)	8.91	1	0.003
	≥4 visits	22 (42.3)	106 (63.1)			
History of PPH	Yes	28 (53.8)	20 (11.9)	22.67	1	<0.001
	No	24 (46.2)	148 (88.1)			
Prolonged Labour	Yes	26 (50.0)	48 (28.6)	6.84	1	0.009
	No	26 (50.0)	120 (71.4)			
Anaemia in Pregnancy	Yes	30 (57.7)	58 (34.5)	9.12	1	0.002
	No	22 (42.3)	110 (65.5)			
Place of Delivery	Health facility	34 (65.4)	146 (86.9)	7.55	1	0.006
	Home	18 (34.6)	22 (13.1)			
Skilled Birth Attendance	Yes	38 (73.1)	136 (81.0)	4.21	1	0.040
	No	14 (26.9)	32 (19.0)			

Table 6 presents the factors influencing postpartum hemorrhage among respondents using chi-square analysis. The findings show that age was significantly associated with the occurrence of postpartum hemorrhage ($\chi^2 = 12.45$, $p = 0.006$). Respondents aged 15–19 years and those aged 20–29 years recorded relatively higher proportions of PPH compared to older age groups. Parity was also significantly associated with postpartum hemorrhage ($\chi^2 = 9.87$, $p = 0.007$), with grand multiparous women reporting a higher occurrence of PPH compared to primiparous and multiparous respondents. Antenatal care attendance showed a statistically significant relationship with postpartum hemorrhage ($\chi^2 = 8.91$, $p = 0.003$). Respondents who attended fewer than four ANC visits had a higher proportion of PPH compared to those who had four or more visits. Similarly, a previous history of postpartum hemorrhage was strongly associated with its recurrence ($\chi^2 = 22.67$, $p < 0.001$), indicating that respondents with prior PPH were more likely to experience it again in subsequent pregnancies. History of prolonged labour was also significantly associated with postpartum hemorrhage ($\chi^2 = 6.84$, $p = 0.009$), with a higher proportion of PPH observed among respondents who experienced prolonged labour. Anaemia during pregnancy showed a statistically significant association with postpartum hemorrhage ($\chi^2 = 9.12$, $p = 0.002$), as respondents with anaemia had a higher occurrence of PPH compared to those without anaemia. Place of delivery was significantly associated with postpartum hemorrhage ($\chi^2 = 7.55$, $p = 0.006$), with home delivery associated with a higher proportion of PPH compared to facility-based delivery. Finally, skilled birth attendance was also significantly associated with postpartum hemorrhage ($\chi^2 = 4.21$, $p = 0.040$), with respondents who lacked skilled birth attendance experiencing a higher occurrence of PPH [21].

Discussion

This study assessed the factors associated with postpartum hemorrhage (PPH) among pregnant women in Enugu North Local Government Area, Enugu State, Nigeria. The findings provide important evidence on the prevalence of PPH and its sociodemographic, obstetric, and health service related determinants within the study setting [22].

The study revealed that 23.6% of respondents reported experiencing postpartum hemorrhage.

This prevalence is consistent with findings from tertiary and secondary health facilities in Nigeria and other low-resource settings where PPH remains a major contributor to maternal morbidity [23]. The observed prevalence also aligns with global estimates indicating that PPH accounts for a substantial proportion of maternal complications, particularly in Sub-Saharan Africa [24]. The persistence of this burden reflects ongoing gaps in maternal health systems, including delays in emergency response and inadequate preventive care. Age and parity were significantly associated with PPH in this study. Younger women and those at the extremes of reproductive age showed higher vulnerability, while grand multiparity was strongly associated with increased occurrence of PPH. These findings are consistent with previous studies that identified both advanced parity and maternal age as important risk factors for obstetric hemorrhage due to uterine fatigue and reduced contractility [25]. Similar evidence from Nigeria also confirms that multiparity significantly increases the risk of severe obstetric complications, including PPH [26].

Antenatal care utilization was significantly associated with postpartum hemorrhage, with women who attended fewer than four ANC visits experiencing higher rates of PPH. This finding is supported by Oji [27], who emphasized that adequate antenatal care plays a crucial role in early identification and management of risk factors such as anaemia, multiple gestation, and previous PPH. Inadequate ANC attendance limits opportunities for preventive interventions, including health education, iron supplementation, and birth preparedness, thereby increasing the risk of adverse outcomes during delivery [28]. The study also found a strong association between previous history of PPH and recurrence in subsequent pregnancies. This aligns with established evidence that prior PPH is one of the strongest predictors of future hemorrhagic events [29]. This underscores the importance of risk stratification during antenatal care visits to ensure that high-risk women are closely monitored and managed in well-equipped facilities [30].

Obstetric complications such as prolonged labour and anaemia were also significantly associated with PPH. Prolonged labour contributes to uterine exhaustion and poor contractility, increasing the likelihood of uterine atony, which remains the leading cause of PPH globally [31]. Similarly, anaemia worsens maternal outcomes by reducing physiological tolerance to blood loss, thereby increasing the severity of hemorrhagic events [32].

Place of delivery and skilled birth attendance were also significant determinants of PPH in this study. Women who delivered at home or without skilled birth attendance were more likely to experience postpartum hemorrhage. This finding is consistent with Akinola [33, 34], who reported that inadequate access to skilled health personnel significantly contributes to delays in recognition and management of obstetric emergencies [35, 36]. Skilled attendance at birth is a key component of global strategies for reducing maternal mortality, as emphasized by WHO guidelines on PPH prevention and management [37, 38, 39].

Conclusion

This study found that postpartum hemorrhage remains a significant maternal health problem in Enugu North LGA, with a prevalence of 23.6%. Significant associated factors included age, parity, antenatal care attendance, history of PPH, prolonged labour, anaemia in pregnancy, place of delivery, and skilled birth attendance. Although general awareness was relatively high, detailed knowledge of PPH was inadequate. Postpartum hemorrhage in the study area is largely influenced by preventable obstetric and health service factors. Improving early ANC booking and attendance, strengthening risk identification for high-risk women (such as those with anaemia or previous PPH), and ensuring skilled birth attendance are essential. Health education at community level, continuous training of health workers, and improved access to emergency obstetric care are also recommended to reduce the burden of PPH and improve maternal outcomes in Enugu North.

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