



Evaluating Midwives Knowledge and Attitudes Regarding Pre-Eclampsia Management at Presbyterian Hospital, Agogo, Ghana: A Cross-Sectional Study

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Abstract

Background: Pre-eclampsia is a major contributor to maternal and perinatal morbidity and mortality globally and in Ghana. Midwives play a critical role in the early detection and management; however, their knowledge, attitudes, and the challenges they encounter influence the quality of care.

Methodology: A descriptive cross-sectional study was conducted among 50 midwives using a structured self-administered questionnaire. Data were analyzed using SPSS version 26. Descriptive statistics summarized demographic characteristics, knowledge, attitudes, barriers, and recommendations. Chi-square tests and logistic regression examined associations between demographic variables and knowledge/attitude levels. The majority of respondents were aged 20–39 years (70.0%), with 54.0% having 1–3 years of experience, and 86.0% had received prior training in pre-eclampsia management. Knowledge was generally high, with 88.0% recognizing hallmark symptoms and 84.0% identifying magnesium sulfate as the first-line anticonvulsant. Attitudes were positive; 68.0% strongly agreed that pre-eclampsia training should be mandatory. Key barriers included limited patient awareness (86.0%), understaffing (70.0%), and inadequate diagnostic tools (58.0%). Years of experience were significantly associated with knowledge level ($\chi^2=19.470$, $p=0.003$), while logistic regression showed work unit as a significant predictor of knowledge level ($p=0.037$).

Conclusion: Midwives exhibited good knowledge and positive attitudes toward pre-eclampsia management, though systemic barriers constrain effective care. Strengthening in-service training, improving diagnostic and therapeutic resources, and enhancing patient education are recommended to optimize outcomes.

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Introduction

Pre-eclampsia is a leading cause of adverse maternal and perinatal outcomes worldwide, contributing significantly to global maternal and neonatal morbidity and mortality. The condition affects approximately 2%–8% of pregnancies and is responsible for 14% of maternal deaths and 12% of perinatal mortality globally [1-5]. Pre-eclampsia (PE) is characterized by new-onset hypertension after 20 weeks of gestation, typically accompanied by proteinuria, maternal organ dysfunction, or uteroplacental insufficiency [6].

Globally, the pathogenesis of PE is strongly linked to abnormal trophoblastic invasion of the uterine spiral arteries during placental development, resulting in placental ischemia, oxidative stress, and systemic endothelial dysfunction [7-9]. These disruptions contribute to the disease's complex multisystemic nature. PE remains more prevalent in low- and middle-income countries (LMICs), with rates seven times higher than in developed countries [10]. In Africa, prevalence rates range from 1.8% to 16.7% with Ghana reporting prevalence between 6.55% and 7.3% [11-14]. The higher prevalence in LMICs is influenced by socio-economic disparities, limited access to healthcare, and a range of risk factors, including early pregnancies, multiparity, advanced maternal age, anemia, and infections [15]. In Ghana, PE is a major contributor to maternal and neonatal mortality, with approximately 25% of maternal deaths attributed to hypertensive disorders in tertiary hospitals [16,17]. Although clinical guidelines have been adopted, systemic challenges such as delayed diagnoses, inconsistent adherence to protocols, and insufficient training of healthcare workers continue to hinder effective management of PE [18,19].

Midwives have played and continue to play a critical role in the early detection and management of PE, especially in LMICs, where they often serve as the first point of contact for pregnant women. In Ghana, midwives operate at all levels of the healthcare system, offering a range of services including antenatal care, blood pressure monitoring,

administration of antihypertensive medications, and referral of high-risk cases [20,21]. However, evidence suggests many midwives demonstrate inadequate knowledge and skills in managing pre-eclampsia. A study revealed that only 50% of midwives in Ghana's secondary and primary health facilities demonstrated competency in managing pregnancy complications [22-25].

Ghana has made significant strides in increasing the midwifery workforce as part of its commitment to achieving universal health coverage (UHC). However, this increase in numbers has not necessarily resulted in improved quality of care, particularly in rural and underserved areas where PE-related complications remain prevalent. Although continuing professional development (CPD) programs are available for midwives, these initiatives remain inconsistently implemented, and gaps in pre-service training persist [26-29].

PE outcomes could be significantly improved with targeted training interventions that align with global guidelines. A well-trained cadre of midwives equipped with the knowledge, skills, and confidence to manage PE is essential for reducing maternal and neonatal mortality rates in Ghana. This study aimed to assess midwives' knowledge and attitudes at Presbyterian Hospital, Agogo, toward PE management to identify critical gaps and inform evidence-based recommendations for improving midwifery care.

Materials and Methods

Ethics Statement

The Research Committee, Presbyterian Hospital, Agogo, approved the study (APH/ADM/RES135/25)

Study Design and Location

This study adopted a descriptive cross-sectional design to assess interventions aimed at improving midwives' knowledge and attitudes toward PE management. This design was appropriate for obtaining a snapshot of midwives' current knowledge, attitudes, and challenges in pre-eclampsia care, enabling identification of gaps and areas for improvement. This study was conducted

at the Presbyterian Hospital, Agogo, located in the Ashanti Region of Ghana. Established on March 21, 1931, the hospital has grown to become a major healthcare institution, recognized as the second largest hospital in the Ashanti Region and a referral centre for various healthcare facilities, including Konongo-Odumase Government Hospital and Juaso Government Hospital.

Although officially designated as a district hospital, its size, scope of operations, and range of specialized services position it as a facility of regional hospital status. The hospital offers specialized care in surgery, ophthalmology, paediatrics, internal medicine, and obstetrics and gynaecology, making it a critical healthcare provider in the region. It also attracts patients from across Ghana and internationally, establishing itself as a leading mission hospital in the country. Given its stature as a referral and specialized care centre, Presbyterian Hospital, Asante Akyem Agogo, provided an ideal setting for this study, as its midwifery workforce manages a significant number of cases involving pregnancy complications, including pre-eclampsia.

Inclusion and Exclusion Criteria

Registered midwives actively providing antenatal, intrapartum, or postpartum care at Presbyterian Hospital, Agogo were included in the study. Midwives with a minimum of six months of clinical experience at the hospital were included in the study. Midwives willing to provide informed consent to participate were included in the study. Midwives unavailable during the data collection period were excluded from the study. Midwives in administrative roles with no direct patient care responsibilities were excluded from the study. A total of 50 midwives were included in the research.

Sample Size

A purposive sampling technique was employed to select midwives who are directly involved in antenatal, intrapartum, or postpartum care at the hospital. The sample size was determined using the Cochran formula:

$$n = \frac{z^2 \cdot p \cdot (1-p)}{e^2},$$

where: n = required sample size, Z = Z-score for a 95% confidence interval (1.96) p = estimated

proportion of midwives with adequate knowledge of pre-eclampsia (assumed at 50% for maximum variability) and e = margin of error (5%). A 10% adjustment was made to account for non-responses, yielding a final sample size of 50 midwives.

Data Collection

A structured questionnaire was used to assess midwives' knowledge, attitudes, and practices regarding preeclampsia. The questionnaire included sections on: knowledge of pre-eclampsia risk factors, symptoms, and management; attitudes toward the condition and its management; barriers and challenges in managing pre-eclampsia; and recommendations to support pre-eclampsia management.

Procedure

Data was collected through face-to-face interviews and self-administered questionnaires. To enhance accuracy and completeness, a brief orientation was provided to participants before they completed the questionnaire.

Data Analysis

Data analysis was conducted using Statistical Package for Social Sciences (SPSS) Version 26.0. Frequencies, and percentages was used to summarize demographic characteristics, levels of knowledge, and attitudes. Chi-square tests was used to examine associations between selected demographic variables (training in pre-eclampsia management, level of education, years of experience) and knowledge or attitude. Logistic regression was further used to identify predictors of adequate knowledge and positive attitudes. A p-value of 0.05 was considered statistically significant.

Results

The results were organized into socio-demographic characteristics, knowledge levels, attitudes, perceived barriers, and recommendations. Inferential statistics, including chi-square tests and logistic regression, were also presented to assess associations and predictors. The majority of respondents (70.0%) were aged between 20 and 29 years, followed by 22.0% in the 30–39 years group. Only a small proportion were aged 40 years and above. In terms of years of professional experience, the largest proportion (54.0%) had 1–3 years of experience, while 28.0% had less than one year. Only 18.0% had more than four years of experience. Educational background revealed that nearly half

(46.0%) of respondents held a Diploma qualification, while 40.0% had a Bachelor’s degree, and only 4.0% had postgraduate training. Encouragingly, a majority (86.0%) reported having received training in pre-

eclampsia management.

Table 1: Below presents the socio-demographic profile of 50 respondents who participated in the study.

Variable	Category	Frequency (n)	Percentage (%)
Age Group	20-29	35	70
	30-39	11	22
	40-49	3	6
	50+	1	2
Years of Experience	<1 year	14	28
	1-3 years	27	54
	4-6 years	6	12
	>6 years	3	6
Educational Level	Certificate	5	10
	Diploma	23	46
	Bachelor’s Degree	20	40
	Master’s Degree or higher	2	4
Trained in Pre-eclampsia	Yes	43	86
	No	7	14
Work setting	ANC unit	19	38
	Labor & delivery unit	18	36
	PNC unit	3	6
	Rotates across all unit	10	20
Encounter with PE Cases	Rarely	5	10
	Occasionally	26	52
	Frequently	19	38
	Always	0	0
Total		100	100

Table 1: Socio-Demographic Characteristics of Respondents

Knowledge of Pre-Eclampsia

Respondents were assessed on their knowledge of pre-eclampsia using structured questions covering definition, risk factors, hallmark symptoms, complications, treatment, and monitoring. The results are summarized in Tables 2–8 and illustrated in Figures 1–2.

All respondents (100%) correctly identified pre-eclampsia as a condition characterized by high blood pressure after 20 weeks of pregnancy, often with proteinuria or maternal organ dysfunction.

Table 2 below shows participants' responses to the definition of pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Q7	50	100	0	0

Table 2: Definition of pre-eclampsia (Q7)

Recognition of risk factors was varied: Chronic hypertension (90%), History of pre-eclampsia in a previous pregnancy (82%), Advanced maternal age > 35years (68%), and Multiple pregnancies (62%) were frequently selected. Nulliparity (first pregnancy) was the least identified (28%). Table 3 below shows participant response to the recognition of the risk factors of pre-eclampsia

Question	Selected (n)=50	Selected (%)	Not Selected (n)=50	Not Selected (%)
Q8a	14	28	36	72
Q8b	31	62	19	38
Q8c	45	90	5	10
Q8d	34	68	16	32
Q8e	41	82	9	18

Table 3: Risk Factors of Pre-eclampsia (Q8a-Q8e)

Most respondents correctly identified high blood pressure >140/90mmHg (90%), proteinuria (88%), persistent frontal headache despite intake of analgesia (86%) and vision changes (74%) as hallmark symptoms. However, only 30% recognized excessive weight gain unrelated to diet. Tabel 4 below shows participant response to the hallmark symptoms of pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n)=50	Not Selected (%)
Q9a	43	86	7	14
Q9b	37	74	13	26
Q9c	44	88	6	12
Q9d	45	90	5	10
Q9e	15	30	35	70

Table 4: Hallmark Symptoms Q9a-Q9e)

Nearly all respondents (98%) recognized eclampsia (seizures), and 74% identified preterm birth as complications. However, fewer identified placental abruption (46%), maternal stroke (46%), and fetal growth restriction (42%). Table 5 below shows participants' responses to the complications of untreated pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n)=50	Not Selected (%)
Q10a	49	98	1	2
Q10b	21	42	29	58
Q10c	37	74	13	26
Q10d	23	46	27	54
Q10e	23	46	27	54

Table 5: Complications of Untreated Pre-eclampsia (Q10a-Q10e)

A large majority (84%) identified magnesium sulfate as the first-line drug for preventing seizures in severe pre-eclampsia. However, 16% did not know. Table 6 below shows participant response to the first line treatment of pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Q11	42	84	8	16

Table 6: First-line Treatment (Q11)

Most respondents (88%) correctly stated that pre-eclampsia typically develops after 20 weeks of gestation. However, 12% did not know. Tabel 7 below shows participant response to the gestational age pre-eclampsia occurs.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Q12	44	88	6	12

Table 7: Gestational Age (Q12)

A majority (86%) reported that blood pressure should be monitored at least every 4–6 hours in severe pre-eclampsia cases. However, 14% did not know. Table 8 below shows participant response to how blood pressure should be monitored in pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Q13	43	86	7	14

Table 8: Monitoring of Blood Pressure (Q13)

Knowledge Scores

Knowledge scores ranged from 19 to 32 out of 32, with most respondents scoring ≥ 24 , classifying them as having adequate knowledge. Figure 1 below is a pie chart showing distribution of knowledge scores.

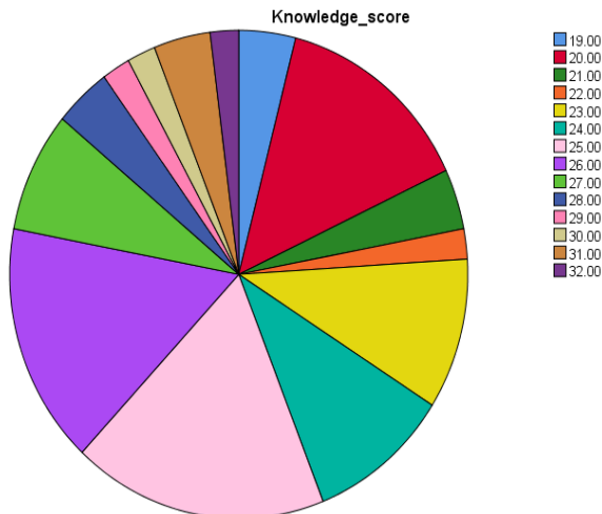


Figure 1: Pie chart showing distribution of Knowledge Scores

Attitudes Towards Managing Pre-eclampsia

More than half of respondents (52%) reported being very confident, while 36% were moderately confident, and a minority (12%) expressed low or no confidence. An overwhelming majority (94%) either agreed or strongly agreed that training in pre-eclampsia management should be mandatory. The majority of respondents felt prepared, with 54% strongly agreeing and 32% agreeing that they were ready to handle pre-eclampsia. Only 14% were neutral or negative. A majority (86%) agreed or strongly agreed that adequate training and resources are available, though 14% remained neutral or disagreed. Almost all respondents (94%) supported regular training, with 56% agreeing and 38% strongly agreeing. Table 9 shows participants' responses to their attitudes towards the management of pre-eclampsia.

Variable	Category	Frequency (n)	Percentage (%)
Confidence in Managing PE	Very confident	26	52
	Moderately confident	18	36
	Slightly confident	4	8
	Not confident	2	4
Mandatory PE MGT Training	Strongly disagree	3	6
	Disagree	0	0
	Neutral	0	0
	Agree	13	26
	Strongly agree	34	68
Preparedness	Strongly disagree	1	2
	Disagree	0	0
	Neutral	6	12
	Agree	16	32
	Strongly agree	27	54
Training & Resources	Strongly disagree	0	0
	Disagree	1	2
	Neutral	6	12
	Agree	27	54
	Strongly agree	16	32
Regular training Programs	Strongly disagree	2	4
	Disagree	0	0
	Neutral	1	2
	Agree	28	56
	Strongly agree	19	38
Institutional Support	Strongly disagree	0	0
	Disagree	0	0
	Neutral	3	6
	Agree	23	48
	Strongly agree	24	46
Total		100	100

Table 9: Attitudes Toward Managing Pre-eclampsia (Q14-19)

Attitude Scores

The was a high distribution of attitude scores. Figure 2 is a histogram showing the distribution of attitude score among respondents.

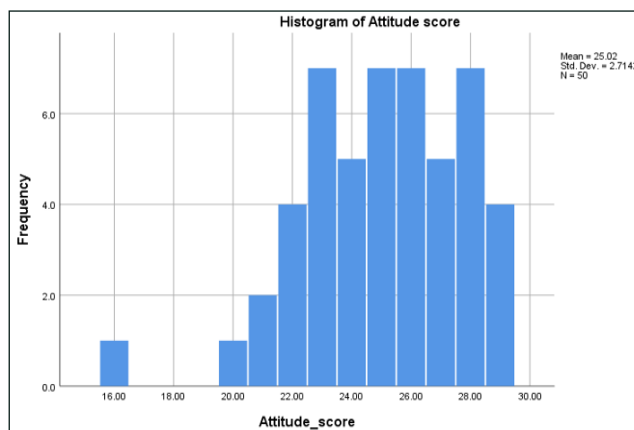


Figure 2: Histogram showing the distribution of Attitude score among Respondents

Barriers to Effective Management of Pre-eclampsia

Respondents were assessed on the barriers and challenges they face, which hinder their ability to manage pre-eclampsia effectively. The results are summarized in Tables 10–13. The majority of respondents reported limited patient awareness (86%), followed by delayed laboratory investigations (74%), overwork or understaffing (70%), and delayed referral pathways (70%). More than half also cited lack of training (58%), inadequate diagnostic tools (58%), shortages of magnesium sulfate (56%) and few reported lacks of locally adapted guidelines (32%). Table 10 below shows participants response to the barriers on the effective management of pre-eclampsia.

Barriers	Yes	n %	No	n %
Lack of training on pre-eclampsia management	29	58	21	42
Inadequate diagnostic tools (e.g., blood pressure monitors, urine dipsticks)	29	58	21	42
Shortages of magnesium sulfate and other medications	28	56	22	44
Delayed access to laboratory investigations	37	74	13	26
Lack of locally adapted clinical guidelines	16	32	34	68
Delayed referral pathways for severe cases	35	70	15	30
Overwork or understaffing	35	70	15	30
Limited patient awareness of pre-eclampsia symptoms	43	86	7	14

Table 10: Barriers to Effective Management of Pre-eclampsia (Q20)

Interestingly, all respondents (100%) confirmed the presence of clear facility protocols for managing pre-eclampsia. Table 11 below shows participants' responses to the presence of protocols for managing pre-eclampsia.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Q21	50	100	0	0

Table 11: Protocols for Managing Pre-eclampsia (Q21)

Nearly half of respondents (46%) reported occasional shortages, while 20% frequently and 4% always encountered shortages of essential supplies. Only 30% said resource shortages were rare. Table 12 below

shows participant response to resource shortage in pre-eclampsia management.

Variable	Category	Frequency (n)	Percentage (%)
Resource shortage	Rarely	15	30
	Occasionally	23	46
	Frequently	10	20
	Always	2	4

Table 12: Resource shortage in Pre-eclampsia Management (Q22)

The most common challenges reported were limited patient awareness (26%) and insufficient diagnostic tools (24%), followed by insufficient beds (12%), refusal of magnesium sulfate due to fear/pain (12%), and staff overload (12%). A smaller proportion highlighted clinical monitoring difficulties (6%), delayed referrals/lab results (4%), and lack of competence/training (4%). Table 13 shows specific challenges participant face in the management of pre-eclampsia.

Barriers	Frequency (n)	Percentage (%)
Limited patient awareness about pre-eclampsia	13	26
Insufficient diagnostic tools (BP apparatus, lab)	12	24
Insufficient beds	6	12
Refusal of MgSO4 by clients (Pain, fear)	6	12
Staff work overload/Understaffing	6	12
Delayed referrals/ lab results	2	4

Table 13: Specific Challenges Faced in Management (Q23)

Recommendations from Midwives

Respondents were asked to make recommendations. The results are summarized in Tables 14–16.

The majority of respondents recommended regular in-service training for midwives (96%), improved access to diagnostic tools and medications (94%), and better patient education on pre-eclampsia symptoms (94%). Additionally, 82% highlighted the development of locally adapted clinical guidelines, while 78% suggested the recruitment of additional midwives to reduce workload. Table 14 below shows participant response to interventions to improve pre-eclampsia management.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Regular in-service training for midwives	48	96	2	4
Improved access to diagnostic tools and medications	47	94	3	6
Development of locally adapted clinical guidelines	41	82	9	18
Recruitment of additional midwives to reduce workload	39	78	11	22
Better patient education about pre-eclampsia symptoms	47	94	3	6

Table 14: Interventions to improve Pre-eclampsia Management (Q24)

All respondents (100%) endorsed the need for additional training programs on pre-eclampsia management. Table 15 shows participant response on whether additional training programs are needed or not.

Question	Selected (n)=50	Selected (%)	Not Selected (n) =50	Not Selected (%)
Yes	50	100	0	0
No	0	0	0	0

Table 15: Additional training programs on Pre-eclampsia Management (Q24)

When asked to point out interventions that would make the biggest difference in pre-eclampsia management, more than half of respondents emphasized better patient education and awareness creation (54%), followed by regular in-service training (34%), while a smaller proportion highlighted recruitment of more midwives (8%), improved diagnostic tools and supplies (8%), locally adapted guidelines (4%), regular ANC attendance and early screening (6%), and emergency preparedness (2%). Table 16 shows participants' priority recommendations to effective management of pre-eclampsia.

Recommendations	Frequency (n)	Percentage %
Better patient education/awareness creation	27	54
Regular in-service training for midwives	17	34
Recruitment of more midwives/reduce workload	4	8
Adequate diagnostic tools and medical supplies	4	8
Development of locally adapted clinical guidelines	2	4
Encourage regular ANC attendance /early screening	3	6
Emergency preparedness/response	1	2

Table 16: Priority Recommendations to Effective Management of Pre-eclampsia (Q24)

Inferential-Statistics

To examine the associations between selected socio-demographic variables and outcome variables (knowledge level and attitude level), both Chi-square tests of independence and binary logistic regression analyses were conducted.

Chi-Square Test Results

Chi-square tests were used to examine the associations between training in pre-eclampsia management, educational level, and years of experience with knowledge and attitude levels of respondents. Of all variables tested, only years of professional experience was significantly associated with knowledge level. None of the socio-demographic variables showed significant associations with attitude levels. These results informed subsequent logistic regression analysis. Table 17 below shows summary of chi-square results.

Variable Tested	Outcome Variable	X2 (Chi-square)	df	p-value	Significant
Trained in PE	Attitude Level	0.399	1	0.56	No
Education	Attitude Level	4.427	3	0.219	No
Experience	Attitude Level	5.357	1	0.147	No
Trained in PE	Knowledge Level	0.319	2	0.853	No
Education	Knowledge Level	8.101	6	0.231	No
Experience	Knowledge Level	19.47	6	0.003	Yes

Table 17: Summary of Chi-square Results

Logistic Regression Analysis

Logistic Regression Analysis of Predictors of Knowledge

Work Unit was the only significant predictor of knowledge level ($p=0.037$). Midwives in ANC unit ($Exp(B)=516.6$, $p=0.004$) and Labor & Delivery unit ($Exp(B)=73.400$, $p=0.011$) had substantially higher odds of adequate knowledge compared to the reference group. Years of Experience was marginally non-significant ($p=0.077$). Educational level, training history, encounter rate, and age group were not significant predictors ($p > 0.05$). Tabel 18 shows findings of logistic regression predicting knowledge level.

	B	S.E.	Wald	df	Sig.	Exp(B)
Experience	-1.622	0.918	3.122	1	0.077	0.197
Education (Overall)			2.458	3	0.483	
Education (1)	-4.945	49226	0	1	1	0.007
Education (2)	-3.245	49226	0	1	1	0.039
Education (3)	-5.182	49226	0	1	1	0.006
Trained PE (1)	0.874	1.718	0.259	1	0.611	2.396
Work Unit (Overall)			8.468	3	0.037	
Work Unit (1)	6.247	2.167	8.311	1	0.004	516.571
Work Unit (2)	4.296	1.698	6.403	1	0.011	73.4
Work Unit (3)	23.918	20632	0	1	0.999	2.4E+10
Encounter Rate	0.69	0.786	0.77	1	0.38	1.993
Age Group (Overall)			3.505	3	0.32	
Age Group (1)	-20.732	40193	0	1	1	0
Age Group (2)	-17.088	40193	0	1	1	0
Age Group (3)	-43.324	56841.3	0	1	0.999	0
Constant	22.061	63550.5	0	1	1	3.8E+09

Table 18: Logistic Regression Predicting Knowledge Level

Logistic Regression Analysis of Predictors Attitude Level

None of the predictor variables were statistically significant (all $p > 0.05$). Training, work unit, years of experience, encounter rate, and age group, did not significantly predict attitude level. Tabel 19 shows findings of logistic regression predicting attitude level.

	B	S.E.	Wald	df	Sig.	Exp(B)
Experience	34.037	7054.97	0	1	0.996	6.1E+14
Education			0	3	1	
Education (1)	32.958	51409.461	0	1	0.999	2.1E+14
Education (2)	68.074	51208.424	0	1	0.999	3.7E+29
Education (3)	49.413	52349.64	0	1	0.999	2.9E+21
Trained PE (1)	-1.685	15646.873	0	1	1	0.185
Work Unit			0	3	1	
Work Unit (1)	14.456	18912.71	0	1	0.999	1896486
Work Unit (2)	48.404	32884.13	0	1	0.999	1.1E+21
Work Unit (3)	-17.963	25461.309	0	1	0.999	0
Encounter Rate	0	1.5	0	1	1	1
Age Group			0	3	1	

Age Group (1)	47.564	42597.743	0	1	0.999	4.5E+20
Age Group (2)	46.458	44909.833	0	1	0.999	1.5E+20
Age Group (3)	-18.573	58475.367	0	1	1	0
Constant	-143.09	81576.295	0	1	0.999	0

Table 19: Logistic Regression Predicting Attitude Level among Respondents

Discussion

The findings demonstrate that midwives at Presbyterian Hospital, Agogo generally possess good theoretical knowledge of pre-eclampsia. Universal recognition of the definition of pre-eclampsia, high awareness of its onset after 20 weeks of gestation and the need to monitor blood pressure at least every 4–6 hours in severe pre-eclampsia cases suggests strong foundational understanding of the condition. This level of knowledge exceeds findings reported from earlier studies in Ghana and other LMICs, where only about half of midwives demonstrated adequate knowledge of hypertensive disorders in pregnancy [25,30].

High recognition of major risk factors such as chronic hypertension, previous history of pre-eclampsia, advanced maternal age and multiple gestations align with WHO and ISSHP guidelines and indicates effective transmission of core obstetric knowledge. However, poor identification of nulliparity as a risk factor highlights persistent gaps in comprehensive risk assessment. This finding is consistent with studies from South Africa that reported fragmented understanding of risk factors of pre-eclampsia [31]. Failure to recognize early risk factors may delay intensified surveillance during antenatal care, increasing the likelihood of adverse outcomes.

Knowledge of the hallmark symptoms such as hypertension, proteinuria, persistent headache, and visual disturbances was high, reflecting improved awareness of clinical warning signs. Nonetheless, limited recognition of non-specific symptoms such as unexplained excessive weight gain suggests that subtle early manifestations of pre-eclampsia maybe overlooked. This is clinically significant, as early detection remains central to preventing progression to severe disease [32-34].

Regarding complications, respondents demonstrated stronger awareness of maternal complications (eclampsia, preterm birth) than fetal complications

such as fetal growth restriction and placental abruption. Failure to identify neonatal risks associated with pre-eclampsia can lead to severe adverse outcomes [32,33]. This imbalance emphasizes the need to ensure a more balanced understanding of this risk factors to promote holistic maternal-fetal care.

Encouragingly, most respondents correctly identified magnesium sulfate as the first-line anticonvulsant, consistent with WHO recommendations. However, the minority who failed to recognize this remains concerning, as incorrect management of severe pre-eclampsia can result in preventable maternal mortality.

Overall, midwives demonstrated positive attitudes towards the management of pre-eclampsia. High levels of confidence and perceived preparedness indicate that midwives are psychologically willing to manage the condition. Similar positive attitudes have been reported in Bujumbura and Tanzania, although confidence levels vary across settings [35,36].

An overwhelming majority supported mandatory and regular training, reflecting strong self-awareness of the need for continuous professional development. This aligns with evidence from Ghana showing that midwives prefer structured workshops and in-service training to maintain clinical competence [37, 38].

Although respondents largely reported institutional support and availability of resources, perceived adequacy may not reflect actual clinical realities. Systemic challenges such as inconsistent drug supply, malfunctioning equipment, and delayed investigations have been widely documented in Ghanaian hospitals. Therefore, confidence and positive attitudes may not always translate into effective practice if structural barriers persist [38,39].

Despite good knowledge and positive attitudes, respondents identified several significant systemic and patient-related barriers and challenges to effective pre-eclampsia management. Limited patient

awareness emerged as the most frequently reported challenge. This finding supports existing literature that highlights poor health literacy, sociocultural beliefs, and delayed care-seeking behaviors as major contributors to adverse maternal outcomes in LMICs [40-42].

Health system barriers, including delayed laboratory investigations, understaffing, inadequate diagnostic tools, and insufficient beds, were also prominent. These challenges have been repeatedly reported in Ghana and other sub-Saharan African countries and undermine the timely diagnosis and management of pre-eclampsia. Even when protocols exist, inadequate resources limit their effective implementation [39,43].

Work overload and understaffing further compound these challenges. High patient-to-midwife ratio increases stress, impairs clinical decision-making, and contributes to burnout, which may compromise quality of care. Additionally, patient refusal of magnesium sulfate due to fear or misconceptions highlights the need for improved patient counselling and community education [44,45].

Inferential analysis revealed that years of experience and work unit were significant predictors of knowledge level. This suggests that practical exposure, particularly in high-risk unit such as antenatal and labor wards, enhances clinical understanding of pre-eclampsia. These findings are consistent with earlier studies demonstrating that clinical experience improves competence in obstetric emergencies [19].

The lack of strong predictors for attitude level may indicate that attitudes are influenced more by professional values and institutional culture than by individual demographic factors.

Conclusion

Midwives at Presbyterian Hospital, Agogo demonstrated good knowledge and positive attitudes towards the management of pre-eclampsia, particularly in relation to diagnosis, monitoring and use of magnesium sulfate. However, gaps remain in recognizing some risk factors and fetal complications, while systemic barriers such as

limited patient awareness, understaffing, delayed investigations, and inadequate resources continue to hinder effective care. Clinical experience and work unit significantly influenced knowledge levels, highlighting the importance of practical exposure. Overall, strengthening health systems through regular training, improved resources, and patient education is essential to optimize pre-eclampsia management and reduce preventable maternal and neonatal morbidity in Ghana.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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