


Midwives Experiences of Managing Clients with Eclampsia in a low Resource Setting: A Qualitative Descriptive Study

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Abstract

Objective: Eclampsia remains a public health issue, especially in low-resource countries worldwide. Midwives are the backbone of the pregnancy and delivery process. Midwives trained in the necessary knowledge and skills are more likely to notice early warning signals of preeclampsia and immediately help clients in such emergencies. This study explored midwives' experiences in managing patients with eclampsia in Ghana.

Methods: This study was conducted among eight registered midwives at maternity units of two district hospitals in the Eastern Region of Ghana, using an exploratory, descriptive qualitative research design. A purposive sampling technique was adopted to select and interview participants. Interviews were audio-recorded, transcribed, and analyzed using qualitative thematic analysis. The right of participation and withdrawal from the study was respected.

Findings: The three emerged overriding themes are: 1. Midwives have knowledge (warning signs, regimens, and prevention of complications) about the management of eclampsia. 2. Challenges in managing clients included inadequate equipment, staffing, and access to drugs. 3. Strategies for mitigating barriers to care for women with eclampsia (adherence to protocols, teamwork, peer mentoring and supervision, midwives' attitude, and client education).

Conclusion: Midwives working in underserved facilities have the knowledge and skill to monitor and manage pregnant women experiencing eclampsia. However, they need to be supported with appropriate resources and advanced equipment to ensure adherence to protocols on managing eclampsia promptly referred. Continuous training and workshops for midwives in the management of hypertension in pregnancy are recommended and the public educated on the dangers of eclampsia.

Keywords

experiences, maternal mortality, eclampsia, midwives, resources

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Introduction

Pregnancy and childbirth are periods characterized by events that affect maternal, fetal, and neonatal wellbeing. Hypertensive disorders of pregnancy (HDP) are among the adverse events that affect birth outcomes. Globally, the incidence of HDP increased by 10.92% over 29 years (1990–2019), with sub-Saharan Africa being among the worst affected (Meazaw et al., 2020; Say et al., 2014). Even though significant efforts have been made to reduce maternal mortality due to pregnancy-related problems, the rate remains unacceptably high globally (Alkema et al., 2016; Bomela,

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2020; Say et al., 2014). Preeclampsia and eclampsia remain the most prevalent HDP compared with gestational and chronic hypertension cases (Dassah et al., 2019). According to the literature, preeclampsia and eclampsia afflict between 2% and 10% of pregnant women each year (Girum & Wasie, 2017; Say et al., 2014). One pregnant woman is believed to die every three minutes globally due to preeclampsia and eclampsia (Wiggins & Stevens, 2016).

World Health Organization (WHO) estimates further affirm preeclampsia is rare in industrialized countries (0.4% of live births) but seven times more common in developing countries (2.8% of live births) (Say et al., 2014; Wiggins & Stevens, 2016). Ghana is steadily working to achieve goal 3.1 of the sustainable development goals agenda of reducing maternal mortality to 70 per 10 000 live births by 2030. The maternal mortality ratio for Ghana is estimated at 319 per 100 000 live births as of 2015. Regional audit reports show HDP continue to occur due to inadequate resources and supplies to facilities in the Eastern Region of Ghana. Preeclampsia and eclampsia deaths topped death at the regional hospital and accounted for 27% of causes of maternal deaths (Bomela, 2020). Strategies such as focused antenatal improved skilled delivery contributed to the gain made in maternal health.

Preeclampsia and eclampsia have similar characteristics, with the earlier occurring during pregnancy and the latter up to 42 days after delivery. The onset of hypertension marks Preeclampsia after 20 weeks of pregnancy accompanied by new onset of hypertension, proteinuria, and any following: renal insufficiency, thrombocytopenia, pulmonary edema, impaired liver function, and unexplained headache (Espinoza et al., 2020; Tranquilli, 2013; Ukah et al., 2018). If untreated, preeclampsia can lead to eclampsia. Eclampsia is the emergence of generalized seizures in the absence of other tonic-clonic seizure-related diseases such as epilepsy, cerebral artery ischemia and infarction, and intracranial hemorrhage (Espinoza et al., 2020; World Health Organisation, 2013). Previous studies on HDP have examined the prevalence, factors associated with the client, and interventions for addressing HPD. A recent scoping review (Garti et al., 2021) identified several studies from Africa on midwives' knowledge of preeclampsia management but not their experiences. Moreso, none of the studies included in the review focused on the current setting.

Midwives are the mainstay in managing the pregnancy and the delivery process. Midwives trained with the requisite knowledge and skill are more likely to detect early warning signs addressed or refer clients for prompt intervention. Midwives in urban health facilities have access to more sophisticated equipment such as digital monitors delivery suits, and they work with specialists to manage pregnancy complications. However, modern obstetric equipment may not be available in rural health facilities, thereby affecting the delivery of quality maternal care. Given the conditions under which midwives in underserved areas work, it was

essential to explore their experiences of managing eclampsia at the district and sub-district levels. The specific issues explored were to describe how midwives handle cases of eclampsia, identify the challenges associated with managing these clients and explore strategies the midwives employ in addressing barriers affecting the management of this client.

Research Methods

Study Design

An exploratory qualitative research design was used to explore midwives' experiences in managing clients with eclampsia. These experiences were captured in an in-depth narrative face-to-face interview within the natural environment of participants (Varshney, 2022). An epistemological constructivist stance that considers knowledge subjective and best derived social context of the experiencing person was adopted to guide the study.

Study Setting and Population

This study was conducted at maternity units of two district hospitals (Akuse and Atua Government Hospital) in the Eastern Region of Ghana. These facilities operate under the Ghana Health Service (GHS) and are low resourced. The maternity units provide 24 maternity services to pregnant women. The participants for this study were registered midwives with at least one year of practice.

Midwives were purposively selected based on their knowledge and experience with the management of eclampsia patients. A total of eight midwives were included in the study from each institution, with four representatives. The researchers identified participants who were readily available, willing to participate, and ready to communicate their experiences articulate and reflective manner. All six researchers have experience in qualitative methods. Three collected the data and three coded and analysed the data. Drafting and editing the manuscript was a shared responsibility among members. Researchers and interviewers work in different facilities with only one interviewee known to one researcher.

Procedure

The participants were informed about the purpose of the study and recruited after written and verbal consent was obtained from the hospitals and participants. The participants were approached during their daily duty shift, and a time for interviews was scheduled. Data were collected through semi-structured interviews lasting up to 30 to 45 min using a semi-structured interview guide. Researchers developed the interview guide to suit the context of the study setting (Cho & Lee, 2014). The main questions were: i. How do you manage patients with eclampsia? ii. What challenges do

you encounter in managing clients with eclampsia? and iii. What strategies do you employ to facilitate eclampsia management? The interview guide was pretested at the emergency antenatal unit of one of the facilities, and a minimal amendment was made before commencing the interviews. Individual face-to-face interviews were conducted in a secluded area within the maternity units. Due to the busy, dynamic nature of the participants', researchers scheduled convenient times with participants who were willing to participate. Following participants' responses, follow-up prompts and probing questions were employed for further information. During the interview sessions, participants freely expressed themselves without interference. The researchers also avoided leading questions and unnecessary interruptions. Data saturation was reached on the eighth participant when no new information was obtainable.

All interviews were digitally recorded in English and transcribed verbatim by researchers. Audio files and transcripts were stored in a secured digital storage system. Participants were given pseudo-names, alphabets, and figures such as M1, M2, M3, etc. Data were collected between January and March 2019.

Data Analysis

The researchers employed a thematic approach in analyzing the data following several steps of Clarke & Braun (2018). The appropriate form of analysis was primarily inductive because there were no preexisting themes to guide the study. The data analysis was done concurrently with data collection, which allowed the researchers to reflect upon the viewpoints of the midwives and performed some modifications, adjustments, and sequencing of questions in subsequent individual interviews (Wiggins & Stevens, 2016). The transcripts were read and reread several times by authors to familiarize themselves with the data and make meaning of the midwives' views. The researchers created an independent coding frame through line-by-line manual coding of transcripts focusing on keywords and phrases. The transcripts were coded to identify and discuss the variations in coding to check for intercoder reliability. We constantly compared codes for differences and conceptual similarity by referring to the original transcripts (Cho & Lee, 2014). During the revision of codes, an iterative process was adopted through backward and forward assessment of data resulting in adjustment and refining of themes. During data sessions, any discrepancies regarding the themes were resolved through discussions. Finally, for data presentation, quotations from participants were selected and presented as examples of their responses.

Rigor

Scientific rigor was measured through confirmability, dependability, credibility, and transferability. Confirmability was

achieved through prolonged engagement, reflexivity, data triangulation, independent coding, and peer evaluation. An independent coder evaluated the coding, process at different phases to ensure dependability. Neutrality was provided through the strategy of conformability by keeping an appropriate distance between the researchers and informants to avoid influencing the findings. Participants were guaranteed that whatever information they would give would not negatively impact their lives. After coding the data, the transcripts and audiotapes were made available for an independent coder for recoding. Data were coded, recorded, and compared with the themes and subthemes identified by the independent coder. Transferability was observed by providing detailed descriptions of the informants' characteristics, the informants' description of the phenomenon, and the researcher's observations in reporting the findings.

All six researchers are nurses and midwives interested in maternal and child health. This study adopted personal and epistemological reflexivity in qualitative research. Reflexivity is an attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research process (Lane & Roberts, 2018). With personal reflexivity, the researchers found themselves ruminating on how their experiences in nursing and midwifery practice might shape the discussions. The researchers also pondered how the findings affected nurse educators and professionals. On the issue of epistemological reflexivity, the researchers were faced with a methodological dilemma. The researchers adopted individual interviews that allowed the participants to freely share detailed information regarding their challenges and adopted coping strategies in nursing women with eclampsia.

Findings

The study included eight participants aged 30 to 47 years. The participants comprised one, Midwifery Officer, four Senior Staff Midwives, and three Staff Midwives. All the participants had 2 to 15 years of work experience in the two health facilities as presented in.

Three major themes emerged from the qualitative data analysis; knowledge of eclampsia management, challenges in managing eclampsia, and strategies for mitigating barriers. Each of these themes had subthemes, as presented in Table 1.

1. Knowledge of eclampsia management. Participants described their experience of managing clients with eclampsia concerning detecting the warning signs, responding promptly, and administering regimens consistent with a standard protocol. The narrative further revealed that the midwives were aware of complications following eclampsia. The knowledge and experience gained over the years enabled prompt interventions and quick referrals where necessary.

Table 1. Participants Characteristics.

Pseudonym	Age (years)	Sex	Marital status	Religion	Education background	Rank	Work experience
M1	31	F	Married	Christian	Diploma	Senior Staff Midwife	5
M2	31	F	Married	Christian	Diploma	Senior Staff Midwife	6
M3	47	F	Married	Christian	Diploma	Senior Staff Midwife	15
M4	32	F	Married	Muslim	Diploma	Senior Staff Midwife	7
M5	30	F	Single	Christian	Diploma	Staff Midwife	4
M6	36	F	Married	Christian	Diploma	Staff Midwife	4
M7	26	F	Married	Christian	Degree	Midwifery Officer	3
M8	24	F	Single	Christian	Diploma	Staff Midwife	2

Table 2. Themes and Subthemes.

Knowledge of eclampsia management	<ul style="list-style-type: none"> • Detecting eclampsia • Emergency response • Regimen
Challenges in managing eclampsia	<ul style="list-style-type: none"> • Preventing complications • Inadequate equipment and supplies • Access to drugs and dosing • Staffing • Client factors
Strategies for mitigating barriers to care for women with eclampsia	<ul style="list-style-type: none"> • Adherence to protocol on eclampsia management • Teamwork • Peer mentoring and supervision • Midwives attitude • Client education

a) *Detecting eclampsia.* All the participants mentioned the warning signs and other clinical features that enable eclampsia diagnosis. These warning signs constitute a part of the education provided during the antenatal visits. Routine examinations that target early detection included checking blood pressure, urine testing, and obtaining a history of headache and pitting edema. A participant described how eclampsia is determined:

We compare the baseline blood pressure for increases to determine whether the client's blood pressure is high. The systolic should not exceed the previous one, and the diastolic shouldn't exceed + 30. So, we compare clients first booking on BP and the current one if we diagnose eclampsia. (M2)

The recognition that blood pressure at baseline is critical suggests midwives understand the need to monitor these parameters.

b) *Emergency response.* Once the client is rushed to the hospital with increased blood pressure, the midwives respond quickly to prevent severe consequences. The response depends on the severity and includes calling for help,

making the patient comfortable in bed, checking vital signs, and starting initial treatment:

In managing eclampsia clients in the ward, when the client comes, we put the client in the bed, in a comfortable position, check all the vital signs, including BP, urine protein, and oedema. From the results, we know eclampsia; when to indicates if it is mild or severe. So, when we have the mild one, the client will be on the bed as already said, check the vital signs and urine protein, put the client on a four-hourly BP chart, and then protein. Antihypertensives treatment will then follow depending on the value of the BP recorded. (M1)

When the client comes, we know that eclampsia is when the client has fainted, so when the client arrives, we need more hands, so we call for help. We put the client in bed. We check the vital signs. We set up our intravenous line; then, we give antihypertensives based on the BP we recorded. Then we pass our catheter because giving the mag sulphate. We have to know the amount of urine before giving your magnesium sulphate. (M3)

Kidney function is checked by ensuring at least 30 ml of urine can be obtained before administering the magnesium sulfate. The assessment also included checking plantar reflex, but none of the participants confirmed conducting this assessment. The only person who mentioned this noted it was not done due to lack of equipment.

c) *Regimen.* This subtheme describes the treatment protocol of eclampsia in Ghanaian hospitals. Participants reported that the protocol regimen was taught while in school and for a midwife to become competent with the protocol only after working for some time. A step by step description of the management of eclampsia by participants is as follows:

Yes. Every midwife knows about the treatment protocol, but then during your clinical period, you might not experience it, so you might know. Still, you don't get the experience from there, so when you start your job, you can have the experience from there. (M7)

With eclampsia management, we follow a protocol: the magnesium-sulphate protocol. So, we start the magnesium-sulphate protocol if there are all indications of eclampsia, that's oedema, high blood pressure, urine protein, and seizures. We begin with the loading dose of 14 g of magnesium sulphate. We give 4 g IV, and then the rest of the 10 g. We split it into 5 g for each buttock, continuing with 5 g on alternate buttocks for 24 h. (M4)

The midwives know that getting the baby out apart from medication is a significant intervention that promotes recovery and reduces mortality:

Depending on the weeks of the pregnancy, some patients will end up at the theatre for a caesarean section to remove the baby. Sometimes too, depending on the weeks the clients can recover. We put them on antihypertensives then they discharge them. With those that we can't take to the theatre, we refer them to the regional hospital to be managed further. (M3)

d) Preventing complications. The degree of intervention determines the complications that may result from the condition. Early and adequate intervention goes with more minor complications. The midwives monitored urine output regularly to determine renal function. Patients were monitored for severe abdominal pain associated with nausea and vomiting and feeling of tiredness, which suggest hemolysis, elevated liver enzymes and low platelets (HELLP) syndrome. HELLP syndrome puts a patient at risk for disturbances in the clotting mechanism leading to a possible disseminated intravascular coagulation (DIC). The series of blood and urine analysis investigations provide an objective basis for determining these complications. Participants were able to identify some possible complications and how to prevent them:

One of the complications is renal failure. That's why we always observe the urine output, tongue bites, HELLP syndrome, DIC, and you can also get fits; that's why the beds need side rails and so on. (M4)

Seizures associated with eclampsia pose a risk for safe care because of the probability of falls if the appropriate beds are not used. The determination of the midwives in preventing complications was not affected even by the lack of requisite equipment for care:

We're trying our best to ensure that no client passes away, gets complications, or is disadvantaged because of things we don't have. (M2)

It is suggested that all pregnant women be made aware of the warning signs and symptoms and the significance of antenatal and postnatal care, which should be easily accessible.

Some midwives reported that some clients do not take their advice:

Some clients' condition is noticed during anti-natal, so they are booked to be seeing a Medical Officer during their anti-natal then they are put on antihypertensive medications. Some of them will be like, "when I take it, I can't sleep." (M7)

Some clients also don't take the prescribed drugs at all. Also, when some clients are booked for emergency CS or elective CS to come on a particular day, they feel they can deliver the baby independently so that they won't come. They'll stay at home, and they won't even come for anti-natal again. The condition becomes serious before they come. (M8)

2. *Challenges associated with managing eclampsia.* A participant mentioned some challenges experienced in the line of duty that inhibited the quality of care for a patient with eclampsia. These included inadequate equipment and supplies, drug access, staffing, and client factors.

a. Inadequate resources and supplies. Managing clients with eclampsia require appropriate beds, monitors, resuscitation material, oxygen, and other supplies. However, all the midwives mentioned instances where they could not completely complement resources and supplies in managing the patients. Where the equipment is accessible, it is either inappropriate, faulty, or in use in another unit, and the midwives would have to wait for their turn to use it. The following quotes exemplify this point further:

There is always a BP apparatus in the ward. Our challenge recently is with oxygen and supplementation. There have been cases where we don't have oxygen in the ward. But fortunately, no client on magnesium-sulphate has entered into distress. (M5)

The participants lamented the effect of inappropriate beds noting the few standard ward beds available do not have the necessary attachments, such as side rails, to assist in the management of eclampsia patients:

Absence of suitable beds to nursing the eclamptic clients. Its' frustrations to us, the midwives. Sometimes, you become tired of the same bad working conditions that interfere with quality care given to clients. (M6)

No cardiac monitors or devices monitored maternal and fetal profiles to provide continuous and timely updates on the client's condition. The manual assessment processes and the pain of chasing equipment in other units increased the workload and strained the midwives.

And the devices too, we've been speaking to the administrators and hospital management that we need those working tools mentioned earlier all the time. So, they should provide them for us. Because that is what we work with to achieve good outcomes. (M2)

At times you have two or three patients needing oxygen at the same time...just imagine what happens to the midwife at that moment... (M3)

If a woman with eclampsia needs oxygen, we rush to the labour ward to get one to where we need to manage her and you know we do not have much time at hand and when it comes to maternal health every minute count so these are some of the challenges we do face. (M4)

b. Access to drugs and dosing. According to the GHS, magnesium sulfate (MgSO_4) and hydralazine are the recommended drugs for the treatment of eclampsia. According to the participants in this study, most of the medications needed to treat eclampsia are in poor supply:

For eclampsia, we manage it with the parenteral MgSO_4 , which is recommended by the GHS. (M1)

The drug has been in short supply for some time now...it difficult to manage a patient with eclampsia without MgSO_4 . (M4)

In addition, practically all of the midwives expressed concern about medicine shortages as a serious issue in the treatment of eclampsia. They stated that some patients react to MgSO_4 and do not have the necessary medications to offset their adverse effects. Some midwives have claimed that they are sometimes left roaming and looking for the best way to handle a problem. They said that calcium gluconate was the favored antidote, but they didn't have any on hand:

Some patients do react to parenteral MgSO_4 , and you need an antidote to counteract the adverse reaction but to no avail. (M4)

Currently, calcium gluconate is not in the system, which is the preferred antidote in managing adverse reactions of MgSO_4 . (M1)

When there is an adverse reaction, you run around looking for alternatives meanwhile you know the right thing to do to help the patient. (M5)

Participants also stated that several medications, particularly MgSO_4 , are packaged in ineffective dosage forms:

For eclampsia, we usually use MgSO_4 and hydralazine for the management, but these days, they are not able to provide us with the correct dosage. Instead of the ampoules coming in 5 g, they give us 2 g. (M2)

We have MgSO_4 coming in 2 g, and you are supposed to give 5 g, and the 2 g ampoule is a 10 mls vial. (M5)

The study's findings suggest that midwives spend a significant amount of time determining the correct dosage, which could be avoided in emergencies. They went on to say that in an emergency, if the drug isn't in the right dosage form, they struggle to mix it, which causes tension:

So, if you are giving 5 g, then you are giving 25 mls, so just imagine you are drawing all these things is a waste of time, but if it had come in the 5 g vial, it's just ones, you pick it, you draw and just start your medication. (M1)

c. Staffing.

Staffing is a problem. We have a form in which we try to figure out the nurses to patient ratio. It's our prayer that these forms will go to where it has to go so that they will give us more staff. (M2)

The request was made for additional staff, and some await favorable administrative intervention. The midwives reported that sometimes the only option available is to work with students and interns who lack the requisite experience in managing patients with eclampsia.

Sometimes, it's not only the staff around in the ward. You would have rotation or students so if you don't get more hands from a qualified staff or someone who has a fair idea about it, then that's where there's a problem because you would have to do this and that, but if you have someone who knows how to calculate the dosage and mix the drugs, then we flow together. (M3)

One participant lamented about the attitude of colleagues; she says some colleagues do not respond to emergencies the way they should. According to this participant, because colleagues receive and manage eclampsia cases most of the time, they feel reluctant to respond quickly to clients:

It depends on the staff on duty in receiving the clients for management. Some staff feel reluctant to respond to emergencies. They feel eclampsia is normal in pregnancy. Because they've seen those conditions severally. (M7)

d. Client factors. The experience of procedural pain and adherence to instruction were the main challenges that affected the care of clients with eclampsia. The regularity

of administering the intramuscular injection, the pain experience, and the development of edema in some instances was of concern to the midwives. Some participants mentioned they sometimes struggle to determine which spot would be more comfortable to give the shot. Giving the injection on alternates buttocks was the standard practice, but participants mentioned resistance from some of the patients:

You know mag sulphate is very painful, so they mostly complain of burning sensations, so we just try to reassure them. Some of them are so ignorant, but we explain to them the reason why we want to give them the medication, but they try to refuse it, so we just try and advise and encourage them. (M2)

Two participants testified that most indigenous clients do not take instructions from midwives who do not understand their native dialect. As per the location and the mixture of tribes in these two settings, most understand and speak at least two major Ghanaian languages.

...But the typical people from these communities do understand Twi and Ewe, but when they come to the hospital, and you're not speaking their language, she might not mind you. Irrespective of how important the message is. (M7)

Some midwives don't understand the native language spoken in these areas. The clients understand the other common languages spoken in the area, but they'll not mind you because you're not speaking their native language. Most of them there speak ewe and Twi, the fact you speak a different dialect other theirs, they don't mind. (M1)

3. Strategies for mitigating barriers to care of the patient with eclampsia. Working in a poorly resourced facility and maintaining quality care for patients with eclampsia requires adherence to protocols, promoting teamwork, mentoring colleagues and new staff, and adequate supervision. The positive attitude of midwives and their creativity facilitated the care. Participants noted the role of client education in reducing the risk of developing eclampsia and deescalating the impact.

A. Adherence to protocol on eclampsia management. There are standard protocols and guidelines for managing eclampsia as alluded to by all participants. The midwife is expected to act promptly in making care decisions to minimize adverse outcomes. Case detection through regular screening is recommended to detect preeclampsia. Once the client is observed to have increased blood pressure and requires immediate intervention, the call for help, proper

assessment, and initiation of treatment as outlined in the guideline follows:

For eclampsia, we have a protocol for managing eclampsia. We have a protocol here when a client comes with eclampsia. We call for help, physician and colleague call for help. We put the protocols in place. We have a drug for it. We pass the catheter. We ensure that we get urine of above 30 before starting our medication. We give hydralazine; we give other antihypertensives, hydralazine, nifedipine sometimes methyldopa. We give infusion; if necessary, we try our best to implement it. (M2)

However, the visibility of the protocol was a significant concern for some of the midwives. One indicated that:

I would love it if we could write the protocols boldly and paste them at each bedpost, especially the BP beds so that if there's an emergency, the person attending to the client will know what to do immediately. (M4)

Another midwife reported a lack of clarity in some aspects of the guideline as details:

Sometimes we don't know when exactly to start the MgSO₄ protocol because, in books, it is when there is a seizure that is when you can classify the whole thing as eclampsia; otherwise, it is pre-eclampsia, but I have seen cases where the BP is so high like 170/120 or 180/120, and the urine protein is about 3+ even without the person fitting. Sometimes we start the MgSO₄ protocol. The distinction between when I'm supposed to start and when I'm supposed to hold on to it is a little bit of a problem. (M7)

Additionally, however, a midwife mentioned that:

From my experience, I have seen the eclampsia cases; they don't have recurrent seizures when we start with the MgSO₄ administration. (M5)

B. Teamwork. The concerns about staffing are also linked to teamwork because, according to the midwives, it is difficult to manage the client alone or with inexperienced staff. However, working in a multidisciplinary team in managing the patient ensures optimum outcomes. Each member of the team responding to emergencies assist in implementing the protocol for managing the patient. Reconstituting medication, setting up intravenous fluids, checking vital signs, and administering oxygen are best achieved with a team:

When you're the only person on duty, you have to do everything yourself... and you won't know which one to do first. But if there are a couple of colleagues on duty, you know one person is checking the vital signs, one person will be

reconstituting the drug, another brings the oxygen and so on. In no time, we get the problem resolved. (M8)

Teamwork requires the input and support of each member. As such, supervision and training of novice staff to ensure skill development was mentioned as another way of managing clients, especially the seriously ill who need more regular assessment.

Yes, sometimes one person can be a duty at the labour ward, but the prenatal and lying in staff will help when there is an emergency with eclampsia or another condition. Working together helps. (M6)

C. Peer mentoring and supervision. Participants described measures adopted to deal with staffing challenges and efforts toward reducing workload. New staff were trained and supported to administer treatment and monitor patients. The training promotes safe care by avoiding wrong treatment or nonadherence to the protocols.

Usually, we have new staff, and the person doesn't know the protocol. You have to teach the new team the drug regimen. This is because the drug regimen is such that you will miss it if you don't know anything about it. And they'll end up giving wrong drugs to clients. (M4)

Anyway, anytime we have new staff or students in the ward, we have a ward meeting to teach them. We take them through in-service training on the ward to know how to go about the protocol anytime we have a client with eclampsia. (M1)

Participants mentioned ward meetings and in-service training as part of the measures adopted to build care for patients with eclampsia. However, some of the comments suggest that if there are new staff and no patients with eclampsia, the possibility of the new staff or intent to be trained hangs. No clear policies or strategies were available for mentoring novice midwives, and such opportunities were discretionary.

D. Midwives' attitude. The narratives also revealed that the positive attitude of the midwives toward their work was a strength that enabled them to take care of the patient despite the limited resources. Some recognized the need for self-development through learning new approaches to solving old problems more effectively:

... day in day out, the data supporting specific treatment are reviewed, so if we are put together, and we start from the basics and then as time goes by, we have updated ourselves with the current information. I think it will go a long way to help us manage eclampsia. (M3)

Because maybe how eclampsia was managed 10 years ago, that's not how eclampsia is being handled now. That's why I think continuing training is essential. (M5)

The calm and relaxed attitude they reported in managing patients further made it easier for them to deal with some patients who declined treatment because of the pain associated with the procedure. They also noted that whenever they had patients in critical situations recover, the satisfaction derived was a motivation for increasing effort and working under unfair conditions to produce the best result, saving the life of mother and baby.

E. Client education. Participants were unanimous about the importance of client education in preventing and managing eclampsia. The lack of information on the risk of increased blood pressure and the client's action in seeking help influence the outcome of care. The midwives believe that when the patients are empowered with information, they become personal advocates regarding their care.

Client education is critical for antenatal care and a core mandate for midwifery services in general. Participants acknowledged that client education should be done at all times since the clients may not know the danger some of the symptoms pose to them:

... They should be educated on the signs and symptoms to look out for and symptoms that would require emergency interventions. Sometimes the women are there with symptoms like oedema concentrated urine and when they visit the facility and tell them their BP is, let's say 130/90 mmHg, they don't understand the kind of risk these things pose to them. They cannot actively manage themselves or even advocate for themselves; our duty is to educate them. (M8)

Discussion

Our study found that midwives providing care for women with eclampsia in a low-resource setting and underserved areas have knowledge about the management of eclampsia but are confronted with challenges that affect the care. Our study findings are consistent with studies in Afghanistan (Kim et al., 2013) and the Philippines (Ramavhoya et al., 2019), where midwives were knowledgeable in managing preeclampsia and eclampsia, which was evident in their response to emergencies. The midwives in those studies were able to call for help immediately, position the woman left lateral, give supplemental oxygen, and protect the woman from injury. However, the current findings were contrasting findings by Stellenberg and Ngwekazi (2016), where midwives acknowledged that severe eclampsia was an obstetric emergency, but lacked knowledge of the basic steps to manage this situation. A position confirmed in a recent scoping review showed that midwives had knowledge

gaps in the management of severe eclampsia (Garti et al., 2021). Improving midwives' knowledge of the management of preeclampsia and eclampsia will enhance the quality of midwifery care, prevent complications, and reduce mortalities related to preeclampsia and eclampsia.

In this study, the midwives were committed to evidence-based practice by following the protocol and guidelines for managing preeclampsia/eclampsia. This finding is consistent with a current review in Ghana that indicated that hospitals provided protocols and guidelines for the management of preeclampsia (Garti et al., 2022). Similarly, in South Africa, midwives knew and followed the guidelines for managing severe preeclampsia (Ramavhoya et al., 2019). But then, in other instances, some midwives who knew the guidelines, but lacked knowledge of the recommendations set by the guidelines (Garti et al., 2021; Ramavhoya et al., 2019; Smith et al., 2013), as reported by one participant in the current study stated lack of clarity on when the protocol should be started. In promoting quality of care, preeclampsia guidelines should provide a comprehensive point of reference to encourage best practices.

To provide quality women-centered midwifery care, adequate resources are needed to execute it well. The challenges midwives faced in delivering quality midwifery care to women with eclampsia were insufficient resources and supplies. In most low- and middle-income countries, resource constraints are a significant problem with weak health systems. WHO and GHS have recommended $MgSO_4$ for use in managing preeclampsia/eclampsia. To maintain universality, WHO has determined guidelines for the benefit of $MgSO_4$ for all health practitioners across all settings. However, midwives in this study lacked or had an inadequate supply of the recommended drug to manage eclampsia (World Health Organisation, 2014). This finding is not different from some other studies in Ghana, where there were frequent stockouts and lacked essential antihypertensive drugs for managing preeclampsia/eclampsia crisis (Tunçalp et al., 2014; Wiles et al., 2020). Our study finding is also consistent with a study conducted in six sub-Saharan African countries where they observed inadequate and lack of supply of $MgSO_4$ in some health facilities (Rawlins et al., 2018).

Several factors have been associated with the poor uptake or utilization of $MgSO_4$ in sub-Saharan Africa. These factors include: the drug being not registered at the national level, low incentives and poor profit margins for pharmaceutical companies, stockouts due to poor distribution systems, and poor supply leading to unavailability of $MgSO_4$ in health facilities (Aaserud et al., 2005; Rawlins et al., 2018). A recent study in Ghana revealed that all the maternal deaths in the facility were related to preeclampsia/eclampsia (21), partly due to the unavailability of antihypertensives in managing preeclampsia/eclampsia. This recent occurrence of maternal deaths related to preeclampsia/eclampsia is alarming (Ragasudha et al., 2018). While other hypertensive drugs may be used to manage severe pre eclampsia/eclampsia, evidence shows that $MgSO_4$ is the

clear drug of choice to prevent seizures and to reduce its potential impact on maternal mortality considerably (Fishel Bartal & Sibai, 2022). For example, in Nigeria, maternal deaths associated with severe preeclampsia/eclampsia in Kano hospitals reduced drastically from 20.9% to 2.3% after the introduction of $MgSO_4$ in treating preeclampsia/eclampsia (Rawlins et al., 2018). In the effort to reduce maternal mortality by midwives, an adequate supply of $MgSO_4$ to manage preeclampsia/eclampsia is imperative.

Midwives also complained about the lack of calcium gluconate to manage the adverse effects of $MgSO_4$ in case it occurs. The negative effects of magnesium sulfate (i.e. respiratory depression and cardiac arrest) occur mainly from its relaxing effect on the smooth muscles of the heart. This finding is consistent with an integrative review that revealed calcium gluconate use was infrequently used (Smith et al., 2013), indicating the rareness of adverse effects of $MgSO_4$, its unavailability, or shortage in these countries. Although the life-threatening maternal adverse effects of $MgSO_4$ are considered extremely rare in obstetrics, severe consequences of magnesium toxicity, including respiratory arrest, cardiac arrest, and death, have been reported (Bain et al., 2013; Smith et al., 2013). Due to this effect, the patients are at risk of impending respiratory depression and require continuous oxygenation and emergency correction (Gordon et al., 2014).

In the current study setting, midwives lacked adequate beds to care for women with eclampsia which was supported by a study in rural northern Ghana where midwives lack beds to offer maternity services to women admitted to the health facilities (Dalinjong et al., 2018). Due to the lack of suitable beds, some women in the current study were managed on the floor (Bohren et al., 2019).

The midwives adopted strategies such as calling for help and borrowing oxygen from other wards to resuscitate the patients (Dartey et al., 2021; Ismaila et al., 2021). It is also interesting to note that some midwives, despite the challenges involved in peer monitoring and supervision, readiness to learn new ways of solving existing problems. Regular workshops on prevention, early identification, and management of severe preeclampsia/eclampsia, as well as mentorship, coaching, and supervision, were provided (Saab et al., 2021). Midwives testified that clients' education is a key to minimizing eclampsia (Leslie & Briggs, 2016). This is in line with studies conducted by Hibstu and Siyoum (2017) who stated that all pregnant women be made aware of the warning signs and symptoms, as well as the significance of antenatal and postnatal care, which should be easily accessible (Carter et al., 2017).

Limitations

The researchers acknowledge some limitations of this study, and the findings should be interpreted with caution. Social desirability bias was a limitation of this study.

Additionally, the study sample size was relatively small and covered only two low-resource hospitals in Ghana. Therefore, the findings may not be representative of the midwives in the country. Nonetheless, this is an essential study when maternal mortality in Ghana is still exponentially high. This study provides a platform for midwives' voices to be heard by policymakers and other stakeholders on the challenges they face in managing preeclampsia and eclampsia.

Conclusion

Currently, the quest of midwives to promote and provide quality care for women with eclampsia is based on knowledge and skills which were highly demonstrated in this study. The main challenges confronting midwives in some low-resource institutions in delivery care for women with eclampsia were: inadequate supply of drugs, lack of equipment for resuscitation, and inappropriate beds. Some strategies were in place to provide care for women with eclampsia despite the challenges. These are peer monitoring and supervision, teamwork, adherence to protocol, midwives' attitude, and client education.

In order to address these challenges, also, midwives should follow the GHS protocol of giving a loading dosage of MgSO₄ and antihypertensive for women with severe preeclampsia before referring. Also, simple job aids pasted on walls on how to mix the 5 g and 2 g ampoules would be beneficial. Furthermore, it is highly recommended that the government and other agencies such as NGOs assist health facilities by providing necessary resources to facilitate the smooth management of this condition. Thus, there should be an inter-sectoral collaboration between these agencies since it is of public health concern. Additionally, there should be increased awareness of the public, particularly pregnant women at antenatal on the dangers of this condition as well as preventive measures.

Availability of Data and Materials

Datasets used and/or analyzed during the current study are available from the lead author on reasonable request.

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Author Contributions

All the authors contributed to this article in various ways: AFD analyzed the data, supervised the project, and drafted the manuscript. GD analyzed and reorganized the manuscript, CRO and CEAB collected the data and AA modified the manuscript according to the journal specifications and did the editing.

Consent to Publish

Not applicable.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


Ethics Approval and Consent to Participate

Ethics approval was obtained from the University of Health and Allied Sciences Research Ethics Committee, Ho, Ghana with reference (UHAS-REC A.2 [11] 18-19). We also obtained permission from the hospital management and unit managers before commencing our interviews in the study settings. We also obtained verbal and written informed consent from all the participants before commencing the interviews. All methods performed in this study are in accordance with the relevant guidelines and regulations of the Declaration of Helsinki.

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