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Research article

"We know it is not good, but we are constrained": A study on quality of emergency obstetric and newborn care in Northern Ghana

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ABSTRACT

Objective: To explore the quality of emergency obstetric and newborn care provided to newly delivered women in rural Ghana.
Methods: A multiple case study design, involving in-depth face to face interviews, was deployed to draw evidence from essential health providers, clients and caretakers. Data were further derived from non-participant observation by means of an observation guide and analysis of physical artifacts using the room-by-room walk-through tool. Data analysis followed Yin's five phase process to case study analysis.
Results: Quality of care was compromised by non-adherence to standard practices, inadequate monitoring, crude treatment procedures, lack of basic care needs and poor health providers' relational behaviours. Limited supplies of drugs, equipment and essential care providers further weakened the provision of quality emergency obstetric and newborn care.
Conclusion: Inadequate supply of essential logistics and skill gaps on the part of health providers in some maternal and newborn care components adversely produced poor maternal and neonatal outcomes in rural Ghana. Elements of disrespectful care for women suggest violations of their rights in the maternal and newborn care encounter.

1. Introduction

Global statistics show a steady decline in maternal mortality ratio from 422 in 1980 to 211 per 100,000 live births in 2017 [1]. However, sub-Saharan Africa continues to record high maternal deaths accounting for 533 maternal deaths per 100,000 live births [2]. While maternal deaths often come along with stillbirths and neonatal deaths [3], many of the women who survive endure lifelong incapacitating conditions due to complications arising from childbirth [4,5]. This is regrettable because though the direct causes of maternal cannot be predicted, simple mundane good practices alongside appropriate emergency intervention at delivery could eliminate many maternal deaths and stillbirths [6]. Emergency obstetric and newborn care (EmONC) has been advocated as the most efficient and effective approach in the reduction of maternal mortality particularly in developing countries [7]. The concept refers to the capacity of a health facility to provide essential services to avert preventable causes of mortalities during childbirth [8]. It implies an upgrade in the status of selected health centers and referral hospitals with stocks of essential drugs, medical supplies and equipment

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as well as training the requisite human resources needed for the delivery of quality services at all times [9]. EmONC can be classified as basic (BEmONC) and comprehensive (CEmONC). BEmONC facilities perform signal functions such as: administration of parenteral antibiotics, oxytocic drugs and anticonvulsants, manual removal of placenta, removal of retained products (manual vacuum extraction, dilatation and curettage), assisted vaginal delivery such as vacuum extraction and forceps delivery and perform basic neonatal resuscitation using bag and mask. CEmONC facilities perform all these in addition to providing Cesarean section (CS) and blood transfusion [7]. A study by[10] recommended 23 signal functions that do not only target emergency situations but include effective routine maternal and neonatal signal functions.

Generally, studies on EmONC have concentrated on investigating its coverage and the findings mostly point to poor coverage across all levels of care especially in sub-Saharan Africa [11–13]. Studies reporting on the quality aspects of EmONC in Ghana, have equally identified shortfalls in the content of care provided to clients [14–16]. The studies, however, are sited in southern urban Ghana where maternal and neonatal mortality estimates are considerably lower than that of Northern Ghana which has endured systemic neglect in health services and infrastructural expansion [17]. Consequently, this qualitative study explored the quality of EmONC and its effect on maternal and neonatal outcomes in selected facilities in Northern rural Ghana.

2. Methods

2.1. Study design

A qualitative multiple case study approach, from a constructivist paradigm, was adopted for the study. The choice of paradigm seeks to conform to the belief that reality resides within the actions of people and these are best captured when the researcher interacts with the people [18]. The design enabled the use of multiple data collection methods for wider discovery of empirical evidence pertaining to the provision of EmONC in the study area [19].

2.2. Study area

The study was conducted in EmONC facilities located in a rural district and a peri-urban municipality within the Northern Region of Ghana. The region recorded a maternal mortality ratio of 207 per 100,000 live births, above the national average of 151 per 100,000 [17]. Most of the districts in the region are rural with sparse and hard to reach communities segregated by large farmlands and poor drainage system [20].

2.3. Sampling

Purposive sampling was used to select two EmONC facilities in two towns in the region. A district hospital was selected to help gain an insight into the research objective at the district level. A referral municipal hospital was also selected to help gain an understanding of the extent of quality of EmONC and how that compares with the district hospital. Purposive and convenient sampling methods were used to select participants from a population of 36 essential health service providers and 57 clients. Essential health providers were sampled because they perform wide ranging signal functions of EmONC. Caretakers of, and women receiving EmONC were sampled purposively to draw on their experiences around health providers' attitudes, care quality efforts and interpersonal relations [21].

2.3.1. Inclusion criteria

Essential health staff who provided EmONC signal functions between May and September 2019.
Women who received EmONC services between May and September 2019.
Caretakers who assisted women on admission in hospitals between May and September 2019.

2.3.2. Exclusion criteria

Health staff uninvolved in the provision of EmONC
Women who did not receive emergency intervention during the study period.

2.4. Data collection

Data were collected using non-participant observation, in-depth face-to-face interviews and analysis of physical artifacts. The multiple data collection sources methods aided in the triangulation of results [22]. Before data collection, participants were informed about the researcher and the purpose of the study after which they were required to provide written consent by appending signatures or thumbprinting on consent forms to demonstrate willful participation. The lead author collected observation data for an average of 5 months concurrently in the study facilities and compiled daily notes using a guide adapted from [23]. Each observation was preceded by note of the availability of essential drugs, equipment and personnel (required for the performance of signal functions) in the labour and maternity wards using the room-by-room walk through tool by [24]. Data were captured under the headings: 'Not available', 'available some of the time', 'available most of the time'. Interviews with health providers took place after working hours and at places convenient to them The interviews were conducted in English and recorded with participants' consent. Questions on the interview guide included: -Can you please describe how you attend to labour/complications? -Are EmONC signal functions always available? -How many midwives are on duty at a time and why? -Are you able to perform all signal functions as required by pregnancy

complications? How/why? -Do you have the essential items required for complication management? why? Do you follow standard guidelines on complication management? Why?

Interviews with clients and care givers were carried out immediately after discharge from the hospital either in an obscure place within the facility premise or in their homes. Questions for care givers and clients included: Why did you choose to come to this facility and not any other? Were health personnel readily available when you arrived in the facility? Were you attended to immediately you arrived? To what extent did health providers show courtesy to you during treatment? What is your general impression about the quality of care provided to you? Interview guides were pre-tested in each facility for feedback before actual data collection. A trained research assistant, fluent in the local language (Dagbani), interpreted the English content of the instrument to clients. The research assistant also transcribed the audio recordings of the local language content, translated it into English and anonymised the identity of participants. Interviews proceeded till data saturation was achieved in each category. Data saturation occurred when information provided by participants became repetitive [25]. A participant was interviewed once unless the need for clarification warranted a follow-up interview. Interviews lasted an average of 63 minutes. A total of 11 health staff and 9 clients declined participation for personal reasons. Table 1 is a breakdown of participants and data collection method used.

2.5. Rigour

The credibility of the study was ensured through the following processes: multiple data sources, verbatim transcription of interviews, analysis of data in the context in which they occurred, constant comparative technique, member checking and triangulation methods [26]. Triangulation of multiple data sources ensured validity of data gathered. The collection and comparison of data also enhanced data quality based on the ideologies of thought divergence or convergence [27]. Reliability of the findings was enhanced through multiple coding of the transcripts to arrive at a consensus on the emergent codes and themes [26].

2.6. Ethical approval

Ethical approval for the study was obtained from the Ghana Health Service (GHS-ERC004/04/19) and the University of Cape Coast [UCC] Ethical Review Board (UCCIRB/CES/2019/03). Informed consent was received from participants to illustrate voluntary participation.

2.7. Data analysis

Data analysis followed Yin's five phases of analysis notably compiling data, disassembling data, reassembling data, interpreting and concluding [19]. Analysis of data was first carried out for the district hospital and then triangulated with the referral facility. All observation notes were compiled into two transcripts for analysis. Audio recordings of interviews with participants were transcribed verbatim. A list of the set of equipment, drugs and essential health personnel was also compiled and grouped according to facility type. The lead author read the transcripts thoroughly and severally for content familiarity. This was followed by manual coding of concepts to identify basic themes and create categories. Using pattern of occurrence, related codes were grouped into themes which were then

Table 1
Health staff.

Gender	No of Participants
Female	18
Male	3
Age	
20–29	8
30–39	9
40–49	1
50 and above	3
Education	
Post-secondary	4
Tertiary	17
Rank	
Staff midwife	7
Senior enrolled nurse	4
Senior staff midwife	5
Senior midwifery officer	3
Deputy director, nursing services	1
Obstetrics and gynaecology specialist	1
Years in practice	
1–10	16
11–20	3
21–30	–
31–40	2
Total	21

grouped into categories for presentation in the findings. To enhance credibility of results, the second author conducted independent coding and analysis of the transcribed data and comparism was made. Similar codes and themes were maintained while differences in codes called for a re-examination and re-structuring of themes to a level acceptable to both authors. Each of the stages was characterised by personal reflections through constant comparism of emerging themes with data to ensure that themes generated were independent of researchers' biases [19]. Member reflections [28] was carried out by gaining feedback from data interpretations and conclusions from 11 study participants. Observation notes enabled a vivid and analytic description of events in the study environment and supported by interview quotes from study participants. The code work for the study is contained in Table 4 while participants' details are contained in Tables 1–3.

3. Results

3.1. Characteristics of study participants

Study participants consisted of 21 essential health staff, 23 clients and 10 care givers. The health worker category comprised 15 midwives including 2 male midwives, 4 senior enrolled nurses, 1 hospital matron and a specialist gynaecologist. Of the midwives, 5 had a Post-secondary certificate while the rest were diploma and degree holders and had practiced for an average of 10 years. Most of the women who received EmONC interventions were of advanced age, uneducated, engaged in petty trading and in polygamous marriages. Caregivers were female relatives of clients who obtained complications. Most of them had no formal education.

Participants are coded as (#C) for clients and (# Pr.) for health providers with corresponding identifiers. Clients refer to both women who obtained complications and caretakers.

3.2. Main themes

3.2.1. Non-adherence to standard practice in the facilities

There were some physical signs in EmONC facilities to suggest that EmONC signal functions were available and duly provided. Excerpts of the safe motherhood protocol [29] were visible on the side walls of wards in both facilities. Health staff indicated that this was to guide them on how to proceed with care. However they mostly failed to adhere to it in their practice. For example, it was observed that the partograph was never used in both facilities. Rather, a piece of paper was devised and monitoring activities recorded on it. Foetal heart rate and vaginal examination results were not recorded according to the standard practice of 30 min and 4-h duration respectively, but as at when they remembered to do so. Consequentially, providers missed the clue to intervene where appropriate leading to adverse outcomes in some instances, especially at the referral facility. A senior member disclosed:

> "… The midwives will say that they count but if they use a partograph, it will point to some key areas that will tell them that there is a problem but they don't use it and we record bad cases …" (# Pr. 2).

Some midwives revealed that their failure to use the partograph was due to the fact that most of the parturients arrived in an advance stage of labour rendering it unsuitable:

Table 2
Clients (patients).

Age	No of Participants
Below 20	4
20–29	5
30–39	8
40–49	6
Education	
None	14
Basic	4
Secondary	1
Post-secondary	2
Tertiary	2
Occupation	
Unemployed	9
Informal	12
Formal	2
Marital Status	
None	3
Monogamy	4
Polygamy	16
Type of obstetric complication observed	
Post-partum hemorrhage	12
Pre-eclampsia	5
Placenta praevia	2
Maternal distress	4
Total	23

Table 3
Clients (caretakers).

Age	No of Participants
Below 20	3
20–29	2
30–39	4
40–49	1
Education	
None	6
Basic	–
Secondary	3
Post-secondary	–
Tertiary	1
Occupation	
Unemployed	6
Informal	3
Formal	1
Marital Status	
None	3
Monogamy	1
Polygamy	6

Table 4
Summary of study findings.

Main emergent theme (Category 1)	Minor emergent theme (Category 2)
i. Non-adherence to standard practice: … but they don't use it and we record bad cases …… most of the women arrive at the hospital with 7 cm …… if you give them the question to plot, they will plot but they don't know how to apply it… how many people have time to follow the protocol … ii. Inadequate monitoring in wards … I cried out to the midwife who also called the doctor ……. I was the only one on duty and the babies were many …. divergent: … because we don't have NICU, we try to manage our cases well …. iii. Experimental care… definitely I will have to use the client as experiment to learn …… when student midwives come, that is where we have all the troubles ……. after delivery, my sister had a deep cut and bleed seriously ….the midwives were students iv. Crude management procedures… you Just insert your hand to scoop them out …… the midwife put her hand inside me and was removing things out ….it was painful …… it is quite painful and discomforting to clients v. Non-performance of needed care… for us, when the head has disengaged, we give episiotomy … …. for forceps, they have stopped it …	vi. Lack of empathic care … they could help me to come through without CS …… the midwife was hitting me that I was not pushing enough …… if you don't shout, .they will not make effort to push … vii. Non-consensual care… we had to go against him and rush them to theatre if not mother and baby will expire …

"… Here most of the parturients arrive at the hospital with 7 cm dilation …"

Other senior members, however, said most midwives lacked the knowledge on how to use the partograph though they have been periodic in-service training to build the capacity of staff:

"… If you give them the question to plot, they will plot but they don't know how to apply it in day to day management though we organise refresher courses for them …" (# Pr. 8)

Clients who presented with very high blood pressure (BP) received treatment using magnesium sulphate. However, treatment was sometimes done hurriedly in both facilities and did not follow the standard time duration of between 10 and 15 minutes as providers decried the lack of time. Some women who received this wrong treatment immediately became unconscious and had to be resuscitated. A health provider indicated:

"… It is in the protocol that we start such treatment with a loading dose of 4 g of magnesium sulphate then give slowly between 10 and 15 min. How many people have time to do that.…?" (# Pr. 14).

3.2.2. Inadequate monitoring in wards

In their bid to provide best care, health providers admitted clients suffering from the two main causes of maternal death-post-partum hemorrhage (PPH) and eclampsia in separate rooms very close to the nurses' table in the referral hospital for effective

management. Nonetheless, close monitoring was sometime not possible due to the high workload. Abiba was on admission in the Maternity ward on account of PPH. She delivered at home in a town nearby but bled profusely as a result of retained placenta. She was taken to the health centre in the village but was immediately referred to the municipal hospital. Upon arrival, manual removal of placenta was conducted. She was admitted and transfused with three pints of blood. On the second day of admission, her daughter, who was with her at the hospital, observed her mother in a pool of blood. There was only one midwife on duty and she was attending to other patients in the ward. It took a loud cry for help from the caretaker to salvage an apparent incident of maternal death:

> "… I went to stand by her and saw that all the blood had come out again and it was a pool on the bed so I cried out to the midwife who also called the doctor and other people and my mother was rushed to the theatre …" (# Care giver 6.)

Similar events surrounded newly delivered babies leading to frequent cases of neonatal death. A pre-term baby with a poorly clamped cord bled to death at the Neonatal Intensive Care Unit (NICU) due to inadequate monitoring by the nurse on duty. The nurse attributed it to excessive work in the wards though the incident occurred while she was seated at the nurses table:

> "… You can see that when that incident happened, I was the only one on duty and the babies were many. Besides, I attended to that baby before going to sit down …" (# Pr. 6)

At the municipal hospital, though there was no NICU, no adverse outcome was recorded during the period of fieldwork. Midwives attributed it to their resolve to provide effective care irrespective of structural constraints:

> "… Because we don't have NICU here we try to manage our cases well so that mother and baby can survive …" (Pr. 11)

3.2.3. Experimental care

Some newly posted midwives in both facilities indicated that upon completion of their studies they spent quite a number of years at home though they qualified for postings. This followed governments' inability to immediately employ them in the health sector due to fiscal challenges. When they were eventually posted, those sent to the Northern part were immediately placed in wards to practice because of the chronic shortfalls of midwives in the area. Such midwives disclosed they battled with work as they appeared to have forgotten certain procedures learnt in school and ended up having to use the client for experiment in a bit to recover what was learnt:

> "… Now that I am here alone, if I get a complication that I have forgotten of, how do I provide care? Definitely, I will have to use the client as experiment to learn and that is what we the new ones do because we stayed home for long after school and forgot how to perform some functions … yes the protocols are on the walls but we have to practice to be able to do it ….." (# Pr 15).

Also student midwives, without requisite skill set were assigned to deliver women without supervision due to lack of essential health providers. Part of the training of midwives required that students gain practical experience of their profession by serving in health facilities, a system known as internship. Students are supposed to complete log books on their activities in the wards including the number of deliveries conducted. Since the concentration is not on quality of delivery but number of deliveries, student midwives appeared more interested in catching babies than preventing complications. As a result, some deliveries were poorly conducted. They could not manage complications leading to adverse consequences on mothers and their babies. A senior staff said:

> "… Whenever students come in, because they have to conduct 10 or 20 deliveries, the midwives give it to them and that is where we have all the troubles …" (# Pr. 1)

A caretaker shared the following experience:

> "… When I took my sister to the hospital, I wasn't happy at all because after delivery she had a very deep cut and bled seriously. I understand the midwives were students …" (# Care giver 3).

3.2.4. Crude management procedures

The evidence further suggests that health providers used crude management procedures to handle complications. As a normal routine, on suspicion of PPH, a midwife would quickly wear gloves and insert virtually the whole length of her arm into the cervix through to the womb apparently to check and scoop retained products out. This was carried out amidst sobs and wails from the woman who sometimes failed to co-operate leading to struggles. The client was encouraged to stay calm for what was being done, was in her own interest. This procedure was immediately followed by the administration of either oxytocin or misoprostol. Three categories of women received this treatment at the facilities on daily basis. These were women at high risk of PPH, those who bled profusely as a result of retained products/clots after having been discharged from delivery bed and those who were rushed in from home on account of retained placenta attained from home delivery. They received these signal functions without any form of anesthesia or use of appropriate equipment. Health providers attributed the situation to lack of essential drugs and equipment. A midwife shared the following on how they managed such complications:

> "… You just insert your hand into the vagina to see whether there is retained placenta or product of conception and scoop them out to stop the bleeding. We know it is not good but we are constrained. The drugs and equipment are not there …" (# Pr.1).

A client also shared her experience thus:

> "… The midwife put her hand inside me and was removing some things out. It was very painful. That is why I don't want to deliver at the hospital …" (#C 3).

It was observed that women were much agitated by such practices and sometimes refused to corporate. Midwives indicated their motive of conducting service in such a manner was to arrest the problem as soon as possible to save life:

> "… It's not a good thing for a midwife to just insert the hand, because it is quite painful and discomforting to the client but we want to safe life …" (# Pr. 13)

3.2.5. Non-performance of needed care

It was further observed in both facilities that some deliveries elicited assisted vaginal delivery using the forceps or vacuum extraction but this mostly did not happen. A midwife at the district hospital, said under such situations they give episiotomy to enable the woman deliver since they lacked the equipment. At the referral facility, though the said equipment were there, midwives said they lacked the expertise to perform such functions:

> "… For us when the head has disengaged we give episiotomy to enable the baby come out because we don't have the vacuum …" (# Pr. 16)

> "… As for forceps, they have stopped it because if not someone who has been trained it can cause problems for the babies …" (# Pr 10)

3.3. Minor themes

3.3.1. Lack of empathic care

In normal deliveries, it was a routine for a midwife to stand in front of a client positioned on the delivery bed, support the perineum with a pad and shout series of pushes amidst tight slaps of the parturient to enable her push through. However, some clients stated that they desired some additional support to enable them deliver vaginally. One disclosed that she lacked the energy to push as she had not eaten throughout the labour period. Another client said her baby had a nuchal cord that was not realised early enough by the midwife. Some of such cases ended up with a CS which most clients detested. Some women shared their experience on the delivery bed:

> "… I think they could have shown me more support or patience or something just to help me and the child to come through without going through CS …" (#C 2).

> "… The baby had a rope around the neck but the midwife did not see and was just hitting me that I was not pushing enough …" (#C 6)

Some midwives, however, indicated that shouting at women on the delivery bed was intended to achieve safe delivery as anything less could lead to complications or even make them worse:

> "… If we don't shout at them, they won't make effort to push and the baby may become asphyxiated upon delivery …" (# Pr. 8)

3.3.2. Non-consensual care

The findings reveled that some interventions were carried out without clients' consent. Midwives indicated that women in the area lacked the autonomy to take decisions concerning their health. It was the responsibility of their partners to do so. In the event of an emergency CS, women would often ask staff to seek consent from their husbands who might not be available. Midwives alluded that such actions often delayed service delivery or worsened complications. They intimated that male partners especially resisted emergency CS due to ignorance hence health providers sometimes proceeded with non-consensual care when this was necessary:

> "… I told the husband of a woman that the baby is coming with the buttocks but because the lady has not delivered before we were taking her to the theatre. This man fought us that we should use misoprostol. We had to go against him and rush her to theatre if not the mother and foetus will both expire …" (#Pr. 12).

4. Discussion

Quality of obstetric care is partially responsible for the differences in maternal and neonatal mortality and morbidity rates across countries [30]. Studies within this domain are mostly quantitative in nature while the few with qualitative design usually assess interpersonal aspect of care. This study adopted a qualitative multiple case study design to explore the quality of EmONC in Northern rural Ghana.

Previous studies on quality of maternal health care have cited health providers' inadequate clinical knowledge and lack of skills and competences as factors debilitating against positive maternal and neonatal outcomes [9,31,32]. These studies, however, did not disclose what interventions were put in place to improve upon the situation. Evidence from this study suggests that though standardised and local guidelines on EmONC existed to guide care delivery, they were not adhered to during the care delivery process not only due to lack of skills on their application but due to late presentation by women. Other reasons included a dearth in essential staff,

drugs, equipment and heavy workload. Consequently, women received harmful care as midwives applied crude management procedures, failed to manage pain with anesthesia while certain needful treatments were denied. These activities present a picture of sub-standard care which is a common finding in most studies conducted in developing countries [12,33–35]. Sub-standard care is viewed as an affront to women's reproductive rights as it has the potential of inducing undesirable health outcomes for mother and baby [36]. The evolving literature thus points to culturally insensitive procedures in health facilities that have the potential of dissuading some women of accessing hospital care and subjecting others to livelong debilitating maternal morbidities and even death after hospital discharge [37]. Indeed, maternal health remains an important priority within the sustainable development goals and governments' short to medium term aspirations. To demonstrate commitment to best health outcomes, the process of care delivery in Ghana must be driven by evidence and conform to both local and internationally validated guidelines and principles. It is worth noting that some midwives adopted alternative means of providing care in view of the structural challenges. It may be helpful if further research examines approaches to promoting quality care in resource poor settings to inform the adoption of alternative treatment measures that may promote positive maternal and neonatal outcomes in deprived areas.

The manner of maternal and child care delivery has been assessed largely through client satisfaction surveys. Several studies in this area generally report of client mistreatment and disrespectful care in health facilities [14,38–40]. Specifically, the studies have cited physical, verbal and emotional maltreatments of women by health providers during facility delivery. The studies dwelled largely on the views of clients to draw their conclusions. Evidence from this multi-purpose stakeholder study equally revealed women's desire for more compassionate and supportive care during delivery and complication management. Though health providers justified the use of harsh language, they may need to moderate it with effective monitoring as the finding in this study suggests that some difficult deliveries were more associated with physiological challenges such as maternal distress for which a harsh treatment may not achieve desired results. The issue of non-consensual care due to partner non-availability as found in this study constitutes another form of client abuse and is similar to finding in Nepal [41]. According to the Ghanaian Patients' Charter, all treatment proceedings must be explained to the patient and the patient has the right to either consent to or reject [42]. Although health providers eventually succeeded with care delivery irrespective of consent from clients, this contravenes the specifications in the Patients' Charter. The need for public involvement and co-operation in maternal and child health care initiatives are imperative for quality care delivery. Largely, the nature of care provided in this study negates women's right to dignified and respectable maternity care [43]. The underlying factors are largely modifiable through further research, adequate supply of essential logistics and well trained staff as well as community involvement in maternal and child health care delivery activities.

4.1. Conclusion

Inadequate supply of essential logistics and provider lack of competence in some care components induced poor quality care and possible adverse maternal and neonatal outcomes. Elements of disrespectful care for women suggest violations of their rights in the maternal and newborn care encounter.

5. Strengths and limitations

The main strength of this study lies in the use of varied qualitative methods and participants to enhance the trustworthiness of findings. The study, however, reflects the process of EmONC delivery in two facilities in the Northern Region of Ghana hence cannot be generalised though the findings may have practical implications in similar settings.

Author contribution statement

Alice Ayawine: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Roger Atinga: Analyzed and interpreted the data; Wrote the paper.

Data availability statement

The data that have been used are confidential.

References

[1] WHO, UNICEF, UNFPA, World Bank Group, Trends in Maternal Mortality: 2000-2017 [Internet]. 2019. Available from: https://www.int/news-room/fact sheets/detail/maternal-mortality.
[2] WHO, Maternal Mortality Fact Sheet [Internet] [cited 2020 May 6]. Available from: www.who.int/news-room/fact-sheets/detail/maternal mortality, 2019.
[3] D. Chou, B. Daelmans, R.R. Jolivet, M. Kinney, L. Say, Ending preventable maternal and newborn mortality and stillbirths, BMJ 351 (suppl 1) (2015) 19–22.
[4] D. Chou, Ö. Tunçalp, T. Firoz, M. Barreix, V. Filippi, P Von Dadelszen, Constructing maternal morbidity – towards a standard tool to measure and monitor maternal health beyond mortality, BMC Pregnancy Childbirth 16 (45) (2016) 1–10, https://doi.org/10.1186/s12884-015-0789-4.
[5] C. Silveira, M.A. Parpinelli, R.C. Pacagnella, C.B. Andreucci, E.C. Ferreira, C.R. Angelini, et al., A cohort study of functioning and disability among women after severe maternal morbidity, Elsevier B.V. Int. J. Gynecol. Obstet. [Internet] 134 (1) (2016) 87–92, https://doi.org/10.1016/j.ijgo.2015.10.027.
[6] S. Hodgins, J. Tielsch, K. Rankin, A. Robinson, A. Kearns, J. Caglia, A new look at care in pregnancy : simple , effective interventions for neglected populations, PLoS One 11 (8) (2016) 1–74.
[7] WHO, Monitoring Emergency Obstetric Care: A Handbook [Internet], 1-153 pp. Available from: www.who.int/reproductivehealth, 2009.

[8] A. Paxton, D. Maine, L. Freedman, D. Fry, S. Lobis, The evidence for emergency obstetric care, Int. J. Gynecol. Obstet. 88 (2) (2005) 181–193.
[9] K.T. Ijadunola, M.Y. Ijadunola, O.A. Esimai, T.C. Abiona, New paradigm old thinking : the case for emergency obstetric care in the prevention of maternal mortality in Nigeria, BMC Publ. Health 10 (6) (2010) 1–8.
[10] S. Gabrysch, G. Civitelli, K.M. Edmond, M. Mathai, M. Ali, Z. Bhutta, et al., New signal functions to measure the ability of health facilities to provide routine and emergency newborn care, PLoS Med. 9 (11) (2012) 1–7.
[11] A.M. Ntambue, F.K. Malonga, K.D. Cowgill, M. Dramaix-Wilmet, P. Donnen, Emergency obstetric and neonatal care availability, use, and quality: a cross-sectional study in the city of Lubumbashi, Democratic Republic of the Congo, 2011, BMC Pregnancy Childbirth 17 (1) (2017) 1–17, https://doi.org/10.1186/s12884-017-1224-9.
[12] M. Kanyangarara, B. Victoria, Linking household and health facility surveys to assess obstetric service availability , readiness and coverage : evidence from 17 low- and middle-income countries, J. Glob. Health 8 (1) (2018) 1–12.
[13] M. Kyei-onanjiri, M. Carolan-olah, J.K. Awoonor-williams, T.V. Mccann, Review of emergency obstetric care interventions in health facilities in the Upper East Region of Ghana : a questionnaire survey, BMC Health Serv. Res. (2018) 1–8.
[14] M.A. Bohren, J.P. Vogel, E.C. Hunter, O. Lutsiv, S.K. Makh, J.P. Souza, et al., The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review, PLoS Med. 12 (6) (2015) 1–32.
[15] T.J. Lohela, R.C. Nesbitt, A. Manu, L. Vesel, E. Okyere, B. Kirkwood, et al., Competence of health workers in emergency obstetric care : an assessment using clinical vignettes in Brong Ahafo region , Ghana, BMJ Open 6 (2016) 1–9.
[16] Ö. Tunçalp, M.J. Hindin, K. Adu-bonsaffoh, R.M. Adanu, Assessment of maternal near-miss and quality of care in a hospital-based study in Accra , Ghana, Int. Fed. Gynecol. Obstet. 123 (1) (2013) 6–11, https://doi.org/10.1016/j.ijgo.2013.06.003.
[17] CHIM, The Health Sector in Ghana: Facts and Figures [Internet], 52-53 pp. Available from: http://www.ghanahealthservice.org/downloads/FACTS+FIGURES_2017.pdf, 2017.
[18] C. Willig, Introducing Qualitative Research in Psychology: Adventures in Theory and Method, second ed., Open University Press, 2008.
[19] R.K. Yin, Case Study Research and Applications: Design and Methods, sixth ed., SAGE, Los Angeles, 2018.
[20] GSS, Ghana Demographic and Health Survey [Internet], 109-125 pp. Available from: https://dhsprogram.com/pubs/pdf/FR307/FR307.pdf, 2015.
[21] W.J. Creswell, Research Design: Qualitative, Quantitative and Mixed Methods Approaches, Third Edit. Sage Publications, Inc., 2009.
[22] R.K. Yin, Case Study Research: Design and Methods, fifth ed., The Guilford Press, New York, 2011.
[23] R.M. Emerson, R.I. Fretz, L.L. Shaw, Writing Ethnographic Fieldnotes, The University of Chicago Press, Chicago, 2005, pp. 353–368.
[24] Z. Gill, P. Bailey, R. Waxman, J.B. Smith, Averting Maternal Death and Disability: A tool for assessing " readiness " in emergency obstetric care: The room-by-room " walk-through, Int. J. Gynecol. Obstet. 89 (2005) 191–199.
[25] J.M. Morse, Determining sample size, Qual. Health Res. 10 (1) (2000) 3–5.
[26] P. Baxter, S. Jack, Qualitative case study methodology: study design and implementation for Novice researchers qualitative case study methodology : study design and implementation, Qual. Rep. 13 (4) (2008) 544–559.
[27] C. Wolfram, J. Hassard, Triangulation, in: A. Mills, G. Durepos, E. Wiebe (Eds.), Encyclopedia of Case Study Research [Internet], SAGE Publications, Inc., Thousand Oaks Print, 2010, pp. 945–949. Available from: http://methods.sagepub.com/reference/encyc-of-case-study-research.
[28] N.K. Denzin, Y.S. Lincoln, The Sage Handbook of Qualitative Research, third ed., SAGE, Thousand Oaks, CA, 2005.
[29] Ghana Health Service, National Safe Motherhood Service Protocol, Ghana Health Service & Ministry of Health, 2008, pp. 24–92.
[30] M.E. Kruk, E. Kelley, S.B. Syed, F. Tarp, T. Addison, Y. Akachi, Measuring quality of health-care services: what is known and where are the gaps? Bull. World Health Organ. 95 (6) (2017) 390, 390A.
[31] U. Asibong, I.B. Okokon, T.U. Agan, A. Oku, M. Opiah, E.J. Essien, et al., The use of the partograph in labor monitoring: a cross-sectional study among obstetric caregivers in General Hospital, Calabar, Cross River State, Nigeria, Int. J. Womens Health (2014;6(October) 873–880.
[32] J. De Graft-Johnson, L. Vesel, H.E. Rosen, B. Rawlins, S. Abwao, G. Mazia, et al., Cross-sectional observational assessment of quality of newborn care immediately after birth in health facilities across six sub-Saharan African countries, BMJ Open [Internet 7 (3) (2017), e014680. Available from: http://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2016-014680.
[33] S. Miller, M. Cordero, A.L. Coleman, J. Figueroa, S. Brito-anderson, R. Dabagh, Quality of care in institutionalized deliveries : the paradox of the Dominican Republic, Int. J. Gynaecol. Obstet. 82 (2003) 89–103.
[34] R.C. Nesbitt, T.J. Lohela, A. Manu, L. Vesel, E. Okyere, K. Edmond, et al., Quality along the continuum: a health facility assessment of intrapartum and postnatal care in Ghana, PLoS One 8 (11) (2013) 1–10.
[35] F. Mgawadere, H. Smith, A. Asfaw, J. Lambert, There is no time for knowing each other ": quality of care during childbirth in a low resource setting, Elsevier B. V. Midwifery [Internet] 75 (2019) 33–40, https://doi.org/10.1016/j.midw.2019.04.006.
[36] P.A. Afulani, C.A. Moyer, Accountability for respectful maternity care, The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY-NC-ND 4.0 license, Lancet [Internet] 394 (10210) (2019) 1692–1693, https://doi.org/10.1016/S0140-6736(19)32258-5.
[37] S.M. Tabatabaei, F.B. Pour, H. Azadeh, Infection control practices and program management in labor and delivery units : a cross-sectional study from Iran, Int. J. Infect. 3 (2) (2016) 1–8.
[38] B. Kanengoni, S. Andajani-sutjahjo, E. Holroyd, Women ' s experiences of disrespectful and abusive maternal health care in a low resource rural setting in eastern Zimbabwe, Elsevier Ltd, Midwifery [Internet] 76 (2019) 125–131, https://doi.org/10.1016/j.midw.2019.06.003.
[39] M.A. Bohren, H. Mehrtash, B. Fawole, T.M. Maung, M.D. Balde, E. Maya, et al., How women are treated during facility-based childbirth in four countries : a cross-sectional study with labour observations and community-based surveys, Lancet 6736 (19) (2019) 1–14.
[40] L.D. Ambruoso, M. Abbey, J. Hussein, Please understand when I cry out in pain : women ' s accounts of maternity services during labour and delivery in Ghana, BMC Publ. Health 11 (5) (2005) 1–11.
[41] M. Bogren, K. Erlandsson, A. Johansson, M. Kalid, A. Abdi, J. Mohamed, et al., Health workforce perspectives of barriers inhibiting the provision of quality care in Nepal and Somalia – a qualitative study, Elsevier, Sex Reprod. Healthc. [Internet] 23 (2020) 1–7, https://doi.org/10.1016/j.srhc.2019.100481.
[42] P.K. Turkson, Perceived quality of healthcare delivery in a rural district of Ghana, Ghana Med. J. 43 (2) (2009) 65–70.
[43] A.L. Hulton, Z. Matthews, R.W. Stones, A Framework for the Evaluation of Quality of Care in Maternity Services, University of Southampton, 2000, pp. 1–50.