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Challenges to obstetric referrals in Ghana: perspectives of healthcare workers in rural setting

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Challenges to obstetric referrals in Ghana: perspectives of healthcare workers in rural setting

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Abstract

Objective: We explored and document healthcare workers' perspectives on the challenges encountered during obstetric referrals.

Design: The study adopted a qualitative research approach and a descriptive phenomenology design. Healthcare workers permanently working in 16 rural healthcare facilities in the Sene East and West Districts composed the target population for this study. Using a purposive sampling technique, participants were recruited and enrolled in in-depth individual interviews (n=25) and focused group discussions (n=12). Data were analysed thematically using QSR NVivo 12.

Setting: Sixteen rural healthcare facilities in the Sene East and West Districts, Ghana

Participants: Healthcare workers

Results: Areas related to patient as well as institutional level issues challenged the referral processes. At the patients' level, financial constraints, fears associated with referral and patients' non-compliance with referrals were identified as challenges that delayed the referral process. With regard to institutional challenges, the following emerged: referral transportation challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies.

Conclusion: We conclude that in order for obstetric referrals in rural health settings in Ghana to be effective and timely, there is the need to improve awareness creation about its importance and the support required from patients and their families in complying with referral directives. The awareness creation may be done through health education messages and campaigns. Also, to accelerate obstetric referrals in rural settings, there is an urgent need to incorporate technology through platforms such as the use of WhatsApp for facilitating referrals and enhancing coordination between HCWs involved in the referral process.

Keywords: Challenges; Obstetric referrals; Rural settings; Ghana

Strength and limitations

- By adopting qualitative research design, the study provides deep and contextual understanding of the challenges that affect obstetric referrals in rural Ghana.
- The discussion of the study findings guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to ground our findings.
- Nevertheless, the findings may not be reflective of obstetric referral challenges in urban settings as we focused only on rural healthcare facilities.
- The study did not include the perspectives of patients.

Background

Improving maternal health has been a key issue on the global front for the past two decades.¹ This has been demonstrated through priorities of the Millennium Development Goals (MDGs) target 5 and now the Sustainable Development Goals (SDG) target 3.1. Despite these global efforts to improve maternal health, maternal mortality remains high. Nearly 289,000 mortalities associated with pregnancy and childbirth related complications are reported worldwide each year.² Sub-Saharan Africa (SSA) and Southern Asia account for the regions with the highest burden of maternal mortality.³

In Ghana, improving maternal health outcomes remains an important public health concern. Successive governments have shown commitment towards improving different dimensions of maternal health. For instance, in 2008, free maternal health service was introduced as a policy to facilitate skilled birth attendance and institutional birth deliveries.^{4 5} Additionally, Community-based Health Planning and Services (CHPS) was introduced to serve as a point of primary healthcare for pregnant women.^{2 6} Although CHPS provide primary healthcare as well as family planning, antenatal and postnatal care, they often lack the capacity to provide birthing services or deal with obstetric complications.² In Ghana, the predominant obstetric complications include eclampsia, obstructed labour, haemorrhage and sepsis,^{2 7} all of which require interventions that are beyond the competencies of staff within a primary health facility. As such, obstetric referrals have become an important strategy to alleviate obstetric emergencies among women.

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3 Despite the importance of obstetric referrals in promoting better maternal health outcomes,
4 evidence suggest there are challenges that affect the referral process. This study uses Thaddeus
5 and Maine's "Three Delays Model" (TDM) as the conceptual framework. This model postulates
6 that, delays occur at the point of deciding to seek healthcare (type I); at the point of reaching the
7 health facility (type II); and, at the point of receiving quality care (type III).⁸ Related studies have
8 also applied the TDM to understanding obstetric referral challenges.⁷⁻⁹ For instance, Afari et al.⁷
9 found challenges with transportation, communication and standard of care. The findings from
10 these studies have highlighted the need to eliminate delays at the various level of the TDM to
11 improve obstetric referrals. Exploring the challenges that confront obstetric referrals in rural
12 settings in Ghana could significantly contribute to reducing maternal mortality, morbidity and
13 disabilities. It would again propel Ghana towards the attainment of the Sustainable Development
14 Goals (SDG) target 3.1 which envisions to reduce the maternal mortality ratio to <70 deaths per
15 100,000 live births.

16
17 The present study therefore seeks to explore and document healthcare workers' perspectives on
18 the challenges encountered during obstetric referrals. This study focuses on type II and III delays.

19 20 21 22 23 24 25 26 27 28 29 30 31 **Methods**

32 33 **Study design and source of data**

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35 The study adopted a qualitative research approach and aligns with the interpretivist philosophy.
36 Specifically, descriptive phenomenology design was used. This research design allowed us to
37 articulate and comprehend the most essential meaning of the challenges that confront obstetric
38 referrals from the perspective of those directly involved (i.e., healthcare workers). Data used in
39 this study are primary data from fieldwork conducted between August 1 to October 31, 2021.

40 41 42 43 44 **Study setting**

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46 This study was conducted in the Sene East and West District of Ghana. Sene District is located in
47 the Bono East region. The district lies between Longitudes 0⁰ 15'E and 0⁰ 15'W, and Latitudes 7o
48 N and 8o 30'N [10]. Sixteen healthcare facilities were sampled across the Sene District. Nine of
49 these facilities were from Sene West District while the remaining seven facilities were from Sene
50 East District. The healthcare facilities included in this study ranged from CHPS compounds to
51 health centres. They are typically staffed by one community health nurse and they provide basic
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emergency obstetric and newborn care (BEmONC). In Sene West, a total of 407 deliveries and 558 deliveries were reported in the year 2020 and 2021. Between January and March, 2022, 184 deliveries had been reported in Sene West. However, there were only 16 midwives as at the end of March, 2022 [Sene West District Health Service Records, 2022]. In Sene East, a total of 620 deliveries and 728 deliveries were reported in the year 2020 and 2021. Between January and March, 2022, 174 deliveries had been reported in Sene East. However, there were only 18 midwives as at the end of March, 2022 [Sene East District Health Service Records, 2022].

Study population and sampling

Healthcare workers (HCWs) comprising community health nurses, general nurses and midwives permanently working in the 16 rural health facilities in the Sene East and West Districts composed the target population for this study. Using purposive sampling techniques, 37 participants were recruited and enrolled in in-depth individual interviews (IDIs), n=25 and focused group discussion (FGDs), n=12. Only HCWs who were directly involved in the management of obstetric cases and obstetric referrals were sampled to participate in the study.

Table 1: Breakdown of study area

Districts	Facilities
Sene West District Rural Facilities	<ul style="list-style-type: none"> • Bantema CHPS Compound • Drobe CHPS Compound • Lemu CHPS Compound • Sintah Clinic • Central KD Medical Centre • Kyeamekrom CHPS Compound • Tato Bator CHPS Compound • Lassi Health Centre • RCH
Sene East District Rural Facilities	<ul style="list-style-type: none"> • Kajaji health center • Kojokrom Health Center • Bassa Health Center • Premuase CHPS Compound • Nyankontre CHPS compound • Bodinka CHPS Compound • Asuso CHPS Compound

Data collection

Data was collected from between August 1 to October 31, 2021. The study used an IDI guide and FGD guide as the data collection instruments (see Supplementary File). These guides were pretested and validated. A research assistant (RA) with experience conducting IDIs and FGDs and proficiency in both English and Twi languages was trained in use of the data collection instruments. On average, a maximum of two interviews were conducted per day. Both IDIs and FGDs were conducted in English or Twi depending on the participants' preferences. An information sheet and informed consent sheet was provided to participants. The information sheet detailed the purpose of the study as well as the possible benefits, risks and duration of the study. All the participants consented by signing prior to the start of the interview. The IDIs lasted between 40-60 minutes whereas the FGDs lasted approximately 105 minutes. All of the sessions were audio recorded using a tape recorder. After each day's interview, the audio data was transcribed verbatim and encrypted to prevent unauthorised access to the data.

Data management and analyses

Transcripts from all the IDIs and FGDs were then vetted by the first author (VD) before being imported into QSR NVivo-12 for analysis. Data was analysed following Collazi's descriptive phenomenological method of analysis which includes the process of familiarising with the data, identifying significant statements, formulating meanings, generating themes and verifying the data.¹¹ Themes were generated using the nodes function in QSR NVivo to highlight compelling extracts. ABBM who is an expert in qualitative research coded six of the interview transcripts from the IDIs and FGDs while JO coded the remaining transcripts. ABBM then reviewed the coding conducted in the analysis for comparison. This corresponded to that of the lead author in that the same main issues for discussion arose, thus, enhancing the credibility of the findings. The emerged themes and sub-themes were discussed and reviewed by all the authors.

Rigor

Reliability was ensured in this study by following acceptable standards and methods of phenomenological studies. Detailed description of the study contexts and methods allowed transferability and confirmability of the study findings. To ensure credibility, we conducted member-checking with five of the participants; this was done one week after transcription so that

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3 participants could affirm the transcripts accurately reflected the interview content. No participant
4 offered corrections or expressed concerns about the content of the interviews. Field notes, which
5 included the participants' nonverbal cues, concerns, and interviewers' reflections, were recorded
6 after each interview and referred to during the analysis. The RA who carried out the interviews is
7 a healthcare researcher by training with extensive experience conducting IDIs and FGDs.
8 However, the RA does not work in the study settings and had no direct relationship with the
9 participants.

16 **Patient and public involvement**

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18 Members of the public and the study participants were not involved in the design of the study.
19 However, HCWs including community health nurses, general nurses and midwives participated in
20 the conduct of the study as participants. The results from our study is intended to be shared with
21 members of the public, healthcare professionals and relevant stakeholders via scientific
22 publications, lay reports, social media and conferences.

27 **Ethical approval**

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29 All the methods in this study conform to international ethical standards in the Declaration of
30 Helsinki and Belmont Declaration.^{12 13} The Ghana Health Service Ethics Review Committee
31 (GHS-ERC) [ID: GHS-ERC 004/03/21] approved and cleared the study as ethically sound. An
32 information sheet was given to all participant to brief them about the objective of the study, the
33 procedures, potential risk and benefits, emphasis on the protection of the participants' autonomy,
34 confidentiality and privacy. All participants voluntarily participated in this study. We anonymised
35 transcripts before analysis. Audio records and transcripts (without any identifying information)
36 were stored on a password protected computer. We followed the Standards for Reporting
37 Qualitative Research.¹⁴

46 **Results**

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48 Socio-demographic characteristics were collected on all participants (see Table 2). The majority
49 of participants were female (76.6%) and were educated at a certificate (2 years' post-secondary
50 school) or diploma (3 years' post-secondary school) level. The content of the certificate
51 programme is limited whereas that of the diploma programme is detailed.

Table 2: Participants' socio-demographic characteristics

Characteristics	n	%
Sex		
Female	49	76.6
Male	15	23.4
Mean age	29.9	
Education status		
Certificate	22	34.4
Diploma	38	59.3
Post-basic	2	3.1
Other	2	3.1
Qualification		
Community health nurse	12	18.8
General nurse	4	6.3
Midwife	35	54.7
Other	13	20.3
Years/months worked at facility		
Months	29	45.3
Years	35	54.7

Table 3 shows the emerging themes from the study analysis. Three levels of challenges emerged at the patient and institutional level. These challenges encountered during obstetric referrals further resulted in type I, II and III delays.

Table 3: Emerging themes

Level of challenges	Themes
Patient level challenges	Financial constraints
	Fears about referral
	Patients' non-compliance to referral
Institutional level challenges	Referral transportation challenges
	Poor attitudes of service providers
	Low staff strength
	Healthcare bureaucracies

Patient Level Challenges

Participants reported several challenges with timely obstetric referrals from the patients' contextual and personal factors. Themes that emerged from the data on patient level challenges included: 1) financial constraints; 2) patients' fears and misperceptions about obstetric referral; and 3) non-compliance.

Financial constraints

Regarding the issue of financial constraints, participants reported that patients were often financially handicapped. As such, they found it difficult to afford the cost of transportation to facilities where they are referred. Some participants also noted that when women are referred, they often do not have sufficient financial resources struggle to comply with referral, hence, causing a type I delay as underscored by Thaddeus and Maine.

“When you refer a woman, she will always tell you that the referral point will ask her husband to bring money to pay some things. Since they don't have money it puts some fear in them when they are given the referral forms. In the end, that leads to delay in a woman getting to the referral centre” (IDI, Transcript 001).

“Over here, you have to cross the river in order to get to the referral point. On a normal day, you will pay GHS5 in order to access the canoe to get to the riverside. But when we refer women to go to the referral point, they will have to pay for the charge for all the passengers in order to get exclusive right to the canoe and use it to the other side. That will mean that the person might have to GHS200 which is too much for them to pay. So, they refuse to comply with referral directives” (N2, FGD 2).

Fears and misperceptions about obstetric referral

Patients' understanding of referral is basic and critical to the effectiveness of obstetric referrals. The participants indicated that women who visit their facility have fears and misperceptions about referrals that delays their decision to comply and seek referral on time. Some participants stated that women often fear a referral is going to bring more financial burden to them. The financial burden may be associated with cost of transportation, cost associated with settling and interventions at the referral centre and the fear of the unknown. As such, they are usually adamant

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3 and non-compliant with referrals. Below are some excerpts that reflect the participants'
4 perspectives:
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7 *"...they [women] fear that when they get [referred] to the bigger facility, they're going to*
8 *pay a lot of money or they are going to do CS. As a result of that, whenever you mention*
9 *transfers and referrals to them, this fear is activated so you have to educate them and*
10 *encourage them and by the time you're done the time would have gone and even after all*
11 *this she has to go home to consult relatives or find means of transportation."* (IDI, Basa
12 006).
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18 *"For what I've noticed, they [women who come for healthcare] have their own*
19 *perceptions. Usually, they have that fear that when they go to the receiving facility, they*
20 *are going to be charged a lot of money which they cannot afford. Maybe it is because either*
21 *their friends or people they know have experienced such situations and have paid money.*
22 *I don't really know and can't explain further."* (IDI, Transcript 003).
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27 ***Non-compliance***

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30 Regarding compliance with referrals, participants shared their views that sometimes, pregnant
31 women who are referred to the next level of healthcare do not comply with the referral directives.
32 According to the participants, some patients have certain superstitious beliefs and misconceptions
33 that make them refuse to comply with referral directives. Instead of complying with the referral,
34 patients often go home to perform some ritual or self-care before accepting to be referred. They
35 become compliant only after the initial steps they take have failed them. These things result in
36 delays in referrals.
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43 *"Sometimes, some of them [the patients] have some beliefs that they must perform some*
44 *rituals before they go to the health facility. As such, when you refer them, they will go home*
45 *first to perform those rituals first before they go to where they have been referred. When*
46 *that happens, it causes unnecessary delays to the referral process."* (IDI, Dava CHPs).
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51 *"When a client is not ready to be referred it takes a longer time to convince the person and*
52 *sometimes you have to call in other relatives to assist in talking to the person to accept the*
53 *referral and then maybe the ambulance may not be around"* (FGD, Rich 1).
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3 One of the participants expressed that, “you may refer them [the client] and they may not go to
4 where you referred them, it’s either they don’t go or go to another place” (IDI, Dava CHPs).

7 **Institutional Level Challenges**

8
9 Four themes emerged from institutional level challenges to obstetric referrals in rural settings: 1)
10 referral transportation challenges; 2) poor attitudes of service providers; 3) low staff strength; and
11
12 4) healthcare bureaucracies.

15 ***Referral transportation challenges***

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17 A major challenge that emerged from the data was the problem with distance, transportation and
18 road networks. According to the participants, there is no proper transportation system in place to
19 facilitate referrals. In facilities that are located across rivers, women are forced to use a canoe to
20 cross the river as a means of transporting to the referral centre.

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25 “...most of our catchment areas are in the bushes and some even have to cross rivers before
26 they get here so it makes it difficult for referring” (IDI, Bassa Health).

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37 “Transportation is a big challenge for us here when it comes to referral. You know that as
38 CHPS compound, we don’t have any ambulance or ambulatory services here that can
39 provide patients with oxygen and intravenous infusion while in transit to the receiving
40 facility. So, whenever we have to refer a woman who is critically ill, it becomes a burden.”
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42 (IDI 2, Bantama CHPs).

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49 Others also reported that due to the transportation challenge, they have to resort to the use of
50 motorbikes and taxis as a way of transporting the referred woman to the receiving centre.
51 According to the participants, this arrangement does not safeguard the health of the woman who
52 is being transferred because of the dangers of motorbike transportation during pregnancy. Also,
53 these taxis and motorbikes which are used as a means of transportation for referrals sometimes
54 delay in reaching the health facility. Here is what some HCWs had to say:

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60 “Usually, they come to the facility with taxis or motorbikes. Some of them actually walk to
the facility. Therefore, when there is the need to refer them to a higher health facility, it
becomes a huge problem. When that happens, we have no choice than to resort to the same
means of transport that they came with, that is, the taxi or motorbikes. For those who can

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3 *walk, we sometimes allow them to walk home and prepare themselves to go to where we*
4 *have referred them to. These things worsen the patient's condition.” (IDI, Bassa 006).*
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7 *“Transportation is the main challenge that we face with respect to how timely our referral*
8 *system is. It is very difficult to get means of transport to the hospital, and maybe if the*
9 *husband comes and he is not having a motor bike, then it becomes difficult to transfer the*
10 *person. In such instances, we have to call to the district for an ambulance or go for a taxi*
11 *that can transport the woman. Often, these taxis and even the ambulance delay to get here.*
12 *In the end, the entire referral system is overly delayed mainly because of transportation*
13 *difficulties.” (IDI, Bodinka 004).*
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20 ***Poor attitudes of service providers***

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22 A major challenge that directly emanated from the HCWs was the issue of the attitudes of HCWs
23 at the receiving healthcare facilities. The participants asserted that some patients sent to the
24 receiving facilities return to the referring facility on the basis of poor treatment and delays at the
25 receiving point. Where the client has personally not experienced such poor treatment from HCWs
26 at the receiving facility, they take cues from their friends and family who might have been victims
27 of delays and poor quality of service at the receiving facility.
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33 *“Some of the people who go to the referral centres come back with complains that when*
34 *they went there, they were not received well and that, they don't appreciate the kind of*
35 *treatment they got from the midwife. So, they will go into the community and tell other*
36 *women in their condition that if they go on referrals, they will not have immediate care so*
37 *it's not necessary to go and this makes them reluctant to go on referrals” (IDI, Transcript*
38 *002).*
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44 Another participant expressed that the nature of their relationship with the patients does not allow
45 the client to freely express themselves or take part in the referral decision-making.
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48 *“...when they [the patients] go there they don't have any say so that alone may let them*
49 *delay because when they come here and we ask them to do something they can say they*
50 *don't have money but when they go there they don't have any say, buy this you have to buy,*
51 *do this you have to do that alone make them delay in going to the referral point” (N5, FGD*
52 *2).*
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Low staff strength

The effectiveness of referrals hinges on the availability of sufficient HCWs. Nevertheless, our study shows that the staff strength relative to referral was overwhelming. As a result, it is difficult for HCWs to decide who will accompany a patient who need to be referred.

“...we lack sufficient staff to facilitate the referral process. Due to that, it is difficult to decide who will follow the client to the referral centre.” (IDI, Bantama CHPs 3).

Others also asserted that, at the receiving facility, they often lack key health professionals such as medical officers to cater for emergency obstetric complications. Hence, when the client arrives at the receiving health facility, they have to wait for a long time for the medical officer available to attend to them. This results in both type II and III delays.

“I will say staff strength can be one of the reasons for delay. Sene medical centre is one of our referral centres and they have one medical officer so if he’s already at the theatre and the client arrives the person will have to wait for him to finish before she would be attended to” (IDI, Kajaji Health Center).

Healthcare bureaucracies

The study also identified health bureaucracies that challenge the referral process. According to the participants, they have to consult their superiors and other staff before deciding whether a case is fit for referral. In such instances, there are often disagreements that tends to foster a type II delay during the process of discussing the reasons for referral, calling and alerting the receiving facilities. Some HCWs expressed the following:

“Sometimes, among the staff, there is confusion. One staff will say this client does not need referral another staff will say that she needs referral. By the time they sit there to deliberate on the issue it prolongs the referral” (N2, FGD Kyeamekrom).

“Let’s say a patient is having high BP so I want to refer but then a colleague will that we should stop the referral and give her metadopine for the BP to come down. We will try this and if it works then there’s no need for us to refer the patient but if it doesn’t then there will be referral. By then we would have delayed the process” (N5, FGD Kyeamekrom).

Discussion

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3 Consistent with the Three Delay Model by Thaddeus and Maine [8], we found there are different
4 levels of challenges that affect the timeliness of obstetric referral in Ghana's healthcare facilities.
5 Mainly, challenges related to the patient as well as institutional level issues challenged the referral
6 processes. At the patients' level, financial constraints, fears about referral and patients' non-
7 compliance with referrals were the challenges that delayed the referral process. These findings are
8 congruent with previous studies that have reported that individual level factors such as patients'
9 fears and misperceptions about referrals was a trigger for non-compliance and consequently delays
10 in the referral process.^{15 16} Similarly, Pembe et al.¹⁷ also reported financial constraint is a major
11 challenge to timely obstetric referral. These challenges proliferate type I delays as posited by
12 Thaddeus and Maine,⁸ that is, delays for women to make the decision to seek healthcare. Our
13 findings underscore the need to demystify obstetric referrals and build women's appreciation for
14 the need to comply with referral directives. Rural healthcare facilities can be supported to
15 strengthen health promotion and education at their facilities, emphasising on the importance of
16 obstetric referrals and the timeliness of referrals. Swifter communication through the
17 implementation of telemedicine platforms such as the use of WhatsApp could potentially help to
18 improve communication flow and timely discussions with superiors. Such interventions could
19 effectively contribute to decreasing delays in obstetric referrals.
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33 Concerning the institutional challenges, the following challenges emerged: referral transportation
34 challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies.
35 Our findings mirror earlier studies conducted in Ghana,^{15 18} and Ethiopia¹⁹ that reported the use of
36 commercial vehicles (taxis) and motorbikes as a medium of transportation of patients during
37 obstetric referrals. Again, the findings affirm a report by the Ghana Health Service that shows
38 there were substantial challenges in terms of referral transportation systems.²⁰ A plausible
39 explanation for this finding is that the Ghana National Ambulance system which was established
40 in 2004 to ease emergency health transport service is not well grounded in rural settings as
41 observed from the perspectives of HCWs in this study. Also, delays in the arrival of ambulances
42 are mostly linked to the request of confirmation about the client's ability to afford the cost of the
43 ambulance services, which matches findings from Daniels and Abousi.¹⁸ The result implies that
44 substantial proportion of women in rural settings who suffer obstetric complications are more
45 likely to have their conditions worsened as a result of delays caused by the poor ambulatory
46 services.
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3 Daniels and Abuosi¹⁸ postulate that prioritising emergency cases hinges predominantly on the
4 availability of health personnel. Therefore, any inadequacy in staff strength becomes dire for
5 obstetric referrals. The findings from this study revealed e insufficient HCWs to complement
6 timeliness of referral services within the Sene District. Similar findings have been reported by
7 Afari et al.¹⁵ Given the low staff strength in rural healthcare facilities, it becomes extremely
8 difficult to ensure that health professionals accompany patients to facilities where they have been
9 referred. Relatedly, we found that some healthcare providers at the receiving facilities exhibit
10 attitudes that do not allow patients to participate in the referral decision-making. Such attitudes are
11 bound to result in both type II and III delays as posited by Thaddeus and Maine.⁸
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19 Evidence from the study shows there are existing healthcare bureaucracies that challenge
20 timeliness of obstetric referrals. Participants in this study asserted they had continuous
21 deliberations to come to a consensus that the client has to be referred. The findings are analogous
22 to those found by Oforu et al.²¹ that found bureaucracies to be one of the major challenges
23 confronting the timeliness of obstetric referrals. We acknowledge that team consultations are not
24 wrong on a prima facie basis, as it is critical for ensuring quality referrals.^{22 23} Notwithstanding,
25 long deliberations towards consensus building on obstetric referral creates systemic bureaucracies
26 that exacerbate the perpetuation of type II delays. Thus, highlighting the urgent need for better
27 coordination between HCWs to accelerate timeliness of obstetric referrals. The findings also imply
28 that, adoption of technological and telemedicine platforms such as the use of WhatsApp can
29 advance and facilitate greater coherence, coordination and timeliness in making obstetric referral
30 decisions.
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41 **Strengths and limitations**

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43 By adopting qualitative research design, the study provides deep and contextual understanding of
44 the challenges that affect obstetric referrals in rural Ghana. The discussion of the study findings
45 guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to
46 ground our findings. Nevertheless, we acknowledge that there are key limitations that should be
47 considered. The adoption of qualitative research design does not allow us to generalise the study
48 findings to other rural settings. Also, the study was limited in its scope; thus, we focused only on
49 rural healthcare facilities. Therefore, the findings may not be reflective of obstetric referral
50 challenges in urban settings. There is also the possibility of social desirability bias and selection
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3 bias. However, these challenges do not compromise the authenticity and trustworthiness of our
4 study findings.
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6 7 **Conclusion**

8
9 Using the Thaddeus and Maine's three delay model, we explored HCWs' perspectives about the
10 challenges encountered during obstetric referrals. Patient and institutional level issues emerged as
11 major challenged to obstetric referrals. We conclude that in order for obstetric referrals in rural
12 Ghana to be effective and timely, there is the need to raise more awareness about the need for
13 patients to comply with referral directives, through health education messages and campaigns.
14 Also, to accelerate obstetric referrals in rural settings, there is the urgent need to incorporate
15 technology through platforms such as the use of WhatsApp for facilitating referrals and enhancing
16 coordination between HCWs involved in the referral process.
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24 **Abbreviations**

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26 BEmONC: Basic Emergency Obstetric and Newborn Care; CHPS: Community Health Planning
27 and Services; FGDs: Focused Group Discussions; GHS-ERC: Ghana Health Service Ethics
28 Review Committee; HCWs: Healthcare Workers; IDIs: In-depth Interviews; KNUST: Kwame
29 Nkrumah University of Science and Technology; MDGs: Millennium Development Goals; SDGs:
30 Sustainable Development Goals; SSA: Sub-Saharan Africa; TDM: Three Delay Model.
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40

41 **Contributors**

42
43 VDM led the study and was responsible for acquiring funding. VMD, ABBM, EKN and JRL
44 substantially contributed to the conceptualisation and design of the study. VDM, ABBM and PA
45 provided methodological insights. VMD, ABBM and EKN coordinated data collection. JO carried
46 out the initial analysis and drafted the initial manuscript. All authors discussed the results and
47 critically reviewed its intellectual contents. All authors critically reviewed and revised and then
48 approved the final manuscript as submitted.
49
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53

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6
7

8 9 **Competing interests**

10
11 The authors declare that they have no competing interests.
12

13 14 **Consent for publication**

15
16 Not applicable.
17

18 19 **Ethical approval and consent to participate**

20
21 The protocol for this study was reviewed and approved by the Ghana Health Service Ethics Review
22 Committee (GHS-ERC) on 29th April 2021, with the ethical approval identification number GHS-
23 ERC 004/03/21. All participants gave written informed consent prior to the interviews and
24 individual names were withheld from the transcripts.
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28 29 **Data availability statement**

30
31 The datasets used and/or analysed during the current study are available from the corresponding
32 author on reasonable request.
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34

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STUDY TOOLS

INDIVIDUAL INTERVIEW GUIDE FOR HEALTH CARE PROVIDERS

Date: _____

First say: Now we are ready to get started with the interview. I will be the moderator today. We will be meeting for about 45 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you change your mind about participating, we will not continue with the interview.

I want to remind you that your comments are only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions to get us started.

1. Do you have a personal phone that can send text-messages? YES/NO
2. Is it a smart phone? YES/NO
3. Do you use WhatsApp? YES/NO
4. Do you use your phone every day? YES/NO
5. Do you use your phone to communicate with other providers? YES/NO

Now I would like to ask some questions about transfer and referrals in your catchment area.

1. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes (for healthcare providers):

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

- 1
2
3 2. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?

5 **Probes (for healthcare providers):**

6 What usually happens when the woman first arrives?

7 Can you say more about that? What does the provider do?

8 If you go with the woman, what do you do? Do the providers ask for your help?

9 How is it different if the woman is very sick or very close to delivery?

10 How is it different at night? Over the weekend? On holidays?

11 Can you tell me more about that?

12 Does anyone else have anything to add?

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23 3. Sometimes things go very well and women get care right away when they arrive at a health
24 center or hospital. Other times things don't go as well and it can take some time before they
25 get care. Can you explain those different scenarios? What makes the difference between
26 women getting care right away and not getting care right away?

27 **Probes (for healthcare providers):**

28 Can you tell me more about that?

29 Can you think of an example where things didn't go very smoothly... and can you describe
30 that to me?

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36 4. How do you keep track of how much time has passed since the woman arrived to the facility
37 and received care? Is that recorded anywhere or is it something you just try to remember?

38 **Probes (for healthcare providers):**

39 Is that information recorded on the chart?

40 Who is responsible for recording that information? Who normally does it?

41 Can you tell me more about that?

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48 5. In some places, community providers talk with the providers at the health centers and hospitals
49 very often. They even take trainings together. In other places, the community providers rarely
50 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?

51 **Probes (for healthcare providers):**

52 When do you talk with community providers? What are those interactions usually about?

53 What kind of information does the community health worker provide to you?

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3 How do you feel about those interactions?
4

5 How do you communicate with community providers? (Is it all in person, or would you
6 ever call them?)
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8 Can you describe what the community health worker does once they arrive with the patient
9 to the facility?
10

11 Do they typically stay with the woman or do they typically leave?
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13 Are the community providers used in patient care after the woman has arrived? What types
14 of things do they help you with?
15

16 Would you like opportunities to work more closely with community providers?
17

- 18
19 6. We have been talking about an idea that we wanted to ask you about. We were wondering
20 whether community providers could use WhatsApp as a way to communicate with providers
21 in the health centers. Maybe there could be a WhatsApp group where CHAs could send out a
22 question to the group, or send a notice that a woman is on her way to the health center to help
23 prepare for her arrival. What do you think about that idea?
24

25 **Probes (for healthcare providers):**

26 Overall, do you like the idea? Why or why not?
27

28 What do you think it would be good for?
29

30 What concerns would you have about using WhatsApp in that way?
31

32 What are some suggestions you have to make sure that people use it?
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35

36 *Thank you so much for all of these comments. We just have a last question that circles us back to*
37 *the beginning, when we asked about your phones.*
38

- 39 7. Some people love their phone, have it with them at all times, and never let it run out of credit.
40 Other people use their phone when it has credit but sometimes leave it at home or maybe they
41 forget to charge it. For everyone here, can you tell me which one of those describes you best?
42

43 **Probes (for healthcare providers):**

44 How do you pay for your phone?
45

46 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
47 the day?
48

49 Before we finish, do any of you have anything else that you would like to add to the
50 discussion?
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54 Thank you for your time today – this has been very useful and we appreciate you giving so
55 generously of your time.
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**FOCUS GROUP DISCUSSION GUIDE
FOR COMMUNITY HEALTH WORKERS**

**(THIS INCLUDES COMMUNITY HEALTH ASSISTANTS IN LIBERIA AND
COMMUNITY HEALTH NURSES OR COMMUNITY HEALTH OFFICERS IN
GHANA)**

Date: _____

Facilitator: _____

Note taker: _____

Community/Health Center: _____

Number in attendance (not including research staff): _____

First say: Now we are ready to get started with the focus group. I will be the moderator today. This is _____ and s/he will be taking notes and keeping us “on time”. We will be meeting for about 90 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you CHWnge your mind about participating, you can leave at any time.

This focus group is an interview that is conducted in a natural way, much like a discussion. In the focus group, people are free to give their views and opinions to the questions.

I want to remind you that your comments are the research team only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions as a group to get us started. Please raise your hand if your answer is “YES”. Number of participants in the focus group_____.

6. Do you have a personal phone that can send text-messages? ____# yeses
7. Is it a smart phone? ____# yeses
8. Do you use WhatsApp? ____#yeses
9. Do you use your phone every day? ____#yeses
10. Do you use your phone to communicate with other providers? ____#yeses

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8. Ok, to get started, how do you decide if a woman needs to go to the health center or hospital?

Probes for CHWs:

What are things that you look for that might tell you the woman should go to the health center or hospital?

What kinds of trainings have you received that help you figure out if a woman should go to the hospital?

What are some common reasons for referral to the health center or hospital?

Once you have decided a woman needs to go to the health care facility, is there a current system or order in which you do things? Tell me about how you make these decisions.

How do you decide to take the woman to a health center versus a hospital?

9. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes for CHWs:

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

10. Can you describe the process when a woman leaves her home to go to the health center / hospital?

Probes for CHWs:

How does she decide that she should go to the hospital?

Who goes with her?

How do they usually get there?

How long does it usually take for them to get to the nearest health center?

How long does it usually take for them to get to the nearest hospital?

What are things that can affect that travel time?

1
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3 11. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?
5

6 **Probes for CHWs:**
7

8 What usually happens when the woman first arrives?
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10 Can you say more about that? What does the provider do?
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12 If you go with the woman, what do you do? Do the providers ask for your help?
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14 How is it different if the woman is very sick or very close to delivery?
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16 How is it different at night? Over the weekend? On holidays?
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18 Can you tell me more about that?
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20 Does anyone else have anything to add?
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24 12. Sometimes things go very well and women get care right away when they arrive at a health
25 center or hospital. Other times things don't go as well and it can take some time before they
26 get care. Can you explain those different scenarios? What makes the difference between
27 women getting care right away and not getting care right away?
28

29 **Probes for CHWs:**
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31 Can you tell me more about that?
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33 Can you think of an example where things didn't go very smoothly... and can you describe
34 that to me?
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38 13. In some places, community providers talk with the providers at the health centers and hospitals
39 very often. They even take trainings together. In other places, the community providers rarely
40 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?
41

42 **Probes for CHWs:**
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44 When do you talk with providers at the health centers?
45

46 How do you communicate with them?
47

48 Do you ever text or call on the phone with providers at the health centers?
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52 14. We have been talking about an idea that we wanted to ask you about. We were wondering
53 whether community providers could use WhatsApp as a way to communicate with providers
54 in the health centers. Maybe there could be a WhatsApp group where CHWs could send out a
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3 question to the group, or send a notice that a woman is on her way to the health center to help
4 prepare for her arrival. What do you think about that idea?
5

6 **Probes for CHWs:**
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8 Overall, do you like the idea? Why or why not?
9

10 What do you think it would be good for?
11

12 What concerns would you have about using WhatsApp in that way?
13

14 What are some suggestions you have to make sure that people use it?
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18 *Thank you so much for all of these comments. We just have a last question that circles us back to*
19 *the beginning, when we asked about your phones.*
20

21 15. Some people love their phone, have it with them at all times, and never let it run out of credit.
22 Other people use their phone when it has credit but sometimes leave it at home or maybe they
23 forget to CHWrge it. For everyone here, can you tell me which one of those describes you
24 best?
25

26 **Probes for CHWs:**
27

28 How do you pay for your phone?
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30 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
31 the day?
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35 Before we finish, do any of you have anything else that you would like to add to the
36 discussion?
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40 Thank you for your time today – this has been a very useful discussion and we appreciate you
41 giving so generously of your time.
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Perspectives of healthcare workers on the challenges with obstetric referrals in rural communities in Ghana: a descriptive phenomenology study

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3 **Perspectives of healthcare workers on the challenges with obstetric referrals in rural**
4 **communities in Ghana: a descriptive phenomenology study**
5
6

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Abstract

Objective: We explored and document healthcare workers' perspectives on the challenges encountered during obstetric referrals.

Design: The study adopted a qualitative research approach and a descriptive phenomenology design. Healthcare workers permanently working in 16 rural healthcare facilities in the Sene East and West Districts composed the target population for this study. Using a purposive sampling technique, participants were recruited and enrolled in in-depth individual interviews (n=25) and focused group discussions (n=12). Data were analysed thematically using QSR NVivo 12.

Setting: Sixteen rural healthcare facilities in the Sene East and West Districts, Ghana

Participants: Healthcare workers

Results: Areas related to patient as well as institutional level issues challenged the referral processes. At the patients' level, financial constraints, fears associated with referral and patients' non-compliance with referrals were identified as challenges that delayed the referral process. With regard to institutional challenges, the following emerged: referral transportation challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies.

Conclusion: We conclude that in order for obstetric referrals in rural Ghana to be effective and timely, there is the need to raise more awareness about the need for patients to comply with referral directives, through health education messages and campaigns. Given our findings on the delays associated with long deliberations, the study recommends the training of more cadre of health care providers to facilitate obstetric referral processes. Such an intervention would help to improve the current low staff strength. Also, there is a need to improve ambulatory services in rural communities to counteract the challenges that poor transportation system poses on obstetric referrals.

Keywords: Challenges; Obstetric referrals; Rural settings; Ghana

Strength and limitations

- By adopting qualitative research design, the study provides deep and contextual understanding of the challenges that affect obstetric referrals in rural Ghana.
- The discussion of the study findings guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to ground our findings.
- Nevertheless, the findings may not be reflective of obstetric referral challenges in urban settings as we focused only on rural healthcare facilities.
- The study did not include the perspectives of patients.

Introduction

Improving maternal health has been a key issue on the global front for the past two decades [1]. This has been demonstrated through priorities of the Millennium Development Goals (MDGs) target 5 and now the Sustainable Development Goals (SDG) target 3.1. Despite these global efforts to improve maternal health, maternal mortality remains high. Nearly 289,000 mortalities associated with pregnancy and childbirth related complications are reported worldwide each year [2]. Sub-Saharan Africa (SSA) and Southern Asia account for the regions with the highest burden of maternal mortality [3].

In Ghana, improving maternal health outcomes remains an important public health concern. Successive governments have shown commitment towards improving different dimensions of maternal health. For instance, in 2008, free maternal health service was introduced as a policy to facilitate skilled birth attendance and institutional birth deliveries [4,5]. Additionally, Community-based Health Planning and Services (CHPS) was introduced to serve as a point of primary healthcare for pregnant women [2,6]. Although CHPS provide primary healthcare as well as family planning, antenatal and postnatal care, they often lack the capacity to provide birthing services or deal with obstetric complications [2]. In Ghana, the predominant obstetric complications include eclampsia, obstructed labour, haemorrhage and sepsis [2,7], all of which require interventions that are beyond the competencies of staff within a primary health facility. As such, obstetric referrals have become an important strategy to alleviate obstetric emergencies among women.

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3 Despite the importance of obstetric referrals in promoting better maternal health outcomes,
4 evidence suggest there are challenges that affect the referral process. This study uses Thaddeus
5 and Maine's "Three Delays Model" (TDM) as the conceptual framework. The model postulates
6 that, delays occur at the point of deciding to seek healthcare (type I); at the point of reaching the
7 health facility (type II); and, at the point of receiving quality care (type III) [8]. Related studies
8 have also applied the TDM to understanding obstetric referral challenges [7-9]. For instance, Afari
9 et al. [7] found challenges with transportation, communication and standard of care. The findings
10 from these studies have highlighted the need to eliminate delays at the various level of the TDM
11 to improve obstetric referrals.
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19 Nevertheless, deaths related to obstetric complications remains unacceptably high [2,7]. Thus,
20 suggesting lapses in the current regime of obstetric referrals, particularly in rural settings. If left
21 unaddressed, the situation could derail Ghana from achieving key targets of the sustainable
22 development goals including the target of achieving universal health coverage, and reducing the
23 maternal mortality ratio to <70 deaths per 100,000 live births. Yet, research on obstetric referral
24 challenges based on validated theoretical models like the TDM remains limited in the context of
25 rural settings in Ghana. Hence, the question remains that: (a) What challenges impede obstetric
26 referrals in rural settings in Ghana? (b) How does the TDM explain the existing obstetric referral
27 challenges? The present study, therefore, seeks to explore and document healthcare workers'
28 perspectives on the challenges encountered during obstetric referrals.
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37 **Methods**

38 **Operational definition of obstetric referral**

39 Referral refers to the upwards movement of health care seeking individuals in the health system.
40 Therefore, obstetric referral is the referral of individuals with emergency obstetric complications
41 or needs from a lower health facility to a higher health facility. In this study, obstetric referrals
42 denote all pregnancy and childbirth related conditions that are referred from the rural health
43 facilities to Kwame Danso Hospital (a higher healthcare facility) for further management.
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51 **Study design and source of data**

52 The study adopted a qualitative research approach and aligns with the interpretivist philosophy.
53 Specifically, descriptive phenomenology design was used. This research design allowed us to
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3 articulate and comprehend the most essential meaning of the challenges that confront obstetric
4 referrals from the perspective of those directly involved (i.e., healthcare workers). Data used in
5 this study are primary data from fieldwork conducted between August 1 to October 31, 2021.
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8 9 **Researcher characteristics and reflexivity**

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11 In this study, the team comprised midwives and nurses (VMD, ABBM, NL, JRL), a population
12 health scientist (JO), health directors (AK, JM, AAO), and bio-statisticians (PA, EKN). As a result,
13 they had no influence on the study participants, or the general dynamics of the data collection. The
14 study's location, methodology, and conclusions were all independent of the interviewers. Also, by
15 situating the study within the frame the TDM, we were able to limit the likelihood of introducing
16 biases into the interpretation of the participants' perspectives.
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22 **Study setting**

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24 This study was conducted in the Sene East and West District of Ghana. Sene District is located in
25 the Bono East region. The district lies between Longitudes 0⁰ 15'E and 0⁰ 15'W, and Latitudes 7o
26 N and 8o 30'N [10]. Sixteen healthcare facilities were sampled across the Sene District. Nine of
27 these facilities were from Sene West District while the remaining seven facilities were from Sene
28 East District. The healthcare facilities included in this study ranged from CHPS compounds to
29 health centres. They are typically staffed by one community health nurse and they provide basic
30 emergency obstetric and newborn care (BEmONC). In Sene West, a total of 407 deliveries and
31 558 deliveries were reported in the year 2020 and 2021. Between January and March, 2022, 184
32 deliveries had been reported in Sene West. However, there were only 16 midwives as at the end
33 of March, 2022 [Sene West District Health Service Records, 2022]. In Sene East, a total of 620
34 deliveries and 728 deliveries were reported in the year 2020 and 2021. Between January and
35 March, 2022, 174 deliveries had been reported in Sene East. However, there were only 18
36 midwives as at the end of March, 2022 [Sene East District Health Service Records, 2022].
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48 **Study population and sampling**

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50 Healthcare workers (HCWs) comprising community health nurses, general nurses and midwives
51 permanently working in the 16 rural health facilities in the Sene East and West Districts composed
52 the target population for this study. We purposively sampled all 16 rural health facilities within
53 the districts (see Table 1). In all, 37 HCWs participated in this study. Two FGDs were conducted;
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each group was composed of six participants. The inclusion criteria were that, the prospective participant must be directly involved in the management of obstetric cases and obstetric referrals. Regarding the sample size for the IDIs, data was collected until the point of saturation. By the 22nd interview, no new analytical information was emerging. Hence, we conducted additional three interviews to confirm that we had reached the point of saturation.

Table 1: Breakdown of study area

Districts	Facilities
Sene West District Rural Facilities	<ul style="list-style-type: none"> • Bantema CHPS Compound • Drobe CHPS Compound • Lemu CHPS Compound • Suntah Clinic • Central KD Medical Centre • Kyeamekrom CHPS Compound • Tato Bator CHPS Compound • Lassi Health Centre • RCH
Sene East District Rural Facilities	<ul style="list-style-type: none"> • Kajaji health center • Kojokrom Health Center • Bassa Health Center • Premuase CHPS Compound • Nyankontre CHPS compound • Bodinka CHPS Compound • Asuoso CHPS Compound

Data collection

Data was collected from between August 1 to October 31, 2021. The study used an IDI guide and FGD guide as the data collection instruments (See supplementary file 1). These guides were pretested and validated. A research assistant (RA) with experience conducting IDIs and FGDs and proficiency in both English and Twi languages was trained in use of the data collection instruments. On average, a maximum of two interviews were conducted per day. Both IDIs and FGDs were conducted in English or Twi depending on the participants' preferences. An information sheet and informed consent sheet was provided to participants. The information sheet detailed the purpose of the study as well as the possible benefits, risks and duration of the study. All the participants consented by signing prior to the start of the interview. The IDIs lasted between 40-60 minutes whereas the FGDs lasted approximately 105 minutes. Both IDIs and FGDs were

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3 conducted at the respective premises of the health facilities. The venue was decided by the
4 participants. All of the sessions were audio recorded using a tape recorder. Some specific questions
5 from the IDI and FGD guides include: *How do you refer obstetric cases? What challenges do you*
6 *often experience during obstetric referrals?* After each day's interview, the audio data was
7 transcribed verbatim and encrypted to prevent unauthorised access to the data.
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10 11 12 **Data management and analyses**

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15 First, the interviews conducted in the local language were translated to English using an
16 independent back-to-back translation system to ensure that we retain the exact meanings and
17 experiences of the participants. Transcripts from all the IDIs and FGDs were then vetted by the
18 first author (VD) before being imported into QSR NVivo-12 for analysis. Data was analysed
19 following Collazi's descriptive phenomenological method of analysis which includes the process
20 of familiarising with the data, identifying significant statements, formulating meanings, generating
21 themes and verifying the data [11]. Themes were generated using the nodes function in QSR
22 NVivo-12 to highlight compelling extracts. ABBM who is an expert in qualitative research coded
23 six of the interview transcripts from the IDIs and FGDs while JO coded the remaining transcripts.
24 ABBM then reviewed the coding conducted in the analysis for comparison. This corresponded to
25 that of the lead author in that the same main issues for discussion arose, thus, enhancing the
26 credibility of the findings. The emerged themes and sub-themes were discussed and reviewed by
27 all the authors.
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38 **Rigor**

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40 Reliability was ensured in this study by following acceptable standards and methods of
41 phenomenological studies. Detailed description of the study contexts and methods allowed
42 transferability and confirmability of the study findings. To ensure credibility, we conducted
43 member-checking with five of the participants; this was done one week after transcription so that
44 participants could affirm the transcripts accurately reflected the interview content. No participant
45 offered corrections or expressed concerns about the content of the interviews. Field notes, which
46 included the participants' nonverbal cues, concerns, and interviewers' reflections, were recorded
47 after each interview and referred to during the analysis. The RA who carried out the interviews is
48 a healthcare researcher by training with extensive experience conducting IDIs and FGDs.
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3 However, the RA does not work in the study settings and had no direct relationship with the
4 participants.
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7 **Ethical approval**

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9 All the methods in this study conform to international ethical standards in the Declaration of
10 Helsinki and Belmont Declaration [12, 13]. The Ghana Health Service Ethics Review Committee
11 (GHS-ERC) [ID: GHS-ERC 004/03/21] approved and cleared the study as ethically sound. An
12 information sheet was given to all participant to brief them about the objective of the study, the
13 procedures, potential risk and benefits, emphasis on the protection of the participants' autonomy,
14 confidentiality and privacy. All participants voluntarily participated in this study. We anonymised
15 transcripts before analysis. Audio records and transcripts (without any identifying information)
16 were stored on a password protected computer. We followed the Standards for Reporting
17 Qualitative Research [14].
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26 **Patient and public involvement**

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28 Patients, the public, and study participants were not involved in the design of the study. However,
29 HCWs including community health nurses, general nurses, and midwives participated in the
30 conduct of the study as participants. The results from our research are intended to be disseminated
31 to the participants and the public through scientific publications, lay reports, social media, and
32 conferences.
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38 **Results**

39 Socio-demographic characteristics were collected on all participants (see Table 2). The majority
40 of participants were female (76.6%) and were educated at a certificate (2 years' post-secondary
41 school) or diploma (3 years' post-secondary school) level. The content of the certificate
42 programme is limited whereas that of the diploma programme is detailed.
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Table 2: Participants' socio-demographic characteristics

Characteristics	n	%
Sex		
Female	49	76.6
Male	15	23.4
Education status		
Certificate	22	34.4
Diploma	38	59.3
Post-basic	2	3.1
Other	2	3.1
Qualification		
Community health nurse	12	18.8
General nurse	4	6.3
Midwife	35	54.7
Other	13	20.3
Years/months worked at facility		
Months	29	45.3
Years	35	54.7

Table 3 shows the emerging themes from the study analysis. Two levels of challenges emerged at the patient and institutional level. These challenges encountered during obstetric referrals further resulted in type I, II and III delays.

Table 3: Emerging themes

Level of challenges	Themes
Patient level challenges	Financial constraints Fears about referral Patients' non-compliance to referral
Institutional level challenges	Referral transportation challenges Poor attitudes of service providers Low staff strength Healthcare bureaucracies

Patient Level Challenges

Participants reported several challenges with timely obstetric referrals from the patients' contextual and personal factors. Themes that emerged from the data on patient level challenges included: 1) financial constraints; 2) patients' fears and misperceptions about obstetric referral; and 3) non-compliance.

Financial constraints

Regarding the issue of financial constraints, participants reported that patients were often financially handicapped. As such, they found it difficult to afford the cost of transportation to facilities where they are referred. Some participants also noted that when women are referred, they often do not have sufficient financial resources struggle to comply with referral, hence, causing a type II delay as underscored by Thaddeus and Maine.

“When you refer a woman, she will always tell you that the referral point will ask her husband to bring money to pay some things. Since they don't have money it puts some fear in them when they are given the referral forms. In the end, that leads to delay in a woman getting to the referral centre” (IDI, Transcript 001).

“Over here, you have to cross the river in order to get to the referral point. On a normal day, you will pay GHS5 in order to access the canoe to get to the riverside. But when we refer women to go to the referral point, they will have to pay for the charge for all the passengers in order to get exclusive right to the canoe and use it to the other side. That will mean that the person might have to GHS200 which is too much for them to pay. So, they refuse to comply with referral directives” (N2, FGD 2).

Fears and misperceptions about obstetric referral

Patients' understanding of referral is basic and critical to the effectiveness of obstetric referrals. The participants indicated that women who visit their facility have fears and misperceptions about referrals that delays their decision to comply and seek referral on time. Some participants stated that women often fear a referral is going to bring more financial burden to them. The financial burden may be associated with cost of transportation, cost associated with settling and interventions at the referral centre and the fear of the unknown. As such, they are usually adamant

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3 and non-compliant with referrals. Below are some excerpts that reflect the participants'
4 perspectives:
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7 *"...they [women] fear that when they get [referred] to the bigger facility, they're going to*
8 *pay a lot of money or they are going to do CS. As a result of that, whenever you mention*
9 *transfers and referrals to them, this fear is activated so you have to educate them and*
10 *encourage them and by the time you're done the time would have gone and even after all*
11 *this she has to go home to consult relatives or find means of transportation."* (IDI,
12 **Transcript 006**).
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18 *"For what I've noticed, they [women who come for healthcare] have their own*
19 *perceptions. Usually, they have that fear that when they go to the receiving facility, they*
20 *are going to be charged a lot of money which they cannot afford. Maybe it is because either*
21 *their friends or people they know have experienced such situations and have paid money.*
22 *I don't really know and can't explain further."* (IDI, **Transcript 003**).
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27 ***Non-compliance***

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30 Regarding compliance with referrals, participants shared their views that sometimes, pregnant
31 women who are referred to the next level of healthcare do not comply with the referral directives.
32 According to the participants, some patients have certain superstitious beliefs and misconceptions
33 that make them refuse to comply with referral directives. Instead of complying with the referral,
34 patients often go home to perform some ritual or self-care before accepting to be referred. They
35 become compliant only after the initial steps they take have failed them. These things result in
36 delays in referrals.
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43 *"Sometimes, some of them [the patients] have some beliefs that they must perform some*
44 *rituals before they go to the health facility. As such, when you refer them, they will go home*
45 *first to perform those rituals first before they go to where they have been referred. When*
46 *that happens, it causes unnecessary delays to the referral process."* (IDI, **Transcript 019**).
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51 *"When a client is not ready to be referred it takes a longer time to convince the person and*
52 *sometimes you have to call in other relatives to assist in talking to the person to accept the*
53 *referral and then maybe the ambulance may not be around"* (FGD, **Rich 1**).
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3 One of the participants expressed that, “you may refer them [the client] and they may not go to
4 where you referred them, it’s either they don’t go or go to another place” (IDI, Transcript 013).
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7 **Institutional Level Challenges**

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9 Four themes emerged from institutional level challenges to obstetric referrals in rural settings: 1)
10 referral transportation challenges; 2) poor attitudes of service providers; 3) low staff strength; and
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12 4) healthcare bureaucracies.
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14 ***Referral transportation challenges***

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16 A major challenge that emerged from the data was the problem with distance, transportation and
17 road networks. According to the participants, there is no proper transportation system in place to
18 facilitate referrals. In facilities that are located across rivers, women are forced to use a canoe to
19 cross the river as a means of transporting to the referral centre.
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25 “...most of our catchment areas are in the bushes and some even have to cross rivers before
26 they get here so it makes it difficult for referring” (IDI, Transcript 008).
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29 “Transportation is a big challenge for us here when it comes to referral. You know that as
30 CHPS compound, we don’t have any ambulance or ambulatory services here that can
31 provide patients with oxygen and intravenous infusion while in transit to the receiving
32 facility. So, whenever we have to refer a woman who is critically ill, it becomes a burden.”
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37 (IDI, Transcript 011).
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39 Others also reported that due to the transportation challenge, they have to resort to the use of
40 motorbikes and taxis as a way of transporting the referred woman to the receiving centre.
41 According to the participants, this arrangement does not safeguard the health of the woman who
42 is being transferred because of the dangers of motorbike transportation during pregnancy. Also,
43 these taxis and motorbikes which are used as a means of transportation for referrals sometimes
44 delay in reaching the health facility. Here is what some HCWs had to say:
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50 “Usually, they come to the facility with taxis or motorbikes. Some of them actually walk to
51 the facility. Therefore, when there is the need to refer them to a higher health facility, it
52 becomes a huge problem. When that happens, we have no choice than to resort to the same
53 means of transport that the came with, that is, the taxi or motorbikes. For those who can
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3 *walk, we sometimes allow them to walk home and prepare themselves to go to where we*
4 *have referred them to. These things worsen the patient's condition.” (IDI, Transcript*
5 **006).**
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9 *“Transportation is the main challenge that we face with respect to how timely our referral*
10 *system is. It is very difficult to get means of transport to the hospital, and maybe if the*
11 *husband comes and he is not having a motor bike, then it becomes difficult to transfer the*
12 *person. In such instances, we have to call to the district for an ambulance or go for a taxi*
13 *that can transport the woman. Often, these taxis and even the ambulance delay to get here.*
14 *In the end, the entire referral system is overly delayed mainly because of transportation*
15 *difficulties.” (IDI, Transcript 004).*
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22 ***Poor attitudes of service providers***

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24 A major challenge that directly emanated from the HCWs was the issue of the attitudes of HCWs
25 at the receiving healthcare facilities. The participants asserted that some patients sent to the
26 receiving facilities return to the referring facility on the basis of poor treatment and delays at the
27 receiving point. Where the client has personally not experienced such poor treatment from HCWs
28 at the receiving facility, they take cues from their friends and family who might have been victims
29 of delays and poor quality of service at the receiving facility.
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35 *“Some of the people who go to the referral centres come back with complains that when*
36 *they went there, they were not received well and that, they don't appreciate the kind of*
37 *treatment they got from the midwife. So, they will go into the community and tell other*
38 *women in their condition that if they go on referrals, they will not have immediate care so*
39 *it's not necessary to go and this makes them reluctant to go on referrals” (IDI, Transcript*
40 **002).**
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46 Another participant expressed that the nature of their relationship with the patients does not allow
47 the client to freely express themselves or take part in the referral decision-making. In this context,
48 referral decision-making refers to both the conversations and preparations leading to the referral
49 of a patient to a higher health facility, as well as the decisions that must be made while the patient
50 is at the referral facility. For instance, one of the participants stated that *“some of our colleagues*
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3 *do not practice patient centred care. And so, they don't involve the patient to know whether they*
4 *have the means to go to the referral facility.” (IDI, Transcript 007).*
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7 Another participated narrated:

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10 *“...at the referral facility, there are many decisions that have to be made in relation to the*
11 *care that the patient must receive. But there again, the patients complain that they are not*
12 *involved in any decision. The service providers at the referral centre just do what they think*
13 *is necessary for them” (N5, FGD 2).*
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17 ***Low staff strength***

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19 The effectiveness of referrals hinges on the availability of sufficient HCWs. Nevertheless, our
20 study shows that the staff strength relative to referral was overwhelming. As a result, it is difficult
21 for HCWs to decide who will accompany a patient who need to be referred.
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25 *“...we lack sufficient staff to facilitate the referral process. Due to that, it is difficult to*
26 *decide who will follow the client to the referral centre.” (IDI, Transcript 003).*
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29 Others also asserted that, at the receiving facility, they often lack key health professionals such as
30 medical officers to cater for emergency obstetric complications. Hence, when the client arrives at
31 the receiving health facility, they have to wait for a long time for the medical officer available to
32 attend to them. This results in III delays in receiving care.
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37 *“I will say staff strength can be one of the reasons for delay. Sene medical centre is one of*
38 *our referral centres and they have one medical officer so if he's already at the theatre and*
39 *the client arrives the person will have to wait for him to finish before she would be attended*
40 *to” (IDI, Transcript 017).*
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44 ***Healthcare bureaucracies***

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47 The study also identified health bureaucracies that challenge the referral process. According to the
48 participants, they have to consult their superiors and other staff before deciding whether a case is
49 fit for referral. In such instances, there are often disagreements that tends to foster a type II delay
50 in receiving care during the process of discussing the reasons for referral, calling and alerting the
51 receiving facilities. Some HCWs expressed the following:
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“Sometimes, among the staff, there is confusion. One staff will say this client does not need referral another staff will say that she needs referral. By the time they sit there to deliberate on the issue it prolongs the referral” (N2, FGD Kyeamekrom).

“Let’s say a patient is having high BP so I want to refer but then a colleague will that we should stop the referral and give her metadopine for the BP to come down. We will try this and if it works then there’s no need for us to refer the patient but if it doesn’t then there will be referral. By then we would have delayed the process” (N5, FGD Kyeamekrom).

Discussion

Consistent with the Three Delay Model by Thaddeus and Maine [8], we found there are different levels of challenges that affect the timeliness of obstetric referral in Ghana’s healthcare facilities. Mainly, challenges related to the patient as well as institutional level issues challenged the referral processes. At the patients’ level, financial constraints, fears about referral and patients’ non-compliance with referrals were the challenges that delayed the referral process. These findings are congruent with previous studies that have reported that individual level factors such as patients’ fears and misperceptions about referrals was a trigger for non-compliance and consequently delays in the referral process [15,16]. Similarly, Pembe et al. [17] also reported financial constraint is a major challenge to timely obstetric referral. These challenges proliferate type I delays as posited by Thaddeus and Maine [8], that is, delays for women to make the decision to seek healthcare. Our findings underscore the need to demystify obstetric referrals and build women’s appreciation for the need to comply with referral directives. Rural healthcare facilities can be supported to strengthen health promotion and education at their facilities, emphasising on the importance of obstetric referrals and the timeliness of referrals. Swifter communication through the implementation of telemedicine platforms such as the use of WhatsApp could potentially help to improve communication flow and timely discussions with superiors. Such interventions could effectively contribute to decreasing delays in obstetric referrals.

Concerning the institutional challenges, the following challenges emerged: referral transportation challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies. Our findings mirror earlier studies conducted in Ghana [15,18], and Ethiopia [19] that reported the

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3 use of commercial vehicles (taxis) and motorbikes as a medium of transportation of patients during
4 obstetric referrals. Again, the findings affirm a report by the Ghana Health Service that shows
5 there were substantial challenges in terms of referral transportation systems [20]. A plausible
6 explanation for this finding is that the Ghana National Ambulance system which was established
7 in 2004 to ease emergency health transport service is not well grounded in rural settings as
8 observed from the perspectives of HCWs in this study. Also, delays in the arrival of ambulances
9 are mostly linked to the request of confirmation about the client's ability to afford the cost of the
10 ambulance services, which matches findings from Daniels and Abuosi [18]. The result implies that
11 substantial proportion of women in rural settings who suffer obstetric complications are more
12 likely to have their conditions worsened as a result of delays caused by the poor ambulatory
13 services.
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23 Daniels and Abuosi [18] postulate that prioritising emergency cases hinges predominantly on the
24 availability of health personnel. Therefore, any inadequacy in staff strength becomes dire for
25 obstetric referrals. The findings from this study revealed e insufficient HCWs to complement
26 timeliness of referral services within the Sene District. Similar findings have been reported by
27 Afari et al. [15]. Given the low staff strength in rural healthcare facilities, it becomes extremely
28 difficult to ensure that health professionals accompany patients to facilities where they have been
29 referred. Relatedly, we found that some healthcare providers at the receiving facilities exhibit
30 attitudes that do not allow patients to participate in the referral decision-making. Such attitudes are
31 bound to result in both type II and III delays as posited by Thaddeus and Maine [8].
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39 Evidence from the study shows there are existing healthcare bureaucracies that challenge
40 timeliness of obstetric referrals. Participants in this study asserted they had continuous
41 deliberations to come to a consensus that the client has to be referred. The findings are analogous
42 to those found by Ofose et al. [21] that found bureaucracies to be one of the major challenges
43 confronting the timeliness of obstetric referrals. We acknowledge that team consultations are not
44 wrong on a prima facie basis, as it is critical for ensuring quality referrals [22,23]. Notwithstanding,
45 long deliberations towards consensus building on obstetric referral creates systemic bureaucracies
46 that exacerbate the perpetuation of type II delays. While it is impossible to discount the process of
47 conferring with superiors or colleagues before a decision is made, we postulate that the delays
48 associated with making deliberations could be due to the inadequacy of expertise to ensure swift
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3 decision-making about the client's condition and need for referral. Thus, highlighting an urgent
4 need for better coordination between HCWs to accelerate timeliness of obstetric referrals.
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7 **Strengths and limitations**

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9 By adopting qualitative research design, the study provides deep and contextual understanding of
10 the challenges that affect obstetric referrals in rural Ghana. The discussion of the study findings
11 guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to
12 ground our findings. Nevertheless, we acknowledge that there are key limitations that should be
13 considered. The adoption of qualitative research design does not allow us to generalise the study
14 findings to other rural settings. Also, the study was limited in its scope; thus, we focused only on
15 rural healthcare facilities. Therefore, the findings may not be reflective of obstetric referral
16 challenges in urban settings. There is also the possibility of social desirability bias and selection
17 bias. However, these challenges do not compromise the authenticity and trustworthiness of our
18 study findings.
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27 **Conclusion**

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29 Using the Thaddeus and Maine's three delay model, we explored HCWs' perspectives about the
30 challenges encountered during obstetric referrals. Patient and institutional level issues emerged as
31 major challenged to obstetric referrals. We conclude that in order for obstetric referrals in rural
32 Ghana to be effective and timely, there is the need to raise more awareness about the need for
33 patients to comply with referral directives, through health education messages and campaigns.
34 Given our findings on the delays associated with long deliberations, the study recommends the
35 training of more cadre of health care providers to facilitate obstetric referral processes. Such an
36 intervention would help to improve the current low staff strength. Also, there is a need to improve
37 ambulatory services in rural communities to counteract the challenges that poor transportation
38 system poses on obstetric referrals.
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47 **Abbreviations**

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49 BEmONC: Basic Emergency Obstetric and Newborn Care; CHPS: Community Health Planning
50 and Services; FGDs: Focused Group Discussions; GHS-ERC: Ghana Health Service Ethics
51 Review Committee; HCWs: Healthcare Workers; IDIs: In-depth Interviews; KNUST: Kwame
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3 Nkrumah University of Science and Technology; MDGs: Millennium Development Goals; SDGs:
4 Sustainable Development Goals; SSA: Sub-Saharan Africa; TDM: Three Delay Model.

7 **Acknowledgements**

8
9 We acknowledge all of our participants for their time spent in this study.

12 **Contributors**

13
14 VDM, ABBM, EKN and JRL are the guarantors of the study and accept full responsibility for the
15 work and/or the conduct of the study. VDM: conceptualisation, design of the study, writing –
16 original draft and writing – review and editing; JRL: conceptualisation, design of the study, writing
17 – original draft and writing – review and editing; ABBM: conceptualisation, design of the study,
18 methodology, writing – original draft and writing – review and editing; EKN: conceptualisation,
19 design of the study, methodology, writing – original draft and writing – review and editing; PA:
20 methodology, writing – original draft, writing – review and editing; JO: data curation, analysis,
21 writing – original draft and writing – review and editing; AK: validation, writing – review and
22 editing; JM: validation, writing – review and editing; AAO: validation, writing – review and
23 editing; NL: validation, writing – original draft, writing – review and editing.

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33
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35 to quality maternal care connecting community midwives at rural health facilities, with personnel
36 at district hospital for obstetric referral (USAID/NSF PEER 9-518).

40 **Competing interests**

41
42 The authors declare that they have no competing interests.

45 **Consent for publication**

46
47 Not applicable.

50 **Ethical approval and consent to participate**

51
52 The protocol for this study was reviewed and approved by the Ghana Health Service Ethics Review
53 Committee (GHS-ERC) on 29th April 2021, with the ethical approval identification number GHS-

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3 ERC 004/03/21. All participants gave written informed consent prior to the interviews and
4 individual names were withheld from the transcripts.
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7 **Data availability statement**

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9 The datasets used and/or analysed during the current study are available from the corresponding
10 author upon reasonable request.
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STUDY TOOLS

INDIVIDUAL INTERVIEW GUIDE FOR HEALTH CARE PROVIDERS

Date: _____

First say: Now we are ready to get started with the interview. I will be the moderator today. We will be meeting for about 45 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you change your mind about participating, we will not continue with the interview.

I want to remind you that your comments are only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions to get us started.

1. Do you have a personal phone that can send text-messages? YES/NO
2. Is it a smart phone? YES/NO
3. Do you use WhatsApp? YES/NO
4. Do you use your phone every day? YES/NO
5. Do you use your phone to communicate with other providers? YES/NO

Now I would like to ask some questions about transfer and referrals in your catchment area.

1. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes (for healthcare providers):

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

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3 2. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?

5 **Probes (for healthcare providers):**

6 What usually happens when the woman first arrives?

7 Can you say more about that? What does the provider do?

8 If you go with the woman, what do you do? Do the providers ask for your help?

9 How is it different if the woman is very sick or very close to delivery?

10 How is it different at night? Over the weekend? On holidays?

11 Can you tell me more about that?

12 Does anyone else have anything to add?

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23 3. Sometimes things go very well and women get care right away when they arrive at a health
24 center or hospital. Other times things don't go as well and it can take some time before they
25 get care. Can you explain those different scenarios? What makes the difference between
26 women getting care right away and not getting care right away?

27 **Probes (for healthcare providers):**

28 Can you tell me more about that?

29 Can you think of an example where things didn't go very smoothly... and can you describe
30 that to me?

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36 4. How do you keep track of how much time has passed since the woman arrived to the facility
37 and received care? Is that recorded anywhere or is it something you just try to remember?

38 **Probes (for healthcare providers):**

39 Is that information recorded on the chart?

40 Who is responsible for recording that information? Who normally does it?

41 Can you tell me more about that?

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48 5. In some places, community providers talk with the providers at the health centers and hospitals
49 very often. They even take trainings together. In other places, the community providers rarely
50 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?

51 **Probes (for healthcare providers):**

52 When do you talk with community providers? What are those interactions usually about?

53 What kind of information does the community health worker provide to you?

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3 How do you feel about those interactions?
4

5 How do you communicate with community providers? (Is it all in person, or would you
6 ever call them?)
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8 Can you describe what the community health worker does once they arrive with the patient
9 to the facility?
10

11 Do they typically stay with the woman or do they typically leave?
12

13 Are the community providers used in patient care after the woman has arrived? What types
14 of things do they help you with?
15

16 Would you like opportunities to work more closely with community providers?
17

- 18
19 6. We have been talking about an idea that we wanted to ask you about. We were wondering
20 whether community providers could use WhatsApp as a way to communicate with providers
21 in the health centers. Maybe there could be a WhatsApp group where CHAs could send out a
22 question to the group, or send a notice that a woman is on her way to the health center to help
23 prepare for her arrival. What do you think about that idea?
24

25 **Probes (for healthcare providers):**

26 Overall, do you like the idea? Why or why not?
27

28 What do you think it would be good for?
29

30 What concerns would you have about using WhatsApp in that way?
31

32 What are some suggestions you have to make sure that people use it?
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36 *Thank you so much for all of these comments. We just have a last question that circles us back to*
37 *the beginning, when we asked about your phones.*
38

- 39 7. Some people love their phone, have it with them at all times, and never let it run out of credit.
40 Other people use their phone when it has credit but sometimes leave it at home or maybe they
41 forget to charge it. For everyone here, can you tell me which one of those describes you best?
42

43 **Probes (for healthcare providers):**

44 How do you pay for your phone?
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46 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
47 the day?
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49 Before we finish, do any of you have anything else that you would like to add to the
50 discussion?
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54 Thank you for your time today – this has been very useful and we appreciate you giving so
55 generously of your time.
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**FOCUS GROUP DISCUSSION GUIDE
FOR COMMUNITY HEALTH WORKERS**

**(THIS INCLUDES COMMUNITY HEALTH ASSISTANTS IN LIBERIA AND
COMMUNITY HEALTH NURSES OR COMMUNITY HEALTH OFFICERS IN
GHANA)**

Date: _____

Facilitator: _____

Note taker: _____

Community/Health Center: _____

Number in attendance (not including research staff): _____

First say: Now we are ready to get started with the focus group. I will be the moderator today. This is _____ and s/he will be taking notes and keeping us “on time”. We will be meeting for about 90 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you CHWnge your mind about participating, you can leave at any time.

This focus group is an interview that is conducted in a natural way, much like a discussion. In the focus group, people are free to give their views and opinions to the questions.

I want to remind you that your comments are the research team only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions as a group to get us started. Please raise your hand if your answer is “YES”. Number of participants in the focus group_____.

6. Do you have a personal phone that can send text-messages? ____# yeses
7. Is it a smart phone? ____# yeses
8. Do you use WhatsApp? ____#yeses
9. Do you use your phone every day? ____#yeses
10. Do you use your phone to communicate with other providers? ____#yeses

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8. Ok, to get started, how do you decide if a woman needs to go to the health center or hospital?

Probes for CHWs:

What are things that you look for that might tell you the woman should go to the health center or hospital?

What kinds of trainings have you received that help you figure out if a woman should go to the hospital?

What are some common reasons for referral to the health center or hospital?

Once you have decided a woman needs to go to the health care facility, is there a current system or order in which you do things? Tell me about how you make these decisions.

How do you decide to take the woman to a health center versus a hospital?

9. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes for CHWs:

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

10. Can you describe the process when a woman leaves her home to go to the health center / hospital?

Probes for CHWs:

How does she decide that she should go to the hospital?

Who goes with her?

How do they usually get there?

How long does it usually take for them to get to the nearest health center?

How long does it usually take for them to get to the nearest hospital?

What are things that can affect that travel time?

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3 11. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?
5

6 **Probes for CHWs:**
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8 What usually happens when the woman first arrives?
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10 Can you say more about that? What does the provider do?
11

12 If you go with the woman, what do you do? Do the providers ask for your help?
13

14 How is it different if the woman is very sick or very close to delivery?
15

16 How is it different at night? Over the weekend? On holidays?
17

18 Can you tell me more about that?
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20 Does anyone else have anything to add?
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24 12. Sometimes things go very well and women get care right away when they arrive at a health
25 center or hospital. Other times things don't go as well and it can take some time before they
26 get care. Can you explain those different scenarios? What makes the difference between
27 women getting care right away and not getting care right away?
28

29 **Probes for CHWs:**
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31 Can you tell me more about that?
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33 Can you think of an example where things didn't go very smoothly... and can you describe
34 that to me?
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38 13. In some places, community providers talk with the providers at the health centers and hospitals
39 very often. They even take trainings together. In other places, the community providers rarely
40 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?
41

42 **Probes for CHWs:**
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44 When do you talk with providers at the health centers?
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46 How do you communicate with them?
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48 Do you ever text or call on the phone with providers at the health centers?
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52 14. We have been talking about an idea that we wanted to ask you about. We were wondering
53 whether community providers could use WhatsApp as a way to communicate with providers
54 in the health centers. Maybe there could be a WhatsApp group where CHWs could send out a
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3 question to the group, or send a notice that a woman is on her way to the health center to help
4 prepare for her arrival. What do you think about that idea?
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6 **Probes for CHWs:**
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8 Overall, do you like the idea? Why or why not?
9

10 What do you think it would be good for?
11

12 What concerns would you have about using WhatsApp in that way?
13

14 What are some suggestions you have to make sure that people use it?
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18 *Thank you so much for all of these comments. We just have a last question that circles us back to*
19 *the beginning, when we asked about your phones.*
20

21 15. Some people love their phone, have it with them at all times, and never let it run out of credit.
22 Other people use their phone when it has credit but sometimes leave it at home or maybe they
23 forget to CHWrge it. For everyone here, can you tell me which one of those describes you
24 best?
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26 **Probes for CHWs:**
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28 How do you pay for your phone?
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30 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
31 the day?
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35 Before we finish, do any of you have anything else that you would like to add to the
36 discussion?
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40 Thank you for your time today – this has been a very useful discussion and we appreciate you
41 giving so generously of your time.
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Standards for Reporting Qualitative Research (SRQR)

O'Brien B.C., Harris, I.B., Beckman, T.J., Reed, D.A., & Cook, D.A. (2014). Standards for reporting qualitative research: a synthesis of recommendations. *Academic Medicine*, 89(9), 1245-1251.

No.	Topic	Item	Page number
	Title and abstract		
S1	Title	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
S2	Abstract	Summary of key elements of the study using the abstract format of the intended publication; typically includes objective, methods, results, and conclusions	2
	Introduction		3
S3	Problem formulation	Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	4
S4	Purpose or research question	Purpose of the study and specific objectives or questions	4
	Methods		4
S5	Qualitative approach and research paradigm	Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., positivist, constructivist/interpretivist) is also recommended	4,5
S6	Researcher characteristics and reflexivity	Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, or transferability	5
S7	Context	Setting/site and salient contextual factors; rationale ^a	5
S8	Sampling strategy	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale ^a	5
S9	Ethical issues pertaining to human subjects	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	8
S10	Data collection methods	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale ^a	6,7
S11	Data collection instruments and technologies	Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	6

S12	Units of study	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	8,9
S13	Data processing	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/deidentification of excerpts	7
S14	Data analysis	Process by which inferences, themes, etc., were identified and developed, including researchers involved in data analysis; usually references a specific paradigm or approach; rationale ^a	7
S15	Techniques to enhance trustworthiness	Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale ^a	7
Results/Findings			8
S16	Synthesis and interpretation	Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	9
S17	Links to empirical data	Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	10-14
Discussion			15
S18	Integration with prior work, implications, transferability, and contribution(s) to the field	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	15-17
S19	Limitations	Trustworthiness and limitations of findings	16,17
Other			17,18
S20	Conflicts of interest	Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	18
S21	Funding	Sources of funding and other support; role of funders in data collection, interpretation, and reporting	18

^aThe rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

BMJ Open

Perspectives of healthcare workers on the challenges with obstetric referrals in rural communities in Ghana: a descriptive phenomenology study

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3 **Perspectives of healthcare workers on the challenges with obstetric referrals in rural**
4 **communities in Ghana: a descriptive phenomenology study**
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Abstract

Objective: We explored and document healthcare workers' perspectives on the challenges encountered during obstetric referrals.

Design: The study adopted a qualitative research approach and a descriptive phenomenology design. Healthcare workers permanently working in 16 rural healthcare facilities in the Sene East and West Districts composed the target population for this study. Using a purposive sampling technique, participants were recruited and enrolled in in-depth individual interviews (n=25) and focused group discussions (n=12). Data were analysed thematically using QSR NVivo 12.

Setting: Sixteen rural healthcare facilities in the Sene East and West Districts, Ghana

Participants: Healthcare workers

Results: Areas related to patient as well as institutional level issues challenged the referral processes. At the patients' level, financial constraints, fears associated with referral and patients' non-compliance with referrals were identified as challenges that delayed the referral process. With regard to institutional challenges, the following emerged: referral transportation challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies.

Conclusion: We conclude that in order for obstetric referrals in rural Ghana to be effective and timely, there is the need to raise more awareness about the need for patients to comply with referral directives, through health education messages and campaigns. Given our findings on the delays associated with long deliberations, the study recommends the training of more cadre of health care providers to facilitate obstetric referral processes. Such an intervention would help to improve the current low staff strength. Also, there is a need to improve ambulatory services in rural communities to counteract the challenges that poor transportation system poses on obstetric referrals.

Keywords: Challenges; Obstetric referrals; Rural settings; Ghana

Strength and limitations

- By adopting qualitative research design, the study provides deep and contextual understanding of the challenges that affect obstetric referrals in rural Ghana.
- The discussion of the study findings guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to ground our findings.
- Nevertheless, the findings may not be reflective of obstetric referral challenges in urban settings as we focused only on rural healthcare facilities.
- The study did not include the perspectives of patients.

Introduction

Improving maternal health has been a key issue on the global front for the past two decades [1]. This has been demonstrated through priorities of the Millennium Development Goals (MDGs) target 5 and now the Sustainable Development Goals (SDG) target 3.1. Despite these global efforts to improve maternal health, maternal mortality remains high. Nearly 289,000 mortalities associated with pregnancy and childbirth related complications are reported worldwide each year [2]. Sub-Saharan Africa (SSA) and Southern Asia account for the regions with the highest burden of maternal mortality [3].

In Ghana, improving maternal health outcomes remains an important public health concern. Successive governments have shown commitment towards improving different dimensions of maternal health. For instance, in 2008, free maternal health service was introduced as a policy to facilitate skilled birth attendance and institutional birth deliveries [4,5]. Additionally, Community-based Health Planning and Services (CHPS) was introduced to serve as a point of primary healthcare for pregnant women [2,6]. Although CHPS provide primary healthcare as well as family planning, antenatal and postnatal care, they often lack the capacity to provide birthing services or deal with obstetric complications [2]. In Ghana, the predominant obstetric complications include eclampsia, obstructed labour, haemorrhage and sepsis [2,7], all of which require interventions that are beyond the competencies of staff within a primary health facility. As such, obstetric referrals have become an important strategy to alleviate obstetric emergencies among women.

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3 Despite the importance of obstetric referrals in promoting better maternal health outcomes,
4 evidence suggest there are challenges that affect the referral process. This study uses Thaddeus
5 and Maine's "Three Delays Model" (TDM) as the conceptual framework. The model postulates
6 that, delays occur at the point of deciding to seek healthcare (type I); at the point of reaching the
7 health facility (type II); and, at the point of receiving quality care (type III) [8]. Related studies
8 have also applied the TDM to understanding obstetric referral challenges [7,8]. For instance, Afari
9 et al. [7] found challenges with transportation, communication and standard of care. The findings
10 from these studies have highlighted the need to eliminate delays at the various level of the TDM
11 to improve obstetric referrals.
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19 Nevertheless, deaths related to obstetric complications remains unacceptably high [2,7]. Thus,
20 suggesting lapses in the current regime of obstetric referrals, particularly in rural settings. If left
21 unaddressed, the situation could derail Ghana from achieving key targets of the sustainable
22 development goals including the target of achieving universal health coverage, and reducing the
23 maternal mortality ratio to <70 deaths per 100,000 live births. Yet, research on obstetric referral
24 challenges based on validated theoretical models like the TDM remains limited in the context of
25 rural settings in Ghana. To the best of our knowledge, there are only two studies [7,9] in Ghana
26 that explored obstetric referral challenges based on the TDM. However, these studies were limited
27 to only the exploration of system-based challenges to obstetric referrals in rural settings, neglecting
28 to explore other non-system based challenges such as barriers emanating from the patient. Hence,
29 the question remains that: (a) What challenges impede obstetric referrals in rural settings in Ghana?
30 (b) How does the TDM explain the existing obstetric referral challenges? The present study,
31 therefore, seeks to explore and document healthcare workers' perspectives on the challenges
32 encountered during obstetric referrals.
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44 **Methods**

45 **Operational definition of obstetric referral**

46 Referral refers to the upwards movement of health care seeking individuals in the health system.
47 Therefore, obstetric referral is the referral of individuals with emergency obstetric complications
48 or needs from a lower health facility to a higher health facility. In this study, obstetric referrals
49 denote all pregnancy and childbirth related conditions that are referred from the rural health
50 facilities to Kwame Danso Hospital (a higher healthcare facility) for further management.
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Study design and source of data

The study adopted a qualitative research approach and aligns with the interpretivist philosophy. Specifically, descriptive phenomenology design was used. This research design allowed us to articulate and comprehend the most essential meaning of the challenges that confront obstetric referrals from the perspective of those directly involved (i.e., healthcare workers). Data used in this study are primary data from fieldwork conducted between August 1 to October 31, 2021.

Researcher characteristics and reflexivity

In this study, the team comprised midwives and nurses (VMD, ABBM, NL, JRL), a population health scientist (JO), health directors (AK, JM, AAO), and bio-statisticians (PA, EKN). As a result, they had no influence on the study participants, or the general dynamics of the data collection. The study's location, methodology, and conclusions were all independent of the interviewers. Also, by situating the study within the frame the TDM, we were able to limit the likelihood of introducing biases into the interpretation of the participants' perspectives.

Study setting

This study was conducted in the Sene East and West District of Ghana. Sene District is located in the Bono East region. The district lies between Longitudes 0° 15' E and 0° 15' W, and Latitudes 7° 0' N and 8° 30' N [10]. Sixteen healthcare facilities were sampled across the Sene District. Nine of these facilities were from Sene West District while the remaining seven facilities were from Sene East District. The healthcare facilities included in this study ranged from CHPS compounds to health centres. They are typically staffed by one community health nurse and they provide basic emergency obstetric and newborn care (BEmONC). In Sene West, a total of 407 deliveries and 558 deliveries were reported in the year 2020 and 2021. Between January and March, 2022, 184 deliveries had been reported in Sene West. However, there were only 16 midwives as at the end of March, 2022 [Sene West District Health Service Records, 2022]. In Sene East, a total of 620 deliveries and 728 deliveries were reported in the year 2020 and 2021. Between January and March, 2022, 174 deliveries had been reported in Sene East. However, there were only 18 midwives as at the end of March, 2022 [Sene East District Health Service Records, 2022].

Study population and sampling

Healthcare workers (HCWs) comprising community health nurses, general nurses and midwives permanently working in the 16 rural health facilities in the Sene East and West Districts composed the target population for this study. We purposively sampled all 16 rural health facilities within the districts (see Table 1). This sampling technique was used because it allows the researchers to select participants who have relevant knowledge and experience in the area of obstetric referrals in rural Ghana, and can provide rich and in-depth data on the research question [11]. In all, 37 HCWs participated in this study. Two FGDs were conducted; each group was composed of six participants. The inclusion criteria were that, the prospective participant must be directly involved in the management of obstetric cases and obstetric referrals. Regarding the sample size for the IDIs, data was collected until the point of saturation [12]. By the 22nd interview, no new analytical information was emerging. Hence, we conducted additional three interviews to confirm that we had reached the point of saturation.

Table 1: Breakdown of study area

Districts	Facilities
Sene West District Rural Facilities	<ul style="list-style-type: none"> • Bantema CHPS Compound • Drobe CHPS Compound • Lemu CHPS Compound • Suntah Clinic • Central KD Medical Centre • Kyeamekrom CHPS Compound • Tato Bator CHPS Compound • Lassi Health Centre • RCH
Sene East District Rural Facilities	<ul style="list-style-type: none"> • Kajaji health center • Kojokrom Health Center • Bassa Health Center • Premuase CHPS Compound • Nyankontre CHPS compound • Bodinka CHPS Compound • Asuoso CHPS Compound

Data collection

Data was collected from between August 1 to October 31, 2021. The study used an IDI guide and FGD guide as the data collection instruments (See supplementary file 1). These guides were pretested and validated. A research assistant (RA) with experience conducting IDIs and FGDs and proficiency in both English and Twi languages was trained in use of the data collection instruments. On average, a maximum of two interviews were conducted per day. Both IDIs and FGDs were conducted in English or Twi depending on the participants' preferences. An information sheet and informed consent sheet was provided to participants. The information sheet detailed the purpose of the study as well as the possible benefits, risks and duration of the study. All the participants consented by signing prior to the start of the interview. The IDIs lasted between 40-60 minutes whereas the FGDs lasted approximately 105 minutes. Both IDIs and FGDs were conducted at the respective premises of the health facilities. The venue was decided by the participants. All of the sessions were audio recorded using a tape recorder. Some specific questions from the IDI and FGD guides include: *How do you refer obstetric cases? What challenges do you often experience during obstetric referrals?* After each day's interview, the audio data was transcribed verbatim and encrypted to prevent unauthorised access to the data.

Data management and analyses

First, the interviews conducted in the local language were translated to English using an independent back-to-back translation system to ensure that we retain the exact meanings and experiences of the participants. Transcripts from all the IDIs and FGDs were then vetted by the first author (VD) before being imported into QSR NVivo-12 for analysis. Data was analysed following Collazi's descriptive phenomenological method of analysis which includes the process of familiarising with the data, identifying significant statements, formulating meanings, generating themes and verifying the data [13]. Themes were generated using the nodes function in QSR NVivo-12 to highlight compelling extracts. ABBM who is an expert in qualitative research coded six of the interview transcripts from the IDIs and FGDs while JO coded the remaining transcripts. ABBM then reviewed the coding conducted in the analysis for comparison. This corresponded to that of the lead author in that the same main issues for discussion arose, thus, enhancing the credibility of the findings. The emerged themes and sub-themes were discussed and reviewed by all the authors.

Rigor

Reliability was ensured in this study by following acceptable standards and methods of phenomenological studies. Detailed description of the study contexts and methods allowed transferability and confirmability of the study findings. To ensure credibility, we conducted member-checking with five of the participants; this was done one week after transcription so that participants could affirm the transcripts accurately reflected the interview content. No participant offered corrections or expressed concerns about the content of the interviews. Field notes, which included the participants' nonverbal cues, concerns, and interviewers' reflections, were recorded after each interview and referred to during the analysis. The RA who carried out the interviews is a healthcare researcher by training with extensive experience conducting IDIs and FGDs. However, the RA does not work in the study settings and had no direct relationship with the participants.

Ethical approval

All the methods in this study conform to international ethical standards in the Declaration of Helsinki and Belmont Declaration [14]. The Ghana Health Service Ethics Review Committee (GHS-ERC) [ID: GHS-ERC 004/03/21] approved and cleared the study as ethically sound. An information sheet was given to all participant to brief them about the objective of the study, the procedures, potential risk and benefits, emphasis on the protection of the participants' autonomy, confidentiality and privacy. All participants voluntarily participated in this study. We anonymised transcripts before analysis. Audio records and transcripts (without any identifying information) were stored on a password protected computer. We followed the Standards for Reporting Qualitative Research [15].

Patient and public involvement

Patients, the public, and study participants were not involved in the design of the study. However, HCWs including community health nurses, general nurses, and midwives participated in the conduct of the study as participants. The results from our research are intended to be disseminated to the participants and the public through scientific publications, lay reports, social media, and conferences.

Results

Socio-demographic characteristics were collected on all participants (see Table 2). The majority of participants were female (76.6%) and were educated at a certificate (2 years' post-secondary school) or diploma (3 years' post-secondary school) level. The content of the certificate programme is limited whereas that of the diploma programme is detailed.

Table 2: Participants' socio-demographic characteristics

Characteristics	n	%
Sex		
Female	49	76.6
Male	15	23.4
Education status		
Certificate	22	34.4
Diploma	38	59.3
Post-basic	2	3.1
Other	2	3.1
Qualification		
Community health nurse	12	18.8
General nurse	4	6.3
Midwife	35	54.7
Other	13	20.3
Years/months worked at facility		
Months	29	45.3
Years	35	54.7

Table 3 shows the emerging themes from the study analysis. Two levels of challenges emerged at the patient and institutional level. These challenges encountered during obstetric referrals further resulted in type I, II and III delays.

Table 3: Emerging themes

Level of challenges	Themes
Patient level challenges	Financial constraints
	Fears about referral
	Patients' non-compliance to referral
Institutional level challenges	Referral transportation challenges
	Poor attitudes of service providers
	Low staff strength
	Healthcare bureaucracies

Patient Level Challenges

Participants reported several challenges with timely obstetric referrals from the patients' contextual and personal factors. Themes that emerged from the data on patient level challenges included: 1) financial constraints; 2) patients' fears and misperceptions about obstetric referral; and 3) non-compliance.

Financial constraints

Regarding the issue of financial constraints, participants reported that patients were often financially handicapped. As such, they found it difficult to afford the cost of transportation to facilities where they are referred. Some participants also noted that when women are referred, they often do not have sufficient financial resources struggle to comply with referral, hence, causing a type II delay as underscored by Thaddeus and Maine.

“When you refer a woman, she will always tell you that the referral point will ask her husband to bring money to pay some things. Since they don't have money it puts some fear in them when they are given the referral forms. In the end, that leads to delay in a woman getting to the referral centre” (IDI, Transcript 001).

“Over here, you have to cross the river in order to get to the referral point. On a normal day, you will pay GHS5 in order to access the canoe to get to the riverside. But when we refer women to go to the referral point, they will have to pay for the charge for all the passengers in order to get exclusive right to the canoe and use it to the other side. That

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3 *will mean that the person might have to GHS200 which is too much for them to pay. So,*
4 *they refuse to comply with referral directives” (N2, FGD 2).*
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7 ***Fears and misperceptions about obstetric referral***

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10 Patients’ understanding of referral is basic and critical to the effectiveness of obstetric referrals.
11 The participants indicated that women who visit their facility have fears and misperceptions about
12 referrals that delays their decision to comply and seek referral on time. Some participants stated
13 that women often fear a referral is going to bring more financial burden to them. The financial
14 burden may be associated with cost of transportation, cost associated with settling and
15 interventions at the referral centre and the fear of the unknown. As such, they are usually adamant
16 and non-compliant with referrals. Below are some excerpts that reflect the participants’
17 perspectives:
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24 *“...they [women] fear that when they get [referred] to the bigger facility, they’re going to*
25 *pay a lot of money or they are going to do CS. As a result of that, whenever you mention*
26 *transfers and referrals to them, this fear is activated so you have to educate them and*
27 *encourage them and by the time you’re done the time would have gone and even after all*
28 *this she has to go home to consult relatives or find means of transportation.” (IDI,*
29 *Transcript 006).*
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35 *“For what I’ve noticed, they [women who come for healthcare] have their own*
36 *perceptions. Usually, they have that fear that when they go to the receiving facility, they*
37 *are going to be charged a lot of money which they cannot afford. Maybe it is because either*
38 *their friends or people they know have experienced such situations and have paid money.*
39 *I don’t really know and can’t explain further.” (IDI, Transcript 003).*
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44 ***Non-compliance***

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47 Regarding compliance with referrals, participants shared their views that sometimes, pregnant
48 women who are referred to the next level of healthcare do not comply with the referral directives.
49 According to the participants, some patients have certain superstitious beliefs and misconceptions
50 that make them refuse to comply with referral directives. Instead of complying with the referral,
51 patients often go home to perform some ritual or self-care before accepting to be referred. They
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3 become compliant only after the initial steps they take have failed them. These things result in
4 delays in referrals.
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7 *“Sometimes, some of them [the patients] have some beliefs that they must perform some*
8 *rituals before they go to the health facility. As such, when you refer them, they will go home*
9 *first to perform those rituals first before they go to where they have been referred. When*
10 *that happens, it causes unnecessary delays to the referral process.” (IDI, Transcript 019).*
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15 *“When a client is not ready to be referred it takes a longer time to convince the person and*
16 *sometimes you have to call in other relatives to assist in talking to the person to accept the*
17 *referral and then maybe the ambulance may not be around” (FGD, Rich 1).*
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21 One of the participants expressed that, *“you may refer them [the client] and they may not go to*
22 *where you referred them, it’s either they don’t go or go to another place” (IDI, Transcript 013).*
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25 **Institutional Level Challenges**

26
27 Four themes emerged from institutional level challenges to obstetric referrals in rural settings: 1)
28 referral transportation challenges; 2) poor attitudes of service providers; 3) low staff strength; and
29 4) healthcare bureaucracies.
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32 ***Referral transportation challenges***

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35 A major challenge that emerged from the data was the problem with distance, transportation and
36 road networks. According to the participants, there is no proper transportation system in place to
37 facilitate referrals. In facilities that are located across rivers, women are forced to use a canoe to
38 cross the river as a means of transporting to the referral centre.
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43 *“...most of our catchment areas are in the bushes and some even have to cross rivers before*
44 *they get here so it makes it difficult for referring” (IDI, Transcript 008).*
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47 *“Transportation is a big challenge for us here when it comes to referral. You know that as*
48 *CHPS compound, we don’t have any ambulance or ambulatory services here that can*
49 *provide patients with oxygen and intravenous infusion while in transit to the receiving*
50 *facility. So, whenever we have to refer a woman who is critically ill, it becomes a burden.”*
51 *(IDI, Transcript 011).*
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3 Others also reported that due to the transportation challenge, they have to resort to the use of
4 motorbikes and taxis as a way of transporting the referred woman to the receiving centre.
5 According to the participants, this arrangement does not safeguard the health of the woman who
6 is being transferred because of the dangers of motorbike transportation during pregnancy. Also,
7 these taxis and motorbikes which are used as a means of transportation for referrals sometimes
8 delay in reaching the health facility. Here is what some HCWs had to say:
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14 *“Usually, they come to the facility with taxis or motorbikes. Some of them actually walk to*
15 *the facility. Therefore, when there is the need to refer them to a higher health facility, it*
16 *becomes a huge problem. When that happens, we have no choice than to resort to the same*
17 *means of transport that the came with, that is, the taxi or motorbikes. For those who can*
18 *walk, we sometimes allow them to walk home and prepare themselves to go to where we*
19 *have referred them to. These things worsen the patient’s condition.” (IDI, Transcript*
20 *006).*
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27 *“Transportation is the main challenge that we face with respect to how timely our referral*
28 *system is. It is very difficult to get means of transport to the hospital, and maybe if the*
29 *husband comes and he is not having a motor bike, then it becomes difficult to transfer the*
30 *person. In such instances, we have to call to the district for an ambulance or go for a taxi*
31 *that can transport the woman. Often, these taxis and even the ambulance delay to get here.*
32 *In the end, the entire referral system is overly delayed mainly because of transportation*
33 *difficulties.” (IDI, Transcript 004).*
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40 ***Poor attitudes of service providers***

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42 A major challenge that directly emanated from the HCWs was the issue of the attitudes of HCWs
43 at the receiving healthcare facilities. The participants asserted that some patients sent to the
44 receiving facilities return to the referring facility on the basis of poor treatment and delays at the
45 receiving point. Where the client has personally not experienced such poor treatment from HCWs
46 at the receiving facility, they take cues from their friends and family who might have been victims
47 of delays and poor quality of service at the receiving facility.
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53 *“Some of the people who go to the referral centres come back with complains that when*
54 *they went there, they were not received well and that, they don’t appreciate the kind of*
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3 *treatment they got from the midwife. So, they will go into the community and tell other*
4 *women in their condition that if they go on referrals, they will not have immediate care so*
5 *it's not necessary to go and this makes them reluctant to go on referrals” (IDI, Transcript*
6 *002).*
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11 Another participant expressed that the nature of their relationship with the patients does not allow
12 the client to freely express themselves or take part in the referral decision-making. In this context,
13 referral decision-making refers to both the conversations and preparations leading to the referral
14 of a patient to a higher health facility, as well as the decisions that must be made while the patient
15 is at the referral facility. For instance, one of the participants stated that “*some of our colleagues*
16 *do not practice patient centred care. And so, they don't involve the patient to know whether they*
17 *have the means to go to the referral facility.” (IDI, Transcript 007).*
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23 Another participated narrated:

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26 *“...at the referral facility, there are many decisions that have to be made in relation to the*
27 *care that the patient must receive. But there again, the patients complain that they are not*
28 *involved in any decision. The service providers at the referral centre just do what they think*
29 *is necessary for them” (N5, FGD 2).*
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33 ***Low staff strength***

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36 The effectiveness of referrals hinges on the availability of sufficient HCWs. Nevertheless, our
37 study shows that the staff strength relative to referral was overwhelming. As a result, it is difficult
38 for HCWs to decide who will accompany a patient who need to be referred.
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42 *“...we lack sufficient staff to facilitate the referral process. Due to that, it is difficult to*
43 *decide who will follow the client to the referral centre.” (IDI, Transcript 003).*
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46 Others also asserted that, at the receiving facility, they often lack key health professionals such as
47 medical officers to cater for emergency obstetric complications. Hence, when the client arrives at
48 the receiving health facility, they have to wait for a long time for the medical officer available to
49 attend to them. This results in III delays in receiving care.
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53 *“I will say staff strength can be one of the reasons for delay. Sene medical centre is one of*
54 *our referral centres and they have one medical officer so if he's already at the theatre and*
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3 *the client arrives the person will have to wait for him to finish before she would be attended*
4 *to” (IDI, Transcript 017).*
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7 ***Healthcare bureaucracies***

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10 The study also identified health bureaucracies that challenge the referral process. According to the
11 participants, they have to consult their superiors and other staff before deciding whether a case is
12 fit for referral. In such instances, there are often disagreements that tends to foster a type II delay
13 in receiving care during the process of discussing the reasons for referral, calling and alerting the
14 receiving facilities. Some HCWs expressed the following:
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19 *“Sometimes, among the staff, there is confusion. One staff will say this client does not need*
20 *referral another staff will say that she needs referral. By the time they sit there to deliberate*
21 *on the issue it prolongs the referral” (N2, FGD Kyeamekrom).*
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24
25 *“Let’s say a patient is having high BP so I want to refer but then a colleague will that we*
26 *should stop the referral and give her metadopine for the BP to come down. We will try this*
27 *and if it works then there’s no need for us to refer the patient but if it doesn’t then there*
28 *will be referral. By then we would have delayed the process” (N5, FGD Kyeamekrom).*
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35 **Discussion**

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37 Consistent with the Three Delay Model by Thaddeus and Maine [8], we found there are different
38 levels of challenges that affect the timeliness of obstetric referral in Ghana’s healthcare facilities.
39 Mainly, challenges related to the patient as well as institutional level issues challenged the referral
40 processes. At the patients’ level, financial constraints, fears about referral and patients’ non-
41 compliance with referrals were the challenges that delayed the referral process. These findings are
42 congruent with previous studies that have reported that individual level factors such as patients’
43 fears and misperceptions about referrals was a trigger for non-compliance and consequently delays
44 in the referral process [16,17]. Similarly, Pembe et al. [18] also reported financial constraint is a
45 major challenge to timely obstetric referral. These challenges proliferate type I delays as posited
46 by Thaddeus and Maine [8], that is, delays for women to make the decision to seek healthcare. Our
47 findings underscore the need to demystify obstetric referrals and build women’s appreciation for
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3 the need to comply with referral directives. Rural healthcare facilities can be supported to
4 strengthen health promotion and education at their facilities, emphasising on the importance of
5 obstetric referrals and the timeliness of referrals. Swifter communication through the
6 implementation of telemedicine platforms such as the use of WhatsApp could potentially help to
7 improve communication flow and timely discussions with superiors. Such interventions could
8 effectively contribute to decreasing delays in obstetric referrals.
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14 Concerning the institutional challenges, the following challenges emerged: referral transportation
15 challenges, poor attitudes of service providers, low staff strength and healthcare bureaucracies.
16 Our findings mirror earlier studies conducted in Ghana [9,16], and Ethiopia [19] that reported the
17 use of commercial vehicles (taxis) and motorbikes as a medium of transportation of patients during
18 obstetric referrals. Again, the findings affirm a report by the Ghana Health Service that shows
19 there were substantial challenges in terms of referral transportation systems [20]. A plausible
20 explanation for this finding is that the Ghana National Ambulance system which was established
21 in 2004 to ease emergency health transport service is not well grounded in rural settings as
22 observed from the perspectives of HCWs in this study. Also, delays in the arrival of ambulances
23 are mostly linked to the request of confirmation about the client's ability to afford the cost of the
24 ambulance services, which matches findings from Daniels and Abousi [9]. The result implies that
25 substantial proportion of women in rural settings who suffer obstetric complications are more
26 likely to have their conditions worsened as a result of delays caused by the poor ambulatory
27 services.
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39 Daniels and Abuosi [9] postulate that prioritising emergency cases hinges predominantly on the
40 availability of health personnel. Therefore, any inadequacy in staff strength becomes dire for
41 obstetric referrals. The findings from this study revealed that there were insufficient HCWs to
42 complement timeliness of referral services within the Sene District. Similar findings have been
43 reported by Afari et al. [16]. Given the low staff strength in rural healthcare facilities, it becomes
44 extremely difficult to ensure that health professionals accompany patients to facilities where they
45 have been referred. Relatedly, we found that some healthcare providers at the receiving facilities
46 exhibit attitudes that do not allow patients to participate in the referral decision-making. Such
47 attitudes are bound to result in both type II and III delays as posited by Thaddeus and Maine [8].
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3 Evidence from the study shows there are existing healthcare bureaucracies that challenge
4 timeliness of obstetric referrals. Participants in this study asserted they had continuous
5 deliberations to come to a consensus that the client has to be referred. The findings are analogous
6 to those found by Ofori et al. [21] that found bureaucracies to be one of the major challenges
7 confronting the timeliness of obstetric referrals. We acknowledge that team consultations are not
8 wrong on a prima facie basis, as it is critical for ensuring quality referrals [22,23]. Notwithstanding,
9 long deliberations towards consensus building on obstetric referral creates systemic bureaucracies
10 that exacerbate the perpetuation of type II delays. While it is impossible to discount the process of
11 conferring with superiors or colleagues before a decision is made, we postulate that the delays
12 associated with making deliberations could be due to the inadequacy of expertise to ensure swift
13 decision-making about the client's condition and need for referral. Thus, highlighting an urgent
14 need for better coordination between HCWs to accelerate timeliness of obstetric referrals.

24 **Strengths and limitations**

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26
27 By adopting qualitative research design, the study provides deep and contextual understanding of
28 the challenges that affect obstetric referrals in rural Ghana. The discussion of the study findings
29 guided by the Thaddeus and Maine's three delay model provides a solid theoretical foundation to
30 ground our findings. Nevertheless, we acknowledge that there are key limitations that should be
31 considered. The adoption of qualitative research design does not allow us to generalise the study
32 findings to other rural settings. Also, the study was limited in its scope; thus, we focused only on
33 rural healthcare facilities. Therefore, the findings may not be reflective of obstetric referral
34 challenges in urban settings. There is also the possibility of social desirability bias and selection
35 bias. However, these challenges do not compromise the authenticity and trustworthiness of our
36 study findings.

44 **Conclusion**

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46
47 Using the Thaddeus and Maine's three delay model, we explored HCWs' perspectives about the
48 challenges encountered during obstetric referrals. Patient and institutional level issues emerged as
49 major challenges to obstetric referrals. We conclude that in order for obstetric referrals in rural
50 Ghana to be effective and timely, there is the need to raise more awareness about the need for
51 patients to comply with referral directives, through health education messages and campaigns.
52 Given our findings on the delays associated with long deliberations, the study recommends the

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3 training of more cadre of health care providers to facilitate obstetric referral processes. Such an
4 intervention would help to improve the current low staff strength. Also, there is a need to improve
5 ambulatory services in rural communities to counteract the challenges that poor transportation
6 system poses on obstetric referrals.
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10 **Abbreviations**

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12 BEmONC: Basic Emergency Obstetric and Newborn Care; CHPS: Community Health Planning
13 and Services; FGDs: Focused Group Discussions; GHS-ERC: Ghana Health Service Ethics
14 Review Committee; HCWs: Healthcare Workers; IDIs: In-depth Interviews; KNUST: Kwame
15 Nkrumah University of Science and Technology; MDGs: Millennium Development Goals; SDGs:
16 Sustainable Development Goals; SSA: Sub-Saharan Africa; TDM: Three Delay Model.
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22 **Acknowledgements**

23
24 We acknowledge all of our participants for their time spent in this study.
25
26

27 **Contributors**

28
29 VDM, ABBM, EKN and JRL are the guarantors of the study and accept full responsibility for the
30 work and/or the conduct of the study. VDM: conceptualisation, design of the study, writing –
31 original draft and writing – review and editing; JRL: conceptualisation, design of the study, writing
32 – original draft and writing – review and editing; ABBM: conceptualisation, design of the study,
33 methodology, writing – original draft and writing – review and editing; EKN: conceptualisation,
34 design of the study, methodology, writing – original draft and writing – review and editing; PA:
35 methodology, writing – original draft, writing – review and editing; JO: data curation, analysis,
36 writing – original draft and writing – review and editing; AK: validation, writing – review and
37 editing; JM: validation, writing – review and editing; AAO: validation, writing – review and
38 editing; NL: validation, writing – original draft, writing – review and editing.
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48
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50 to quality maternal care connecting community midwives at rural health facilities, with personnel
51 at district hospital for obstetric referral (USAID/NSF PEER 9-518).
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56 **Competing interests**

1
2
3 The authors declare that they have no competing interests.
4

5 **Consent for publication**

6
7
8 Not applicable.
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10 **Ethical approval and consent to participate**

11
12 The protocol for this study was reviewed and approved by the Ghana Health Service Ethics Review
13 Committee (GHS-ERC) on 29th April 2021, with the ethical approval identification number GHS-
14 ERC 004/03/21. All participants gave written informed consent prior to the interviews and
15 individual names were withheld from the transcripts.
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20 **Data availability statement**

21
22 The datasets used and/or analysed during the current study are available from the corresponding
23 author upon reasonable request.
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27 **References**

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STUDY TOOLS

INDIVIDUAL INTERVIEW GUIDE FOR HEALTH CARE PROVIDERS

Date: _____

First say: Now we are ready to get started with the interview. I will be the moderator today. We will be meeting for about 45 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you change your mind about participating, we will not continue with the interview.

I want to remind you that your comments are only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions to get us started.

1. Do you have a personal phone that can send text-messages? YES/NO
2. Is it a smart phone? YES/NO
3. Do you use WhatsApp? YES/NO
4. Do you use your phone every day? YES/NO
5. Do you use your phone to communicate with other providers? YES/NO

Now I would like to ask some questions about transfer and referrals in your catchment area.

1. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes (for healthcare providers):

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

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3 2. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?

5 **Probes (for healthcare providers):**

6 What usually happens when the woman first arrives?

7 Can you say more about that? What does the provider do?

8 If you go with the woman, what do you do? Do the providers ask for your help?

9 How is it different if the woman is very sick or very close to delivery?

10 How is it different at night? Over the weekend? On holidays?

11 Can you tell me more about that?

12 Does anyone else have anything to add?

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23 3. Sometimes things go very well and women get care right away when they arrive at a health
24 center or hospital. Other times things don't go as well and it can take some time before they
25 get care. Can you explain those different scenarios? What makes the difference between
26 women getting care right away and not getting care right away?

27 **Probes (for healthcare providers):**

28 Can you tell me more about that?

29 Can you think of an example where things didn't go very smoothly... and can you describe
30 that to me?

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36 4. How do you keep track of how much time has passed since the woman arrived to the facility
37 and received care? Is that recorded anywhere or is it something you just try to remember?

38 **Probes (for healthcare providers):**

39 Is that information recorded on the chart?

40 Who is responsible for recording that information? Who normally does it?

41 Can you tell me more about that?

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48 5. In some places, community providers talk with the providers at the health centers and hospitals
49 very often. They even take trainings together. In other places, the community providers rarely
50 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?

51 **Probes (for healthcare providers):**

52 When do you talk with community providers? What are those interactions usually about?

53 What kind of information does the community health worker provide to you?

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3 How do you feel about those interactions?
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5 How do you communicate with community providers? (Is it all in person, or would you
6 ever call them?)
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8 Can you describe what the community health worker does once they arrive with the patient
9 to the facility?
10

11 Do they typically stay with the woman or do they typically leave?
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13 Are the community providers used in patient care after the woman has arrived? What types
14 of things do they help you with?
15

16 Would you like opportunities to work more closely with community providers?
17

- 18
19 6. We have been talking about an idea that we wanted to ask you about. We were wondering
20 whether community providers could use WhatsApp as a way to communicate with providers
21 in the health centers. Maybe there could be a WhatsApp group where CHAs could send out a
22 question to the group, or send a notice that a woman is on her way to the health center to help
23 prepare for her arrival. What do you think about that idea?
24

25 **Probes (for healthcare providers):**

26 Overall, do you like the idea? Why or why not?
27

28 What do you think it would be good for?
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30 What concerns would you have about using WhatsApp in that way?
31

32 What are some suggestions you have to make sure that people use it?
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36 *Thank you so much for all of these comments. We just have a last question that circles us back to*
37 *the beginning, when we asked about your phones.*
38

- 39 7. Some people love their phone, have it with them at all times, and never let it run out of credit.
40 Other people use their phone when it has credit but sometimes leave it at home or maybe they
41 forget to charge it. For everyone here, can you tell me which one of those describes you best?
42

43 **Probes (for healthcare providers):**

44 How do you pay for your phone?
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46 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
47 the day?
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49 Before we finish, do any of you have anything else that you would like to add to the
50 discussion?
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54 Thank you for your time today – this has been very useful and we appreciate you giving so
55 generously of your time.
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**FOCUS GROUP DISCUSSION GUIDE
FOR COMMUNITY HEALTH WORKERS**

**(THIS INCLUDES COMMUNITY HEALTH ASSISTANTS IN LIBERIA AND
COMMUNITY HEALTH NURSES OR COMMUNITY HEALTH OFFICERS IN
GHANA)**

Date: _____

Facilitator: _____

Note taker: _____

Community/Health Center: _____

Number in attendance (not including research staff): _____

First say: Now we are ready to get started with the focus group. I will be the moderator today. This is _____ and s/he will be taking notes and keeping us “on time”. We will be meeting for about 90 minutes. We are going to use a tape recorder so we do not forget the important things you tell us. If you do not want to have your voice recorded, or you CHWnge your mind about participating, you can leave at any time.

This focus group is an interview that is conducted in a natural way, much like a discussion. In the focus group, people are free to give their views and opinions to the questions.

I want to remind you that your comments are the research team only to learn more about the community and nothing you say will not be shared with others.

START THE TAPE RECORDER HERE!

Thank you. Now I would like to ask a few simple questions as a group to get us started. Please raise your hand if your answer is “YES”. Number of participants in the focus group_____.

6. Do you have a personal phone that can send text-messages? ____# yeses
7. Is it a smart phone? ____# yeses
8. Do you use WhatsApp? ____#yeses
9. Do you use your phone every day? ____#yeses
10. Do you use your phone to communicate with other providers? ____#yeses

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8. Ok, to get started, how do you decide if a woman needs to go to the health center or hospital?

Probes for CHWs:

What are things that you look for that might tell you the woman should go to the health center or hospital?

What kinds of trainings have you received that help you figure out if a woman should go to the hospital?

What are some common reasons for referral to the health center or hospital?

Once you have decided a woman needs to go to the health care facility, is there a current system or order in which you do things? Tell me about how you make these decisions.

How do you decide to take the woman to a health center versus a hospital?

9. We know sometimes it is easy to get a woman to a health center quickly, and sometimes it can take a long time to get a woman to a health center. What kinds of things can make it take a long time?

Probes for CHWs:

I know distance and transportation are factors, but what else? Do multiple people have to make a decision about whether it is ok to take the woman?

What else can make it take a long time to get to the health center?

10. Can you describe the process when a woman leaves her home to go to the health center / hospital?

Probes for CHWs:

How does she decide that she should go to the hospital?

Who goes with her?

How do they usually get there?

How long does it usually take for them to get to the nearest health center?

How long does it usually take for them to get to the nearest hospital?

What are things that can affect that travel time?

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3 11. Let's talk about what happens when women arrive at the facility. Can you describe that process
4 for me?
5

6 **Probes for CHWs:**
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8 What usually happens when the woman first arrives?
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10 Can you say more about that? What does the provider do?
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12 If you go with the woman, what do you do? Do the providers ask for your help?
13

14 How is it different if the woman is very sick or very close to delivery?
15

16 How is it different at night? Over the weekend? On holidays?
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18 Can you tell me more about that?
19

20 Does anyone else have anything to add?
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24 12. Sometimes things go very well and women get care right away when they arrive at a health
25 center or hospital. Other times things don't go as well and it can take some time before they
26 get care. Can you explain those different scenarios? What makes the difference between
27 women getting care right away and not getting care right away?
28

29 **Probes for CHWs:**
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31 Can you tell me more about that?
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33 Can you think of an example where things didn't go very smoothly... and can you describe
34 that to me?
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38 13. In some places, community providers talk with the providers at the health centers and hospitals
39 very often. They even take trainings together. In other places, the community providers rarely
40 talk to the providers at the health centers and hospitals. Can you tell me what it is like here?
41

42 **Probes for CHWs:**
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44 When do you talk with providers at the health centers?
45

46 How do you communicate with them?
47

48 Do you ever text or call on the phone with providers at the health centers?
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52 14. We have been talking about an idea that we wanted to ask you about. We were wondering
53 whether community providers could use WhatsApp as a way to communicate with providers
54 in the health centers. Maybe there could be a WhatsApp group where CHWs could send out a
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3 question to the group, or send a notice that a woman is on her way to the health center to help
4 prepare for her arrival. What do you think about that idea?
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6 **Probes for CHWs:**
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8 Overall, do you like the idea? Why or why not?
9

10 What do you think it would be good for?
11

12 What concerns would you have about using WhatsApp in that way?
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14 What are some suggestions you have to make sure that people use it?
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18 *Thank you so much for all of these comments. We just have a last question that circles us back to*
19 *the beginning, when we asked about your phones.*
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21 15. Some people love their phone, have it with them at all times, and never let it run out of credit.
22 Other people use their phone when it has credit but sometimes leave it at home or maybe they
23 forget to CHWrge it. For everyone here, can you tell me which one of those describes you
24 best?
25

26 **Probes for CHWs:**
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28 How do you pay for your phone?
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30 Is using your phone annoying or bothersome, or do you enjoy having it with you throughout
31 the day?
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35 Before we finish, do any of you have anything else that you would like to add to the
36 discussion?
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40 Thank you for your time today – this has been a very useful discussion and we appreciate you
41 giving so generously of your time.
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Standards for Reporting Qualitative Research (SRQR)

O'Brien B.C., Harris, I.B., Beckman, T.J., Reed, D.A., & Cook, D.A. (2014). Standards for reporting qualitative research: a synthesis of recommendations. *Academic Medicine*, 89(9), 1245-1251.

No.	Topic	Item	Page number
	Title and abstract		
S1	Title	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
S2	Abstract	Summary of key elements of the study using the abstract format of the intended publication; typically includes objective, methods, results, and conclusions	2
	Introduction		3
S3	Problem formulation	Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	4
S4	Purpose or research question	Purpose of the study and specific objectives or questions	4
	Methods		4
S5	Qualitative approach and research paradigm	Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., positivist, constructivist/interpretivist) is also recommended	4,5
S6	Researcher characteristics and reflexivity	Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, or transferability	5
S7	Context	Setting/site and salient contextual factors; rationale ^a	5
S8	Sampling strategy	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale ^a	5
S9	Ethical issues pertaining to human subjects	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	8
S10	Data collection methods	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale ^a	6,7
S11	Data collection instruments and technologies	Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	6

1	S12	Units of study	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	8,9
2	S13	Data processing	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/deidentification of excerpts	7
3	S14	Data analysis	Process by which inferences, themes, etc., were identified and developed, including researchers involved in data analysis; usually references a specific paradigm or approach; rationale ^a	7
4	S15	Techniques to enhance trustworthiness	Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale ^a	7
5		Results/Findings		8
6	S16	Synthesis and interpretation	Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	9
7	S17	Links to empirical data	Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	10-14
8		Discussion		15
9	S18	Integration with prior work, implications, transferability, and contribution(s) to the field	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	15-17
10	S19	Limitations	Trustworthiness and limitations of findings	16,17
11		Other		17,18
12	S20	Conflicts of interest	Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	18
13	S21	Funding	Sources of funding and other support; role of funders in data collection, interpretation, and reporting	18

^aThe rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.