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Utilisation of antenatal care and skilled delivery services among mothers in Nanton District of Northern Ghana: a mixed-method study protocol

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ABSTRACT

Introduction Maternal morbidity and mortality are a global phenomenon with devastating effects on low-income and middle-income countries among which sub-Saharan Africa (SSA) is the hardest hit. Low utilisation of maternal health services has been recorded in recent times in the Nanton District of Ghana. This has raised concerns about the utilisation of antenatal care (ANC) and skilled delivery (SD) services in the district. However, we found no specific existing literature which has addressed these questions on ANC and SD utilisation in the study setting. Thus, this study seeks to explore the utilisation of ANC and SD services among mothers in the Nanton District of Northern Ghana.

Methods and analysis This will be an observational study. It will use a mixed-method approach, particularly, convergent parallel design to implement the study. This will include quantitative and qualitative aspects using a questionnaire and focus group discussion guide. The planned sample size is 411 participants. The data will be collected at the communities. Before participation in the study, the research team will receive individual written consent from the participants. Descriptive and inferential data analysis will be performed after the data collection. The results will be presented as frequency tables, bar charts and line graphs to indicate the proportions of the outcome indicators. The strength of association among variables will be determined at 95% CI and a significance level of alpha (0.05) will be used.

Ethics and dissemination Ethical clearance has been sought from the Ghana Health Service Ethics Review Board (GHS-ERC 027/03/22). The outcomes from this study may serve as a reference document for the District Health Directorate to use when developing strategies for ANC and SD services. The results will be published in open access and peer-reviewed journals.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The proposed study will use a convergent parallel mixed-method approach to provide a comprehensive analysis of utilisation of health services such as antenatal care (ANC) and skilled delivery (SD) in the study setting and thus, it will fill the existing gaps.
- ⇒ The sample size will be 411 participants from 18 different communities in the district.
- ⇒ The inclusion criteria for this study will cause us to miss out on the proportion of ANC and SD used by women who had stillbirths or lost their children before 1 year of age.
- ⇒ Fear of being judged by the interviewers and recall bias may affect the responses of some mothers.

INTRODUCTION

Worldwide, maternal deaths remain a major public health concern. The World Health Organization (WHO) reports that an estimated 800 women die every day during pregnancy and childbirth. Yet all of these deaths are preventable.[1] In its 2017 reports, the United Nations reported that while 1 in 333 infants died in the first month of life in high-income countries, that ratio was 1 in 36 infants in sub-Saharan Africa.[2] In the specific case of West Africa, the maternal mortality ratio is 674 per 100 000 live births, according to the Population Reference Bureau.[3] In Ghana, maternal mortality remains unacceptably high and continues to pose a daunting public health challenge with a ratio of 310 per 100 000 live births.[4] In response to this negative situation, the government of Ghana rolled out key strategies for reducing maternal mortality by promoting access to and utilisation of maternal and child health services such as antenatal care (ANC) and skilled delivery (SD).[5 6] Some of the interventions introduced by the government of Ghana to accelerate access to and utilisation of maternal healthcare services (MHCS) include the implementation of free MHCS, the connection of maternal clinics to child welfare clinics in each district and training of individuals in safe motherhood skills.[5] Other policy initiatives by the government and the Ghana Health Service (GHS) include the implementation of emergency obstetrics and neonatal care in all the then 10 regions in Ghana, healthcare provision by skilled personnel during the period of pregnancy

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and childbirth and lastly strengthening the Millennium Development Goals accelerated framework initiative to bolster activities regarding the reduction in maternal mortality rate.[6–8] These measures were also intended to contribute to the achievement of targets 3.1 and 3.2 of the Sustainable Development Goals.[9]

Despite these laudable initiatives, maternal deaths still persist. The reasons attributed to the continued persistence of this situation may be associated with a couple of factors including the level of utilisation of essential health services by pregnant women in certain geographical areas. From an analytical viewpoint, maternal health indicators revealed an improvement in the use of essential MHCS by women from the national perspective.[10] Comparatively, evidence of utilisation of MHCS by women in urban and rural settings in Ghana and other sub-Saharan African countries demonstrates an uneven distribution in terms of access and use of these essential health services.[11–13] In the specific case of the Northern region of Ghana, the majority of the population lives in rural areas. As such, most women during pregnancy and childbirth have uneven access and utilisation of essential health services.

With Ghana adopting the WHO recommendation for eight or more contacts for ANC attendance, the most recent Ghana Multiple Indicator Cluster Survey showed a sharp contrast in the level of attendance with 85.0% and 26.4% having ≥4 and ≥8 ANC contacts, respectively. However, there exists a variation within regional coverage. Evidence shows that, while Upper East had coverages of 95.4% and 31.3% for ≥4 and ≥8 ANC contacts, respectively, the Northern region had 82.3% and 16.0% contacts for ≥4 and ≥8 coverage of women receiving ANC from a skilled provider.[14] According to the same survey, similar disparities exist between urban-rural divides while 90.3% and 36.3% had ≥4 and ≥8 ANC contacts in urban areas, 81.2% and 19.2% came from rural areas.[14] Nanton is a rural district and located in the Northern region. These two characteristics combined, could therefore lead to a lower use of ANC and SD services. However, no study has been conducted in the area to investigate the problem and make evidence-based recommendations. The present study will thus assess the level of utilisation of ANC and SD among mothers of infants to inform policymakers on the necessary intervention to enhance the utilisation of essential health services in the district. This study will also highlight the factors influencing the utilisation of these services as well as ascertain the knowledge level of the target group on essential health services. Furthermore, the results of this study will assist stakeholders in designing specific interventions for the identified factors. Additionally, the study will generate useful information that can inform future studies.

OBJECTIVES

The study aims to investigate the utilisation of ANC and SD services among mothers of infants in the Nanton District of the Northern region.

The specific objectives are:

- To estimate the proportion of mothers of infants using ANC and health facility/SD.
- To assess the level of knowledge of mothers of infants on ANC and SD services.
- To identify the factors influencing the utilisation of ANC, health facilities and SD among mothers of infants in the Nanton District.
- To determine the relationship between ANC attendance and SD.

METHODS AND ANALYSIS

Study setting

Ghana is located in West Africa with 16 administrative regions including the Northern region. The Northern region also has 16 districts (Metropolitan, Municipals and Districts). The Nanton District is one of the districts of the Northern region which was carved out of the Savelugu Municipality in 2018. It is about 80 km^2 and shares boundaries with the Sagnarigu Municipal to the north, Karaga District to the east, Tamale Metropolis to the west and the Savelugu Municipal to the south. The population is mostly rural. It has 84 communities with a population density of 8.7/km^2. The area is predominantly inhabited by the Dagomba ethnic group. The district has a total population of 63 450 inhabitants. The majority of the inhabitants are within the poverty line with low incomes. Thus, making it a challenge in accessing their healthcare when needed.

There are 16 health facilities in the district. These include 4 health centres and 12 functional Community-based Health Planning and Service (CHPS) zones to promote health in the district. A CHPS compound is the smallest unit of the health system providing primary healthcare. The services include outpatient care, ANC, child welfare clinics and delivery services. Due to the size of the district, physical accessibility poses a great challenge to vulnerable populations such as women and children. Additionally, the unavailability of a district hospital, poor road network and the weak referral system during health emergencies impacts on essential health services utilisation in the study setting.

Study design

This will be an observational study using a mixed-method approach and a convergent parallel design to assess the level of utilisation of ANC and SD services by mothers of infants in the Nanton District. According to Creswell and Plano Clark, a convergent parallel design entails that the researcher concurrently conducts the quantitative and qualitative components in the same phase of the research process, weights the methods equally, analyses the two components independently and interpret the results together.[15] Thus, this method allows for the simultaneous

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collection and analysis of quantitative and qualitative data on the research problem. The analysis of data using both methods will be mutually reinforcing.

Study population

The study participants will be mothers with infants (children under 1 year of age). They will be selected using multistage technique. In the district, there are 84 communities in 2 subdistricts (Nanton and Tampion). Nanton subdistrict has 45 communities while Tampion subdistrict has 39 communities. In each subdistrict, nine communities will be randomly selected. Thus, a total of 18 communities will be included in the study. At each community, about 23 mothers with infants will then be randomly selected to participate in the study.

Sample size determination

Quantitative study

The sample size for the quantitative study will be determined using Cochran's (1977) formula as follows: $n=(Z^2PQ)/d^2$.[16]

where:

n=desired sample size;

Z=the standard normal deviation, set at $\alpha=0.05$ based on 95% CI=1.96;

P=sample proportion of ANC attendance (41.9% or 0.419);

Q=the acceptable deviation from the assumed proportion=(1−p);

d=allowable margin of error=5.0%.

With the district having at least eight+ ANC attendance of 41.9%, the estimated sample size is 374. A non-response rate of 10.0% (37) will be included. Thus, a total of 411 participants will be selected and interviewed in this part of the study.

Qualitative study

For the qualitative study, each focus group discussion (FGD) will have 6–10 participants. The FGDs will be conducted till the point of saturation (sample size). The saturation will be achieved if there is no new information from the participants. After reaching the point of saturation, two additional FGDs will be conducted.

Sampling technique

Quantitative study

A multistage sampling technique will be employed. The first stage will use simple random sampling to select study communities. There are two subdistricts in the study setting. In each subdistrict, nine communities will be randomly selected. We assumed that 18 communities is representative of the entire district. The names of the communities will be listed, placed in an opaque container and thoroughly mixed. Then, the communities will be randomly selected. The second stage will involve the selection of study participants. At the community level, 23 mothers with infants will then be randomly selected to participate in the study. The selection of participants will be done by inviting all mothers with infants in each community to a particular venue. This will be done with the assistance of community volunteer(s). The total number of mothers with infants who honour the invitation in each community will constitute the sampling frame. They will be assigned unique numbers. The numbers will then be written on papers to represent the mothers and put in an opaque container. The mothers will then be asked to pick one piece of paper from the container. The mothers who will pick numbers from 1 to 23 will become the prospective study participants. This will be repeated in each community. In a situation where the number of mothers in a community are <23, all of them will constitute the study participants.

Qualitative study

The FGDs will be conducted with selected participants of the beneficiary communities till the point of saturation. The saturation will be achieved if there is no new information from the participants. After reaching the point of saturation, two additional FGDs will be conducted. Participants for the FGDs will be selected purposively to include at least three first-time mothers of infants and three mothers with two or more children with the last child being an infant. In situations where the number of participants falls below the set criteria, the available category participants will be engaged. This will ensure that diverse groups of mothers are involved in each FGD. Thus, this will enrich the quality of the discussions.

Inclusion and exclusion criteria

Quantitative study

In our study, an infant is a child between 0 and 11 months of age. A woman between 15 and 49 years of age with an infant is eligible to be included in the study. In addition, the woman should have lived in the community for the past year.

A woman without an infant will be excluded. Similarly, women with children aged 1 year and older will be excluded in this study. Additionally, mothers with infants but have not lived in the district for the past year will also be excluded.

Qualitative study

In addition to the criteria above, women who will take part in the quantitative study will be excluded from the qualitative study.

Study variables

The study will assess both dependent and independent variables to determine their level of association.

Dependent variable

The dependent variable of the study is the utilisation of ANC and SD by mothers of infants. Mothers of infants who have ANC contacts (attendance) will be divided into four categories: no contact, one to three contacts, four to seven contacts and eight or more contacts. The categorisation will be based on the WHO earlier recommendation of a minimum of four ANC visits in 2006[17] and the later

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recommendation of a minimum of eight ANC contacts in 2016 with skilled ANC providers.[18] Also, mothers who have eight or more contacts with a skilled provider will be assessed as having adequately used the ANC service as recommended by the new WHO standards. To ascertain this, ANC cards of the mothers will be checked to determine this adequacy or otherwise of the ANC contacts. The mothers of infants who will have less than eight contacts will be deemed as inadequate utilisation of ANC service. Similarly, mothers of infants who delivered at health centre, CHPS compound or hospital by an accredited health professional will be considered as having used SD. The mothers who are delivered by Traditional Birth Attendants, home delivery and delivery in spiritual homes among others by an unaccredited birth attendant will be deemed as unskilled delivery. In this study, we will use the WHO definition of skilled care at birth as being a delivery service provided by an accredited health professional, such as a midwife, doctor or other nurse, who has been educated and trained in the skills necessary to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and to identify, manage and refer complications in women and newborns.[19]

Independent variables

The independent variables of the study will be centred on the literature review and the modified version of the Anderson behavioural model. Socioeconomic and demographic factors including maternal age, maternal education level, marital status, partner educational level, maternal occupation, religion, parity, average monthly income, use of ANC and health insurance status will be considered. Other variables will include the distance to a health facility, availability of health staff, health supplies, for example, drugs and transport.

Themes of the qualitative study

The qualitative data will be categorised into themes such as knowledge of mothers on ANC utilisation, factors influencing ANC utilisation, knowledge of mothers on SD and factors influencing utilisation of SD services. The other themes include approaches to improve access and use of ANC and SD in the study setting. This is very vital as it will help unravel relevant information from the participants. The complete list of themes that the qualitative section will explore is available in online supplemental file 1.

Data collection methods

The research team will collect data on participants' demographic characteristics, socioeconomic, education factors, knowledge on ANC and SD services for mothers of infants will be collected through face-to-face interviews using a questionnaire. Also, FGDs will be conducted for selected participants. The study will employ both quantitative and qualitative research methods to determine the level of utilisation of ANC and SD services by mothers of infants in the district. The study implementation approach is resumed in online supplemental file 2.

Quantitative study

The quantitative data will be collected through the use of a structured questionnaire. It will be administered to selected mothers of infants. The women will be selected from 18 communities in the 2 subdistricts. For the selection process, any woman between the ages of 15 and 49 years with an infant will be eligible for the study. In the community, any household with a mother having an infant will be eligible for an interview.

Qualitative study

Qualitative data will be collected using an interview guide (FGD guide). The FGDs will be conducted with at least 6–10 mothers. Participants for the FGDs will be selected purposively to include at least three first-time mothers of infants and three mothers with two or more children with the last being an infant. In situations where the number of participants is less than the set criteria, the available mothers will be engaged. This will ensure that diverse groups of mothers are involved in the discussions. FGDs will be conducted with selected participants of the beneficiary communities till the point of saturation. After reaching the point of saturation, two additional FGDs will be conducted. The FGDs will be carried out at a serene and conducive environment devoid of interference and distraction. The FGDs will be conducted in the Dagbanli language which is the indigenous language. Tape recorders will be used to record the FGDs. Recorded tapes will be transcribed from the Dagbanli language into English. Content analysis will be employed to analyse the qualitative data. This will be done by categorising the data into various thematic areas as reflected in the interview guide. With this, the researchers will be able to critically analyse the perspectives of participants on the various themes.

Data collection tools

The study will use a structured questionnaire and FGDs guide to collect the data (online supplemental file 3). The structured questionnaire will be divided into four sections. The first section (A) will cover demographic data of participants, sections B, C and D will contain the three specific objectives. Some of the questions will use the Likert scale of measurement. This scale will be used to determine the opinions of subjects. It will contain a number of statements with a scale after each statement. Participants will be required to select from these statements that represent their opinion or interest.

The FGDs guide will contain open-ended questions that will be used to facilitate discussion with specific target groups such as first-time mothers and mothers with previous deliveries. The qualitative data will be categorised into themes such as knowledge of mothers on ANC utilisation, factors influencing ANC utilisation, knowledge of mothers on SD and factors influencing utilisation of SD services. This is very vital as it will help unravel relevant information from the participants.

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Data management plan and quality control

Data will be collected by a four member team: the principal investigator (PI) and three research assistants (RAs). The RAs will be selected based on their understanding and ability to speak fluently the Dagbanli language. Also, their previous experience in surveys will be considered during the recruitment. A 1 day training session will be organised by the PI to educate the RAs on the key issues of the research work. This training will cover areas such as orientation on the data collection tools, issues bordering on data collection ethics (such as privacy and confidentiality) as well as obtaining informed consent before initiation of the interview. In addition, there will be a 1 day pretesting of data collection tools to ensure that they are standard and adequate for the study. The pretest is important as it will help to identify lapses on the tools. Finally, the researcher will adhere to high standards of data quality control. This will be achieved by cross-checking all administered questionnaires daily by the RAs to ensure their completeness and errors for correction.

Statistical analysis

Quantitative study

Data from the quantitative study will be analysed using SPSS V.22. After checking for completeness and cleaning, data will be analysed descriptively and inferentially according to the objectives. The results will be presented using tables, graphs and charts. The continuous data will be analysed through the IQRs, means and the SDs. The categorical variables will be presented as frequencies and percentages. The first part will deal with the sociodemographic data that will be summarised with frequencies and percentages. The second portion will be on objective one, which is about the proportion of mothers using ANC and SD services. The results of this objective will be summarised in frequencies and percentages, likewise objectives 2, 3 and 4 which are on; knowledge of mothers on ANC and SD; factors influencing utilisation of ANC and SD and to determine the relationship between ANC attendance and SD. In addition, inferential statistics will be applied to assess the possible relationship between the dependent variables (ANC and SD utilisation) and independent variables (socioeconomic, demographic factors and knowledge). The factors associated with the utilisation of ANC and SD services will be tested with Pearson's χ^2 test and a multivariate logistic regression test. Before conducting the regression analysis, independent variables to be included in the subsequent regression analysis will be selected using the χ^2 test. The significance level will be determined by or set at a p value of 0.05. Multivariate analysis including binary logistic regression and χ^2 test for bivariate will be used where appropriate. The multivariate analysis will be used to compare the utilisation of ANC and SD services, knowledge of mothers using these services and the factors influencing their utilisation to the demographic characteristics. The results will be presented as OR with 95% CIs to quantify possible associations between the variables.

Qualitative study

Data generated by the qualitative study will be collected using an interview guide (FGDs guide). After the transcription, the transcripts will be subjected to content analysis based on the various thematic areas of the FGD guide. The participants' opinions and perspectives under each thematic area will be pulled together and analysed to unravel the context and viewpoints. In relation to knowledge on ANC and SD, participants expressing their opinion on a particular knowledge item more frequently will be considered high knowledge on that item. Similarly, less expression on a particular knowledge item will also be considered low knowledge. Regarding the factors influencing ANC and SD utilisation, the majority of participants stating particular factors will be considered to be priority factors and verse versa. During analysis, the opinions of participants will be represented by numbers assigned to them during the discussion phase so as to differentiate individual as well as community opinions.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

ETHICS AND DISSEMINATION

The study will uphold high ethical standards in conformity with research ethics. By this, ethical clearance has been sought from the Ghana Health Service Ethics Review Board (GHS-ERC 027/03/22) (online supplemental file 4). Permission has also been sought from the Regional Health Directorate of Ghana Health Service, DHA of Nanton District as well as the subdistricts and CHPS compounds that will be participating in the study. Additionally, an informed consent (online supplemental file 5) will be obtained from participants with clear explanation of the procedure as well as ensuring their privacy and confidentiality in the process of data collection. Participants will be given the option to withdraw if they do not feel comfortable of being part of the study at any stage. In addition, participants will be assured that responses will be accessible and available to the research team for the specific research work that is being conducted.

In relation to COVID-19, the researcher will put in mitigation measures in conformity with the COVID-19 protocols by GHS to protect the research team and the participants against infection and its spread. This will be done through the provision of hand sanitisers to each research team member when visiting the community for use against infection and its spread. Additionally, the researcher will make available appropriate face mask to the research team for use when visiting the field. In addition, social distancing will also be observed during interviews and FGDs and other interactions. Copies of the final report of the study will be sent to the District Health Directorate where the research will be conducted. This will serve as a reference document for the Directorate

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to consult when developing strategies on ANC and SD. Furthermore, a copy will be placed in the University for Development Studies, Tamale, Ghana library repository as consulting material for students and staff. Additionally, a manuscript will be written for publication in a peer-reviewed journal. The research findings and their implications will also be presented at seminars and other platforms including conferences.

Timeline of the study

Data collection for the present study will start in July 2022. It will be followed by the planned statistical analysis and then reports and manuscript writing.

Contributors AA and MNA participated in the conceptualisation and the methodology. J-PG and MNA drafted the manuscript. AA, J-PG and MNA reviewed and edited the original draft. All authors contributed to revision of the manuscript. MNA coordinated and supervised the completion of the manuscript.

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Table: Complete list of themes that will be explored in the qualitative section of the study

Nº	Themes
1	Knowledge of mothers on ANC services
2	Knowledge of mothers on facility/skilled delivery services
3	Factors promoting ANC utilization by mothers
4	Factors hindering ANC utilization by mothers
5	Factors promoting facility/skilled delivery service utilization
6	Factors hindering facility/skilled delivery service utilization

Table: Study implementation approach for utilization of ANC and Sd services in Nanton District, Ghana

Objectives	Type of study for data collection	How to collect data
1.To ascertain the proportion of mothers of infants utilizing ANC and health facility/skilled delivery	Quantitative study	Survey questionnaire, Section B
2.To assess the level of knowledge of mothers of infants on ANC and SD services	Quantitative study	Survey questionnaire, Section D
	Qualitative study	Focus Group Discussion (FGD), Section A
3.To identify the factors influencing the utilization of ANC, health facilities, and skilled delivery among mothers of infants in the Nanton District	Quantitative study	Survey questionnaire, Section C
	Qualitative study	Focus Group Discussion (FGD), Section B
4.To determine the relationship between ANC attendance and skilled delivery (SD)	Quantitative study	Analysis of ANC attendance its association with SD

QUESTIONNAIRE ON UTILIZATION OF ANTENATAL CARE AND SKILLED DELIVERY SERVICES AMONG MOTHERS

Introduction: This research is being conducted to explore on the "Utilization of Antenatal Care and Skilled Delivery services among mothers of infants in the Nanton District". I would highly appreciate your participation in this study. This information will help the District Health directorate, private agencies, the community and other decision making bodies to plan and improve the uptake of ANC and Skilled delivery services.

The interview would last between 30 to 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to any other than the District Health Directorate and the University.
Participation in this survey is voluntary, as such there would be no compensation in cash or in kind. In the process of the interview, if we should come to any question you don't want to answer, just let me know and I will go to the next question. You are also free to stop or completely withdraw from the interview at any time. The information you provide will kept under strict privacy and confidentiality. I hope that you will participate in this study since your views are important.

At this time do you want to ask me anything on this study? May I begin the interview now?

Signature of interviewer ---------------------- Date---------------------------------

Respondent agrees (A) Yes (B) No Record the time -------------------

IDENTIFICATION
Name of sub District..
Name of Community…………………………………….
Interview Date………………………….................
Interview #...
Name of Interviewer…………………………………………...

Section A: Socio-demographic characteristics

D1. What is your age?................

D2. What is your highest level of education?

1. Pre-primary/None
2. Primary
3. JSS/JHS/Middle School
4. SSS/SHS/Secondary
5. Higher

D3. What is your ethnicity? …………….

D4a. Are you employed? 1. Yes 2. No

D4b. What is your occupation?

1. Unemployed
2. Trader/Business
3. Farmer
4. Artisan
5. Salary worker

D5. How much is your monthly income?

1. Less than100 GHC
2. 100-290
3. 300-490
4. 500 and above

D6. What is your religious affiliation?

1. Moslem
2. Christian
3. Traditionalist
4. Others……..

D7. What is your marital status?

1. Single
2. Married
3. Divorced
4. Widowed

D8. How many children do you have who are alive? …………

D9. What is your partner/husband highest level of education?

1. Pre-Primary/None
2. Primary
3. JSS/JHS/Middle school
4. SSS/SHS/Secondary
5. Higher

D10. What is your partner/husband's occupation?

1. Unemployed
2. Farmer
3. Trader/Businessman
4. Artisan

5. Salary worker

D11. Do you have a child less than 1 years? If no, end interview (Cross check child's age from health records book) 1.Yes 2.No 99. I don't know/not sure

D12. Was this your first pregnancy? 1. Yes 2. No

D13. How many times have you been pregnant? (Including miscarriage) ………….

D14. During your last pregnancy, did you ever had education on ANC and SD services when you visited the ANC clinic?

1. Yes 2. No

D15. If yes to Q.14, by who?

1. Midwife
2. Nurse
3. CHWs

Section B: Utilization of ANC and SD health services

Sub Section B1: Antenatal Care Services (ANC)

D16. During your last pregnancy, did you attend ANC clinic? This does not include TBAs.

1. Yes
2. No
3. I don't know

100. No response

D17. If yes to Q16, how many times did you attend ANC? (This does not include TBAs) (RA to check from Health records book). ……………

D18. How old was your last pregnancy when you first attended ANC?

1. Zero to three Months
2. Four Months
3. Five months and above

Sub Section B2: Skilled Delivery

D19. Where did you deliver your last child (including for a child who may now be deceased)?

1. Hospital
2. Health Center
3. CHPS Compound
4. Private health Facility
5. Home

7. Other ___

100. No response

D20. Who assisted you during the delivery of your last child?

1. Doctor
2. Midwife
3. Nurse
4. CHW
5. TBA
6. Others ……

D21. If D20 is TBA, was delivery there planned? 1. Yes 2. No (if No, skip to D23)

D22. If D21 is yes, what was the main reason for not delivering at a health facility?
1. No difficulty in previous deliveries

2. No health facility available

3. Long distance from health facility

4. Bad attitude of health workers

5. Cost of delivery (Bed preparedness)

6. Lack of Privacy during delivery

9. Cultural/religious beliefs in conflict with hospital delivery

10. Fear of caesarean delivery

11. Transportation difficulties

D23. If TBA delivery was not planned, what was your reason?
1. Spontaneous labour

2. Late night labour

3. Problems with previous home delivery

4. Others (specify)…………………………………………………………

Section C: Factors influencing utilization of ANC and SD health services:

Sub Section C1: Antenatal Care (ANC)

D24. Where did you attend antenatal care during your last pregnancy?

1. Hospital

2. Health Centre

3. CHPS Compound

4. TBA/Spiritual leader/Home

D25a. Why did you attend ANC**?** ***(You can tick as many as apply to you)***

1. For health of unborn baby (fetus)

2. For health of mother

3. For health education on pregnancy

4. To screen blood and urine for diseases

5. To receive ANC drugs such as SP

6. Advise on gestation age of pregnancy

7. It helped me in my previous pregnancy

8. Others ………………………………

D25b. Why did you not attend ANC**? If D16 is No.** ***(You can tick as many as apply to you)***

1. Late recognition of pregnancy
2. Unwanted pregnancy
3. Domestic occupations
4. Perceived lack of benefit
5. Stigmatization by community
6. Due to cultural reasons
7. Others………………….

D26a. Which of these factors promoted your ANC attendance? (**Tick as many as it applies to you)**

1. Availability of health facility
2. Availability of health staff
3. Friendly health staff
4. Nearness/short distance to health facility
5. Holder of health insurance (NHIS)
6. Availability of transport
7. Availability of supplies (ANC drugs)
8. Partner support
9. Autonomous decision making power
10. Experience on previous pregnancy
11. Mass media (Radio, TV etc)
12. Others…………………….

D26b. Which of these served as barrier(s) to your ANC attendance? (You can tick as many as apply to you)

1. Long distance

2. Lack of transport

3. Bad attitude of health workers

4. Shortage/Lack of supplies (ANC drugs)

5. Lack of partner support

6. High cost of ANC services

7. Cultural and religious beliefs

8. No NHIS card/Expired NHIS card

9. Others………………………

D27. How much do you spend on transportation to acquire ANC services?

1. No cost

2.Below GH¢ 20

3. GH¢ 20 – GH¢ 40

4. GH¢ 40 – GH¢ 60

5. GH¢ 60 GH¢80

6. GHC. 80.00 and Above

D28. How much time do you spend in acquiring ANC services?

1. 0-15 minutes

2. 16-30 minutes

3. 31-45 minutes

4. 46-60 minutes

5. 60 minutes and above

D29. Did health workers attend to you immediately when you arrived at the ANC clinic? 1. Yes 2. No

D30. How much do you spend in acquiring ANC services at the facility?

1. No expenditure

2. Below GH¢ 20

3. GH¢ 20 – GH¢ 40

4. GH¢ 40 and above

D31. Do you listen to radio? 1. Yes 2. No

D32. If yes to D31, how many times a week? ……………..

D33. Do you watch TV? 1. Yes 2. No

D34. If yes to D33, how many times a week? ……………..

D35. Can the number of pregnancies a mother had in a lifetime influence the choice of ANC attendance? 1.Yes 2. No

Sub Section C2: Skilled Delivery

D36. Where did you deliver your last child?

1. Hospital

2. Health Centre

3. CHPS Compound

4. TBA/Spiritual leader/Home

5. Others …………….

D37. Why did you deliver at the place of your choice? (***Choose as many as apply to you***).

1. For health of mother

2. For health of baby

3. To avoid complications

4. Previous experience

5. Due to nearness

6. Low cost of service

7. Others ……………………..

D38a. Which of these helped you to deliver at the facility? (Choose as many as apply to you).

1. Nearness of health facility
2. Availability of transport
3. Availability of health staff
4. Friendly health staff
5. Partner's support
6. Holder of NHIS
7. Mass media (Radio, TV etc)
8. Experience from previous delivery
9. Others………………………

D39. Which of these served as barrier to skilled delivery? (Choose as many as apply to you).

1. Long distance to the facility

2.Transportation difficulties

3. Lack of money

4. Bad attitude of health workers

5. Lack of partner support

6. Cultural and religious beliefs

7. No NHIS card/ Expired NHIS card

8. Others ……………………..

D40. How much do you spend on transportation to acquire services of skilled delivery?

1. No cost

2. Below GH¢ 20

3. GH¢ 20 – GH¢ 40

4. GH¢ 40 – GH¢ 60

5. GH¢ 60 GH¢80

6. GH¢ 80.00 above

D41. How much do you spend on delivery services?

1. No cost

2. GH¢ 40 or Below

3. GH¢ 50 – GH¢ 90

4. GH¢ 100 – GH¢ 140

5. GH¢ 150 GH¢190

6. GH¢ 200 and above

D42. Did health workers attend to you immediately in your last delivery? 1. Yes 2. No

D43. Do you listen to radio? 1. Yes 2. No

D44. If yes to D31, how many times a week? ……………..

D45. Do you watch TV? 1. Yes 2. No

D46. If yes to D33, how many times a week? ……………..

D47. Can the number of deliveries a mother had in a lifetime influence the choice of delivery practice? 1.Yes 2. No

Section D: Level of knowledge of pregnant women on ANC and SD services

Sub Section D1: ANC Services

D48. What services did you receive during your ANC attendance? (Choose all that applies)

1. Urine for lab investigation
2. Blood for lab investigation
3. Scan
4. Palpation

5. Malaria prophylaxes (SP)
6. Counselling on nutrition and exclusive breastfeeding
7. Counselling on birth preparedness
8. Others……………………….

D49. How many times are pregnant women supposed to attend ANC service during their pregnancy period? ……….

D50. What are some of the benefits of ANC services to pregnant women? (***Choose all that applies)***

1. Provides good health to pregnant woman
2. Protects the unborn baby (Foetus)
3. It provide education on pregnancy
4. Provide information on danger warning signs
5. It provides counselling on exclusive breastfeeding
6. Others………………..

D51. On a confidence scale of one to three how confident are you in identifying danger warning signs in a pregnant woman? (For example danger warning signs for: anemia, excessive bleeding, complications from the placenta, pre-eclampsia, eclampsia, etc)

1. Not confident
2. Somewhat confident
3. Very confident

100. No response

D52. Which of the following are danger signs in pregnancy? (***Choose as many as it applies to you***)

1. Anaemia (Shortage of blood)
2. Hypertension (Eclampsia / pre-eclampsia)
3. Hemorrhage
4. Excessive bleeding
5. Severe headache
6. Severe vomiting
7. Severe abdominal pain
8. Others…………………..

Sub Section D2: Skilled Delivery (SD)

D53. What services did you receive immediately after your last delivery? ***(Choose as it applies)***

1. Physical examination
2. Counselling on breastfeeding
3. Contraceptives counselling
4. Blood test for anemia
5. Nutritional supplements
6. Information on danger warning signs
7. Others ……………………………….
8. None of the above

100. No response

D54. What are some of the benefits of skilled delivery? **(Choose as many as it applies to you**)

1. Promote good health of mother
2. Ensure good health of newborn
3. Prevent infection
4. Education is provided on danger signs
5. Others …………………………………

D55. Why did you prefer to give birth with assistance of skilled provider? (Choose as many as apply to you)

1. Friendly health staff
2. Advice received from community opinion leaders
3. Shorter waiting time
4. Quality of care
5. Facility is neat and clean
6. Respect for privacy
7. Adequate and complete medication
8. Health staff is available when needed
9. Cheaper services
10. Close proximity/easy to reach
11. Others (Specify)…………………………….

D56. On a confidence scale of one to three how confident you are in identifying danger warning signs for the mothers after delivery? (Examples for mother: anemia, excessive bleeding, complications from the placenta, pre-eclampsia, eclampsia, etc)

1. Not confident
2. Somewhat confident
3. Very confident

100. No response

D57. Which of these are danger signs after delivery? (Choose as many as it applies)

1. Anemia
2. Excessive bleeding,
3. Complications from the placenta/Retention of placenta
4. Hypertension (Pre-eclampsia and eclampsia)
5. Severe abdominal pain
6. Severe headache
7. Others ……………….

Thank you for your time.

FOCUS GROUP DISCUSSION GUIDE ON UTILIZATION OF ANTENATAL CARE AND SKILLED DELIVERY SERVICES BY MOTHERS

Introduction: This research is being conducted to explore on the "Utilization of Antenatal Care and Skilled Delivery services among mothers of infants in the Nanton District". I would highly appreciate your participation in this study. This information will help the District Health directorate, private agencies, the community and other decision making bodies to plan and improve the uptake of ANC and Skilled delivery services.

The discussion would last between 30 to 45 minutes to complete. Whatever information you provide will be kept strictly private and confidential and will not be shown to any other than the District Health Directorate and the University.
Participation in this survey is voluntary, as such there would be no compensation in cash or in kind, however, the results will be useful to the Nanton DHA for improvement of services for users. In the process of the interview, if we should come to any question you don't want to answer, just let me know and I will go to the next question. You are also free to stop or completely withdraw from the interview at any time. I hope that you will participate in this study since your views are important.

At this time do you want to ask me anything on this study? May I begin the discussion now?

Section A: Knowledge of mothers of infants on ANC and SD services

A: Knowledge of mothers of infants on ANC utilization

1. What services are rendered to pregnant women during pregnancy at the ANC clinic?
2. How soon are pregnant women expected to initiate ANC attendance and why?
3. Why is it important for pregnant women to attend ANC regularly?
4. How often are pregnant women required to attend ANC during pregnancy?
5. What complications/danger signs are associated with pregnant women during pregnancy?
6. How can the number of pregnancies a woman had in her life time influence her ANC attendance?

A2: Knowledge of mothers of infants on skilled delivery

1. Why are pregnant women expected to deliver with a skilled provider at the health facility?
2. After delivery at the facility, what services are provided for the mother and baby and why?
3. What are some of the danger signs/complications experienced by women after delivery?
4. How can the number of deliveries a woman had in her life time influence her delivery practice?

Facilitator's Note:

Section B: Factors influencing utilization of ANC and SD by mothers of infants.

Section B1: Factors influencing ANC utilization

1. What are some of the factors that promote the utilization of ANC services by pregnant women?
2. What are some of the barriers that prevents pregnant women not to adequately utilize ANC services during pregnancy?
3. What can be done to improve ANC utilization by pregnant women?

Section B2: Factors influencing SD utilization

1. What motivate pregnant women to deliver at the health facility?
2. What barriers do pregnant women encounter in their desire to deliver at the health facility?
3. What can be done to improve skilled/facility delivery?

Facilitator's notes:

1. Probe factors on sociodemographic (Age, education, partner support, distance. etc)
2. Economic (Cost, transport, employment, etc.) and facility factors (Attitude of staff, availability of ANC supplies, time spent, etc.) factors.
3. Cultural norms, beliefs and practices that affect ANC and SD utilization

Thank you

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
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Email: ethics.research@ghsmail.org
23rd May, 2022

My Ref. GHS/RDD/ERC/Admin/App 22/178
Your Ref. No.

Alexis Ayelepuni
University for Development Studies
Department of Global and International Health,
P. O. Box TI 1883,
Tamale, Northern Region,
Ghana

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 027/03/22**
Study Title	"Utilization of Antenatal Care and Skilled Delivery Services among Mothers in the Nanton District of Northern Region, Ghana."
Approval Date	23rd May, 2022
Expiry Date	22nd May, 2023
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED

Mr. Kofi Wellington
(GHS ERC Vice Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

Study participation consent form

STUDY TITLE: UTILIZATION OF ANC AND SKILLED DELIVERY SERVICES AMONG MOTHERS IN THE NANTON DISTRICT OF NORTHERN REGION, GHANA

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (Dagbanli). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant…………………………..

Participants' Signature ……………………...OR Thumb Print……………………………

Date:………………………………….

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (Dagbanli) language to his proper understanding.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……………………………

Signature of Interpreter……………………….. OR Thumb Print ………..........................

Date:………………………

Contact Details:

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood (Dagbanli).

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:…………………………

Signature…………………………... OR Thumb Print ……….........................

Date:……………………………

Contact Details:

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name……………………………………….

Signature ………………………………………………….

Date………………………………………………………….