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DETERMINANTS OF ANTENATAL CARE FIRST TRIMESTER INITIATION AND THEIR EFFECTS ON PLACE OF DELIVERY IN THE BUILSA SOUTH DISTRICT OF THE UPPER EAST REGION

BY

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DECLARATION

I Michael Boah hereby declare that this dissertation is the result of my own original work, and that this dissertation, either in whole or in part has not been presented in this University or elsewhere for another degree, except for the other people's work which I have duly acknowledged**.**

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Date:……..

DEDICATION

I wish to dedicate this work to my two lovely children, Rufina W. Boah and Maximus W. Boah. They have been my motivation to succeed in life.

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ABSTRACT

The importance of antenatal care and skilled-birth attendant at delivery in the reduction of maternal morbidity and mortality are key components of the safe motherhood initiative. Despite the introduction of strategies to promote early antenatal care attendance and delivery in health facilities by skilled attendants, women in the Builsa South district initiate antenatal care late. The purpose of this study is to explore the determinants of antenatal care first trimester initiation and how they affect the place where the woman delivers. A population based cross sectional study was conducted in June 2016 among four hundred and thirty-one women in childbearing age who delivered in the past six months preceding the survey. Both quantitative and qualitative methods were used in data collection. Four focus discussions were conducted. The study was approved by Ethics Review Committee of the Ghana Health Service. Quantitative data were analyzed using STATA version 13. Pearson Chi- square test was used to identify statistically significant association in a bivariate analysis. A multivariate logistic regression was used to estimate the strength of association between the independent variables and the outcome variables. In the qualitative method, discussions were recorded and transcribed verbatim. Thematic analysis was used for the analysis. The study found 98.8% of the respondents used antenatal care at least once in their recent pregnancy. However, many booked after the first trimester of pregnancy and 68 percent attained four and more visits before delivery. Prevalence of health facility delivery was 62.7 percent. Unaware of delivery onset and no complications with previous delivery were the major causes of home delivery. Maternal age, highest educational attainment, parity, occupation, and having a valid health insurance during pregnancy were significantly associated with the timing of the first antenatal care visit in the bivariate analysis. In the multivariate analysis, level of educational attainment was identified as the determinant of antenatal care initiation which had a statistically significant association ($p<0.05$) with place of delivery. The frequently mentioned reasons for

late booking from the discussions were unplanned pregnancy and waiting to confirm pregnancy status.

The findings suggest that there is urgent need to advocate for and invest in the education of the female child since this promotes better maternal health seeking behaviour and can contribute to reducing maternal morbidity and mortality. The qualitative results also suggest that though maternal health services are free for women who deliver in health facilities, there are other hidden costs like the inability to afford Dettol, soap, bleach, and rubber sheets required for delivery which serve as barriers to health facility delivery. Health care providers can identify potential women who will most likely deliver at home using the routinely collected data on the women during antenatal care. Women found to be at risk of home delivery can be supported throughout pregnancy to encourage them to deliver in health facilities with skilled-birth attendants.

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ANC – Antenatal care

AOR – Adjusted Odds Ratio

CHN – Community Health Nurse

CHPS – Community-based Health Planning and Services

CHV- Community Health Volunteer

CWC – Child Welfare Clinic

DDHS – District Director of Health Service

ERC – Ethics Review Committee

FGD – Focus Group Discussion

GDHS – Ghana Demographic and Health Survey

GHS – Ghana Health Service

JHS – Junior High School

RCH – Reproductive and Child Health

RDHS – Regional Director of Health Service

SBA – Skilled Birth Attendant

SHS – Senior High School

SP – Sulphadoxine-pyrimethamine

STIs – Sexually Transmitted Infections

TBA – Traditional Birth Attendant

UNFPA – United Nations Population Fund

UNICEF – United Nations Children's Fund

WHO – World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

More than 500 women die yearly in low and middle-income countries due to preventable complications associated with pregnancy (Ronsmans & Graham, 2006). Globally, about 73% of maternal deaths that occurred from 2003 to 2009 were directly from known obstetric causes, while the remaining 27% was accounted for by indirect causes. Postpartum haemorrhage is the leading cause of maternal deaths with 27.1% followed by hypertension (14%), sepsis (11%) and abortion (8%) (Say et al., 2014). In Ghana, the causes of maternal deaths are not very different from the global causes. Postpartum haemorrhage, pre-eclampsia, eclampsia, abortion and sepsis were recorded as the leading direct causes of institutional maternal deaths in 2013 (Ghana Health Service, 2013).

Antenatal interventions and delivery in health facilities in the presence of a skilled birth attendant (SBA) can be very beneficial to the health of the pregnant woman and her infant (World Health Organization, 2014). The antenatal care (ANC) period presents a window of opportunity for pregnant women and their families to access services that prevent and reduce pregnancy related complications and dangers associated with labour and delivery (AbouZahr & Tessa Wardlaw, 2003). To reduce morbidity and deaths due to complications arising from pregnancy, most developing countries adopted a new model of ANC with a comprehensive package proposed by World Health Organisation (WHO) for delivering ANC services (Villar et al., 2001). In this new model, health professionals are required to deliver client-centred antenatal services to women. As recommended by the WHO, every pregnant woman is required to benefit from at least four quality ANC visits before delivery. During these visits, the woman and the unborn baby are

assessed for pregnancy risks and drugs such as sulphadoxine-pyrimethamine (SP) are given as prophylaxis against malaria. The woman also receives tetanus toxoid immunization and sexually transmitted infections (STIs) are treated. In addition, the woman is given iron and folic acid supplements to prevent anaemia and improve maternal and foetal outcomes (Dairo & Owoyokun, 2010; World Health Organization, 2002). Women and their families are also educated on benefits of spacing in births (AbouZahr & Tessa Wardlaw, 2003).

Many studies have reported that an overwhelming proportion of women in developing countries have received ANC services from a qualified health provider at least once during pregnancy. However, there is delayed access due to late initiation to accessing ANC (AbouZahr & Tessa Wardlaw, 2003; Oguntunde, Aina, Ibrahim, & Umar, 2010; Tadesse, Mulat, & Gashaw, 2014). Accessing ANC late during pregnancy may result in fewer visits by the woman before delivery. This practice has been found to be a common phenomenon especially among women in sub-Saharan Africa. The timing and utilization of ANC have been reported in many studies to be influenced by a number of demographic, socioeconomic, and cultural factors such as age of woman and religious denomination. In Nigeria and Bangladesh, Muslim women make more ANC visits than Christian women, whereas women who are above 25 years of age have more ANC visits than those below 25 years (Dairo & Owoyokun, 2010; Nguyena et al., 2012). Other studies also identified parity, cultural beliefs, low maternal educational status, marital status, cost in accessing services or paying for transportation, women's employment status, family size, exposure to information on health, previous history of obstetric complications to be contributory factors to the late initiation, minimal or non-utilization of ANC in developing countries (Kawungezi et al., 2015; Simkhada, Teijlingen, Porter, & Simkhada, 2008; Zeine, Woldie, & Ololo, 2010).

Delivery in a health facility by an SBA is noted as a vital indicator which measures maternal health and has been adopted by several international agreements and agencies. An SBA as defined by WHO is "an accredited health professional such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and new-borns" (World Health Organization, 2004). The availability of an SBA at birth has been identified to contribute to a drastic reduction in not only postpartum haemorrhage as a cause of maternal mortality but includes other obstetric causes (Nieburg, 2012). The importance of skilled delivery has been emphasized in the World Summit for Children held in 1990, the 1994 International Conference on Population and Development, the World Conference on Women in 1995, and the 1997 Safe Motherhood Initiative (Stanton, Blanc, Croft, & Choi, 2007). There is substantial evidence that delivery in health facilities by pregnant women is influenced by factors including ANC utilization, the cost of services, distance to health facilities, lack of transportation, family support, and the geographical location (Adanu, 2010; Esena & Sappor, 2013; Fekadu & Regassa, 2014). Delivery in a health facility in Ghana varies widely by region. Women in urban areas are more likely than their counterparts from rural settings to deliver in health facilities (Ghana Statistical Service, Ghana Health Service, & ICF International, 2015).

The death of a woman has been described to have cost implications to the household, community and the health of the surviving baby and therefore requires timely professional care, effective and efficient interventions during the period of pregnancy, labour and delivery to avert the situation. Though maternal mortality ratio in Ghana has decreased steadily over the decades, it is still high (380/100,000 live births) with variation across the regions and communities in Ghana. The

highest ratios of maternal and infant morbidity and mortality are recorded in regions in the northern part of the country (Biritwum, 2006; World Health Organization, Unicef, UNFPA, World Bank, & United Nations population Division, 2014).

The safe motherhood initiative was among several other interventions; free prenatal and delivery care, and high impact rapid delivery implemented in Ghana to promote maternal health (Okiwelu, Hussein, Adjei, Arhinful, & Armar-klemesu, 2007; Witter, Arhinful, Kusi, & Zakariah-Akoto, 2007). The focus of ANC under the safe motherhood initiative turned from giving special attention to pregnant women with complications, to giving attention to all pregnant women. This is based on the argument that women need access to quality obstetric care services always because complications resulting from pregnancy are often not expected and difficult to forestall with any degree of certainty (Jammeh, Sundby, & Vangen, 2011; Odoi-Agyarko, 2003). Emphasis was placed on care for the individual, birth and risk preparedness plans development and male involvement in maternal health care services (Odoi-Agyarko, 2003).

Despite the importance placed on timely utilization of free maternal health services by women in Ghana, late registration for ANC, and low delivery by skilled attendants in health facilities still persist especially in the Northern parts of the country. Adanu (2010) reported that it was not uncommon to find close to half (49%) of pregnant women in Ghana delivering at home in the absence of a skilled birth attendant. Furthermore, unlike their counterparts in the southern part of the country, pregnant women in northern Ghana were less likely to receive ANC and deliver in a health facility. Akazili, Doctor, Abokyi, Hodgson, & Phillips (2011) in their findings from a study conducted in northern Ghana corroborated the findings of Adanu when they reported that

only 44% of women register for ANC in the first trimester and 29% deliver in health facilities. Additionally, from the 2014 Ghana demographic and health survey (GDHS) report, 36% of women in the northern region of Ghana deliver in health facilities with skilled attendants (Ghana Statistical Service, Ghana Health Service, & ICF International, 2015). Also, 41% of pregnant women in the Upper East Region initiated ANC in the first trimester in 2014 (Awoonor-Williams, 2015).

The late registration at ANC and low coverage of health facility delivery need to be explored in-depth to gain a deeper understanding of the apparent or perceived barriers to early initiation and continuous use of ANC services and low deliveries in health facilities. This study sought to explore the reasons why pregnant women seek ANC late and the effects on place of delivery.

1.2 Problem statement

It is widely known that early initiation and continuous use of ANC contribute to better pregnancy and delivery outcomes. Women are more likely to deliver safely in health facilities if they access ANC services, and benefit from quality services in four and more visits (AbouZahr & Tessa Wardlaw, 2003; Bloom, Lippeveld, & Wypij, 1999). According to Campbell & Graham (2006), early utilization of ANC has immense benefits to the baby. These benefits include increased growth and survival, and reduced risk of infections. In similar studies, abruption of the placenta, giving birth to babies with neonatal sepsis and low weight of baby at birth, foetal and intrauterine deaths were common among women with no ANC visits or who had less than the required ANC visits (Raatikainen, Heiskanen, & Heinonen, 2007; Tuladhar & Dhakal, 2011). Geelhoed et al. (2006) in their cohort study on maternal and foetal outcomes after severe anaemia in pregnancy conducted in rural Ghana reported that inadequate ANC played a role in three of the five

maternal deaths recorded. This stresses the need for early ANC utilization by all pregnant women.

Since the passage of fee exemptions in Ghana, pregnant women access free ANC and delivery services from the first ANC visit to above three months after delivery, and are exempted from paying premiums to enrol unto the national health insurance scheme (NHIS) (Birungi, Nyarko, Askew, Ajayi, & Jehu-appiah, 2006; Ghana Statistical Service, Ghana Health Service, & Macro International Inc, 2007). The use of ANC services is high in Ghana. Over 90% of pregnant women have at least one ANC for their last birth and 87% made at least four visits before their most recent live birth (Ghana Health Service, 2015; Ghana Statistical Service et al., 2015). However, due to several reasons only 56.7% of pregnant women, a target which is below the national target of 80% were delivered by a skilled birth attendant in 2014 (Ghana Health Service, 2015). Studies conducted in Uganda and Nigeria also reported similar results that though most women (83% and 76% respectively) utilize ANC at least once during pregnancy, a few (38% and 12% respectively) delivered in health facilities (Amooti-Kaguna & Nuwaha, 2000; Oguntunde et al., 2010). This suggests that a significant proportion of those who even benefited from care during the ANC period proceed to deliver in places where there is inadequate obstetric care.

A trend analysis of facility data on ANC utilization in the Builsa South district from 2010 to 2014 show that, less than 40% of pregnant women initiate timely ANC contrary to the recommendations of WHO that ANC should begin in the first trimester of pregnancy (Abor & Abekah-Nkrumah, 2011; Builsa South District Annual Report, 2015). With the user fees exemptions on ANC and delivery currently in place, expansion and equipping of three Community-based Health Planning and Services (CHPS) centres located in distant and hard-to-

reach areas in 2013 to conduct deliveries, training of Community Health Nurses (CHNs) in midwifery to increase the number of SBAs in the health facilities, routine health education on the benefits of utilizing maternal health services among other interventions implemented in the district to promote the utilization of maternal health services, it is assumed that expectant mothers will take advantage of these strategies to initiate ANC early and deliver in health facilities where skilled attendants will be available to ensure safe delivery. This is however not the case. The question is "why this continuous trend in the area"? The reasons had to be investigated since they were unknown. This called for a study into the factors responsible for the low trend in ANC initiation and health facility delivery.

Several studies (Addai, 2000; Amoakoh-coleman et al., 2015; Gyimah, Takyi, & Addai, 2006) conducted in Ghana have focused on the factors influencing the use of maternal health services, ANC coverage and the number of ANC follow up visits made by a pregnant woman before delivery utilizing greatly existing demographic and health survey (DHS) data. However, considering the focus of these studies, there still exist some gaps in literature on the factors that influence the early or late initiation of ANC by pregnant women and their effect on place of delivery. The study conducted by Addai (2000) on the socio-demographic and cultural factors influencing the use of maternal and child health services in rural Ghana excluded the timing of ANC from the analysis. Similarly the time (gestational age) of onset of care by pregnant women was also not ascertained in the study by Gyimah et al., (2006). The study by Amoakoh-coleman et al., (2015) on the Predictors of skilled attendance at delivery among antenatal clinic attendants in Ghana is also limited in the sense that the study excluded pregnant women who did not utilize ANC services before delivery hence the possibility of under or over stating the prevalence of the outcome variable of interest (skilled attendance at delivery) in their study.

This study seeks to explore the determinants of early initiation of ANC and their effects on place of delivery among women in the Builsa South district of the Upper East Region using a mixed-method approach to data collection.

1.3 Justification of study

The goal of the health sector of Ghana is to ensure a healthy and reproductive population capable of reproducing itself safely. The sector focuses on reducing the increased risk of and burden of diseases, deaths and deformity among the poor and vulnerable groups especially women and children. Improving the health of women through access to basic health services among others is very critical to saving lives of the thousands of women who die yearly due to the preventable complications from pregnancy and child birth. This study thus was justified for the following reasons.

First, there is limited information available as no known research has been undertaken in the study area to determine the factors militating against the use of maternal health services by women despite the free Maternal Health Policy introduced by the Government of Ghana in 2003. This study therefore will unearth the factors which are contributing to the late initiation of ANC and low health facility delivery in the district using both quantitative and qualitative data collection methods. The findings will enable the Builsa South district health services to appropriately plan and implement feasible and cost effective maternal health interventions including appropriate behaviour change communication strategies geared at promoting optimal use of maternal health care services in the district. Additionally, the findings will be useful in formulating and revising strategies geared at promoting maternal health care by the Ghana Health Service (GHS).

Also, the findings of this study will add to existing literature in Ghana on factors that can influence the timing of antenatal care initiation and place of delivery by pregnant women.

1.4 Objectives

1.4.1 Main objective

The study aimed to examine the determinants of antenatal care first trimester initiation among pregnant women in the Builsa South District and their effect on place of delivery

1.4.2 Specific objectives

The specific objectives were:

- To assess factors influencing ANC first trimester initiation
- To determine the proportion of women who delivered in health facilities
- To examine the effect of ANC attendance on place of delivery

1.4.3. Research questions

- What factors influenced the first trimester initiation of antenatal care among women in the Builsa South district?
- What proportion of women delivered in health facilities?
- How does the number of ANC visits affect the place where a pregnant woman delivers?

1.5 Conceptual framework

1.5.1 The behavioural model of health services use

The behaviour model of health services use by Andersen (1995) stipulates that the use of health services by individuals is modelled by their predisposition to the use of such services, factors which promoted or inhibited the use of services and their need for health care. Each component

of the model independently influenced the use of maternal health services. It is well established that, the decision to use maternal health services is shaped by demographic characteristics such as age, marital status, educational level, religion, birth order, and ethnicity.

How age influences the use of maternal health services can be argued in two directions. Age may be seen as an accumulation of knowledge on the use of services. However, the knowledge that may be possessed by older women may be deeply rooted in traditional beliefs whereas younger women may have been exposed to modern knowledge on health. Thus relative to older women, younger women may be more likely to utilize maternal health services. Another factor is the marital status of the woman. Unmarried women and divorced/separated women may have more autonomy in decisions regarding their own health relative to women who are staying with their husbands or women who may require approval of their partners before seeking care from health facilities (Gabrysch & Campbell, 2009).

Maternal education in part determines the socioeconomic status and autonomy of the woman. High maternal education may imply a greater autonomy in the decision making power of the woman which increases the possibility of the woman taking confident decisions on the use of services promoting maternal health. Maternal education also relates to occupation and income in that compared to a woman without education, a more educated woman has higher chances of getting a well-paid job (Gabrysch & Campbell, 2009). High maternal education may also increase the woman's access to, and understanding of information relating to health (Deo et al., 2015).

The parity of the woman may also affect the use of maternal health services. Relative to women with single previous live birth, those with high number of previous live births may think they

have acquired enough experience in childbirth and less likely to use maternal health services especially if she has no previous complications with pregnancy and delivery. Maternal occupation and religious denomination are both factors that influence the use of maternal health services (Dixon, Tenkorang, Luginaah, Kuuire, & Boateng, 2014).

The framework also explains that even if women are predisposed to maternal health services, both community and personal enabling conditions must be present for utilization to take place. For example health facilities and personnel should be available where people live and work. Also people must be able to obtain and use the services. The health insurance status and distance to health facilities, exposure to information on health, previous experience with the use of health services, and advice from significant others such as mothers-in-laws, community health volunteers, traditional authority, health workers among others, are considered as enablers of health services use.

Distance to health facilities influences how women seek care from these facilities. Women are more likely to recourse to traditional methods of health care available in their communities, for example the use of traditional birth attendants (TBAs) if the nearest health facility is physically inaccessible due to distance. The effect of distance is compounded by the absence of transportation especially in rural communities. In addition, exposure to health information on maternal health through media and health education programs may increase the woman's knowledge on modern health practices thus making the woman more likely to use maternal health services (Gabrysch & Campbell, 2009). Also, previous experience with the use of health services may influence the decision on using such services again (Arthur, 2012). Women who had a previous unpleasant experience with the use of health services are more likely to change or resort to traditional services available to them. Poor health staff attitude and poor quality of care

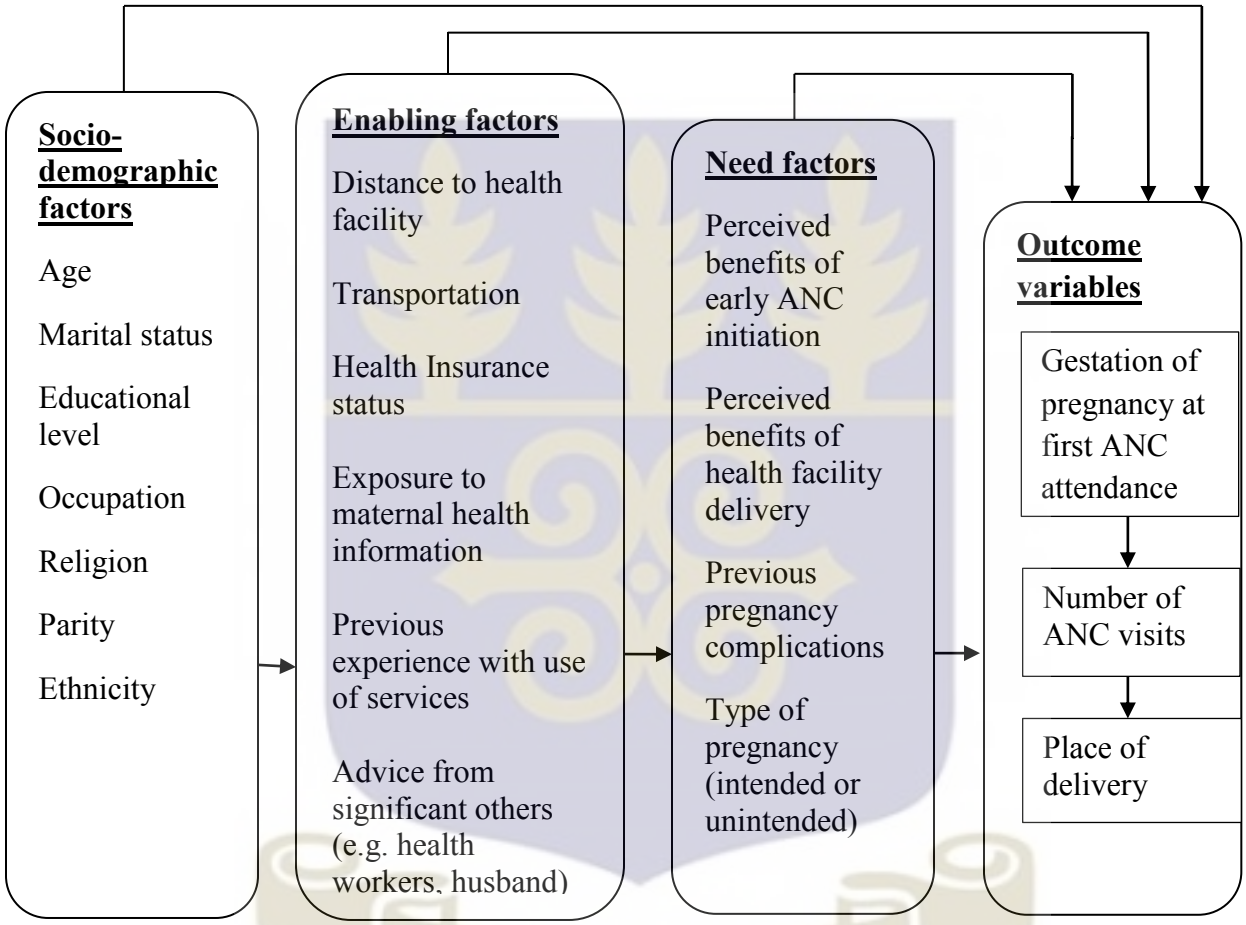
may be implicated in this situation. Repeated use of maternal health may be associated with satisfaction from previous use. Finally the advice from significant others may also influence how women use maternal health services. Some women may use maternal health services because they are told to do so by people of a certain family, social and economic status including health workers. Adolescent girls and unmarried women may be staying with and taken care of by their parents thus making them likely to adhere to advice from these parents on the use of maternal health services.

The need to seek care by a pregnant woman may be directed by the cultural perceptions harboured by the woman on the need for health care. Women on the one hand may attach less seriousness to seeking antenatal care if they perceive that pregnancy is normal and if a previous delivery at home was successful without complications. However if on the other hand the woman understands that though pregnancy is not a disease, there are associated dangers which are not easily predicted and therefore requires continuous check-ups, she may adopt a positive attitude towards the use of ANC services and delivery in a health facility. The same is true for a woman who had complications with previous pregnancy and delivery. The type of pregnancy, whether wanted or unwanted may influence how a woman seeks care in health facilities. Women who do not want a pregnancy may not have the interest to invest time and money in caring for the pregnancy thus less likely to use modern health facilities. However, a woman who expects a pregnancy will be more likely to utilize ANC services early due to the high expectation for a safe delivery.

Therefore in identifying factors influencing the early or late initiation of ANC and non-use of health facility delivery care by women, there is the need to consider data on the individual

characteristics of the woman, the factors that enable the woman to access ANC and delivery, and the woman's perceptions of pregnancy and maternal health services hence the adoption of the behaviour model by Andersen (1995) in this study.

Figure 1: Conceptual framework for Antenatal care initiation and place of delivery



Source: Adapted from the Behavioural model of health service use (Andersen, 1995)

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter explores studies undertaken by various writers on the topic

2.1 ANC Attendance and delivery place

The care rendered to a woman during pregnancy is referred to as ANC and includes among others, the documentation of medical history, individual needs assessment, guidance and counselling relating to pregnancy and delivery, screening tests and risk assessment to identify complications that are detrimental to the health of the mother and the unborn baby (Esena, 2014). ANC coverage is a measure of access and use of care during pregnancy and regardless of the quality of ANC, any delivery can result in unexpected complications hence there is the need for skilled attendants for safe delivery (Ghana Statistical Service et al., 2015).

The use of ANC during pregnancy is strongly associated with delivery in health facilities in Tanzania, Malawi, Kenya, Ghana and Burkina Faso (Stephenson, Baschieri, Clements, Hennink, & Madise, 2006). A study in Kenya concluded that starting ANC early, that is within the first trimester is a precursor to delivery care as women who initiated ANC in the first trimester of pregnancy were more likely to deliver in a health facility compared to their counterparts who used ANC services after the first trimester (Ochako, Fotso, Ikamari, & Khasakhala, 2011).

In Asia and Africa, women who attain four and more ANC visits have an increased likelihood of delivering in health facilities with skilled birth attendants (Stephenson et al., 2006; Tuladhar & Dhakal, 2011). However, relative to women reporting four and more ANC visits, home delivery is about five times higher among women with no ANC attendance in southern Asia (Wagle, Sabroe, & Nielsen, 2004).

2.2 Socio-demographic characteristics influencing ANC initiation and delivery place

Studies have reported that the use of ANC and health facility for delivery is predicted by demographic characteristics such as age, parity, educational level, ethnicity, marital status, religious background and occupation (Gurmesa, 2009; Kawungezi et al., 2015; Thuy Trinh, Dibley, & Byles, 2007). The roles played by these factors in predicting the use of these maternal health services are discussed below.

Maternal age could be used as an index for the woman's accumulated knowledge on the use of health care services, which may have a positive influence on the use of maternal health services especially ANC and delivery in health facilities (Abor & Abekah-Nkrumah, 2011). A study by Gross, Alba, Glass, Schellenberg, & Obrist (2012) revealed that relative to older women, adolescent girls initiate ANC earlier in the first trimester. Similar results were found in a study in Ethiopia on the effect of unintended pregnancy on the use of maternal health services (Wado, Afework, & Hindin, 2013). On the contrast, studies in Nigeria and Kenya reported that, comparatively girls younger than 19 years of age did not utilize ANC services (Iyaniwura & Yussuf, 2009; van Eijk et al., 2006). Age however has no significant influence on the time of initiation of ANC in Nigeria (Oguntunde et al., 2010). Ikamari (2004) reported that younger women in Kenya were more likely than older women to deliver in health facilities. This is similar to the findings of Mpembeni et al. (2007) in their study in Tanzania on the use of ANC and delivery services where majority of the women who delivered in a health facility were below 20 years of age. A study in urban Ghana however revealed that women aged 35-39 years were more likely to deliver in health facilities (Atinga, Baku, & Adongo, 2014). This finding from the study needs to be interpreted with caution because the effect of birth order of the woman on the delivery place was not ascertained. Also considering the fact that the study area is urban, the

findings might not be representative of the true population due to the small sample of pregnant women (363) used in this study.

Higher maternal education enables women to adopt a positive attitude towards receiving information on maternal care which increases women's knowledge on the benefits of seeking health care. In addition women are also able to take decisions on their own with much confidence regarding the use of formal health services (Chakraborty, Islam, Chowdhury, Wasimul, & Hanum, 2003; Gabrysch & Campbell, 2009). Several studies have reported a positive relationship between maternal education and the use of maternal health services (Bina & Mathews, 2009; Gurmesa, 2009; Hazemba & Siziya, 2002). High education was found to be associated with the initiation of ANC in Nigeria, with women who had higher education initiating ANC in the first trimester as recommended (Oladokun, Oladokun, Morhason-Bello, Bello, & Addokum, 2010). The effect of women's literacy extends beyond the use of ANC services. Wado et al. (2013) in their study of Ethiopian women identified maternal education as a predictor of antenatal and delivery in a health facility. In Kenya, Ghana and Malawi, women who attained secondary and higher education are more likely to deliver in a health facility compared to those who had primary or less education (Stephenson et al., 2006). However, a study conducted in Senegal reported that the educational level of a woman did not influence the place where she will deliver (Faye, Niane, & Ba, 2011).

Gabrysch & Campbell (2009) reported that the marital status of a woman may influence the utilization of maternal health services in two ways; through its influence on the woman's autonomy and through an improved socioeconomic status. However, there are contradictory findings on the effect of marital status on the use of ANC and delivery in a health facility.

Raatikainen, Heiskanen, & Heinonen (2007) in their study on ANC and pregnancy outcomes in Finland found that women who did not attend ANC or made less than the recommended visits were not married. In contrast to these findings among Finn women, in Tanzania single women were more likely to deliver in health facilities compared to married women (Mpembeni et al., 2007). Another study in Tanzania by Gross et al. (2012) found no association between the marital status of a woman and the use of maternal health services. This finding is supportive of findings reported by Ndyomugyenyi, Neema, & Magnussen (1998) among Nigerian women. Ivorian women in polygamous marriages and women who were separated from their partners were less likely relative to women in monogamous marriages to report a delivery in a health facility. Such was the case in Kenya among single or separated women (Stephenson et al., 2006). However another study in Kenya also reported that married women were less likely to use health facility for delivery (Kitui, Lewis, & Davey, 2013). A study in Ghana reported that unmarried women, compared to married women had a higher chance of not initiating ANC in the first trimester (Yeboah, 2012).

Studies in Africa have reported a positive association between maternal employment and ANC initiation and delivery in health facilities (Chama-chiliba & Koch, 2013; Dixon et al., 2014). In Ghana, a high proportion of women who are engaged in professional or sales activities are more likely than housewives and women engaged in agricultural activities to deliver in health facilities (Addai, 2000).

The first delivery is normally considered very challenging to the woman since she has no past experiences on childbirth (Navaneetham & Dharmalingam, 2002). Women with one birth may consider themselves inexperienced with childbirth; the opposite is true for women with many

births. Multiple birth order or higher parity may be seen as accumulated experience in childbirth. Thus a multiparous woman is more likely not to see the need for early initiation of ANC or delivery in a health facility, especially if she did not encounter any difficulties in the previous deliveries (Stephenson & Tsul, 2002). Oladokun et al. (2010) and Oguntunde et al. (2010) in their studies in Nigeria reported conflicting findings on the influence of parity on ANC and delivery in health facility. As reported by Oladokun et al. (2010), women with lower parity initiated ANC earlier. Parity was however not a factor determining ANC initiation and delivery in health facilities in the findings of Oguntunde and his counterparts (Oguntunde et al., 2010). In Zambia, women with three or more children were 8% more likely to deliver in a health facility, relative to women with one child (Hazemba & Siziya, 2002). Navaneetham & Dharmalingam (2002) reported that women with two or less children did not significantly differ in ANC utilization. However, ANC use was rather influenced by women with four or more children as the percentage of receiving ANC was reduced by 60%. In Kenya and Senegal, low utilization of maternal health services was common among women with high number of birth orders. Home delivery was prevalent among women with three or more children in Senegal (Faye et al., 2011; van Eijk et al., 2006) similar to what has been reported by Magadi et al. (2000). The influence of parity on ANC initiation and health facility delivery therefore has to be studied further to add to existing knowledge.

2.3 Religion, Ethnicity and ANC initiation and delivery place

Religion may be modelled by different belief systems which to some extent influence how women use health services. Abor & Abekah-Nkrumah (2011) reported in their study that Christian women in Ghana were more likely to use ANC services compared to women from the other religious denominations. These findings are supported in a report from other studies in

Ghana and Nigeria which revealed that Muslims and traditionalists start ANC late, and are more likely to have fewer visits (Dixon et al., 2014; Iyaniwura & Yussuf, 2009). As reported by Addai (2000) and Gyimah, Takyi, & Addai (2006), Catholic women are more likely to use maternal health services compared to traditional and Muslim women. The likelihood of a Muslim woman or a woman who did not belong to any religious group in Kenya to deliver in health facility is very less compared to Christians and Protestants (Kitui et al., 2013). However, in Tanzania and Kenya, Catholic women were less likely than Protestant women to deliver in a health facility (Stephenson et al., 2006).

Ethnicity is an inconsistent predictor of maternal health services utilization due to the cultural variations existing among various traditions (Moyer & Mustafa, 2013). In Kenya, though women from the Kalenji ethnic origin start ANC early compared to Kikuyu and Mijikenda women, relative to Kikuyu women, Kalenji women were more likely to deliver at home without assistance of an SBA (Magadi, Diamond, & Rodrigues, 2000; Magadi, Madise, & Rodrigues, 2000). A study in the upper east region of Ghana reported that Kassena women were more likely to deliver at health facilities with SBA relative to Nankana women (Sakeah et al., 2014). Akan women were more likely than women from other ethnic groups in Ghana to use maternal health services (Abor & Abekah-Nkrumah, 2011). Though the sample used in their study was very representative nationally, the results could be influenced by the fact that Akan forms the predominant ethnic group in Ghana (Ghana Statistical Service, 2013). Thus the inclusion of ethnicity as an indicator in this study will reveal further how ethnicity influences the use of maternal health services in the northern sector of Ghana.

2.4 Distance and ANC initiation and delivery place

In remote communities, physical access to health facilities is a major factor which determines how people seek health care (Crissman, Engmann, Adanu, Nimako, & Moyer, 2013; Gabrysch, Cousens, Cox, & Campbell, 2011; Sychareun et al., 2015). The effect of distance is stronger in the absence of transport and inaccessible roads (Thaddeus & Maine, 1994). According to Babinard & Roberts (2006), women are more likely to begin ANC after twelve weeks, attain less than four visits or deliver outside the health facility due to challenges resulting from long walking distances to health facilities and absence of transportation to ease travelling to seek care from trained personnel.

Studies in Kenya identified that distance negatively influenced the proportion of women who use ANC services and health facility delivery (Ikamari, 2004; van Eijk et al., 2006). In Nepal, women who lived more than 5 km away from a health facility are more than five times likely to deliver at home relative to women who lived within 5km from a health facility (Tuladhar & Dhakal, 2011; Wagle et al., 2004). Similarly Målqvist, Sohel, Do, Eriksson, & Persson (2010) reported that, in Vietnam, the proportion of women delivering in health facilities decreased with an increased distance from health facilities. In Senegal, home delivery among pregnant women resulted from distance (more than 5 kilometres) and the lack of transport to the health facility (Faye et al., 2011).

A study in urban Ghana reported that 43.3% of pregnant women who did not deliver in health facilities (where skilled attendants are available) cited transportation challenges as their reason for not using a health facility for delivery (Esena & Sappor, 2013). This study was conducted in

an urban setting which cannot be compared to the study area (Builsa district) which is predominantly rural with regards to availability and access to transportation.

2.5 Type of pregnancy (intended or unintended) and ANC initiation and delivery place

Whether a woman wants a pregnancy or not may be determined by her age, the number of births and whether she is married or not (Gabrysch & Campbell, 2009). Women who have no intention of getting pregnant may less likely invest their time on ANC visits and delivery in health facilities though care may be received for the woman's own health benefits rather than the child (Raghupathy, 1996).

In Tanzania, women delayed in initiating ANC partly because they recognize pregnancy late. This could possibly be because they did not expect to be pregnant (Gross et al., 2012). In a qualitative study by Haddrill, Jones, Mitchell, & Anumba (2014), women delayed initiating ANC because it was not intended, thus they had to wait for a longer period to confirm their pregnancy status. In Ethiopia, intended pregnancy is associated with ANC attendance but not delivery in a health facility (Wado et al., 2013).

In Kenya the chance that a woman will deliver at home is increased by over 35% if the pregnancy is not intended (Magadi et al., 2000). In Indonesia, underutilization of ANC services by pregnant women was significantly predominant among women who did not intend becoming pregnant at the time of pregnancy (Titaley, Dibley, & Roberts, 2010). Ghanaian women with unintended pregnancy were less likely to deliver in a health facility (Mills, Williams, & Adjuik, 2007).

2.6 Exposure to maternal health information, perceived benefits/needs and ANC initiation and delivery place

Pregnancy may be seen as a natural process, hence women may not see the importance of ANC (Overbosh, Nsowah-Nuamah, van den Boom, & Damnyag, 2004). As reported by Gross et al. (2012) more than half of pregnant women in Tanzania attend ANC because other women also attended, or were told by health workers to attend. This implies that the use of maternal health services may be regarded as a norm and not for the benefits the woman will derive from a positive health behaviour (Gross et al., 2012).

The perceived benefits of ANC or delivery in a health facility may be decided by the knowledge of the mother on the dangers associated with not using ANC services, delivery in health facilities and the life-saving opportunities available in health facilities (Gabrysch & Campbell, 2009).

In Nepal, women who are exposed to information on health through media were more likely to attain the recommended four and more ANC visits (Deo et al., 2015). In Mali, women whose knowledge on ANC was enhanced through contacts with health staff during ANC were more likely to deliver in health facilities (Gage, 2007). The same pattern was reported in Zambia among women who were aware of the dangers of pregnancy and delivery (Stekelenburg, Kayanamina, Mukelabai, Wolffers, & van Roosmalen, 2004). Hailu & Berhe (2014) in their study among Ethiopian women found that relative to women who did not receive information on maternal health, women who were exposed to information on maternal health were over eight times more likely to give birth in a health facility. However, Indonesian women were more likely to use less of ANC services if there reported less exposure to mass media or lack knowledge about obstetric complications (Titaley et al., 2010). Ghanaian women with exposure to mass

media, that is listening to radio, watching television and reading newspaper were more likely to deliver in health facilities relative to unexposed women (Mills et al., 2007).

2.7 Previous medical complications and ANC and delivery place

Medical complications during previous pregnancy, delivery or still births may compel a woman to seek ANC early, and attain more visits during which she may be recommended by health staff to deliver in a health facility (Gabrysch & Campbell, 2009).

A study in Tanzania unearthed that women who experienced previous complications during pregnancy attended ANC two weeks earlier, when compared with women without any history of pregnancy-related complications (Gross et al., 2012). In another study in the same country, pregnant women who had a previous illness and complications in their previous pregnancy were still less likely to deliver in health facilities (Mpembeni et al., 2007).

In Nigeria however, Oladokun et al. (2010) in their study identified a positive association between previous still births and the use of maternal health services, with previous medical complications reported as not having any significant influence on the use of maternal health services. Navaneetham & Dharmalingam (2002) also reported that still birth from a woman's previous delivery did not influence ANC utilization. A study by Titaley, Dibley, & Roberts (2010) in Indonesia reported that women who did not experience any pregnancy complication significantly underutilized ANC services.

In Ghana, childbirth is perceived as being a natural phenomenon and doesn't require pregnant women to utilize maternal health care. ANC attendance is significantly influenced by the "sickness status" of a pregnant woman thus pregnant women who considered themselves not sick

attended ANC less and did not need to deliver in a health facility with skilled birth attendants (Asundep et al., 2014; Mills et al., 2007). There is also evidence that over 95% of women in Ghana who had a previous caesarean section were more likely than those who did not have that complication to utilize a skilled attendant at delivery (Amoakoh-coleman et al., 2015). This result by Amoakoh-coleman et al. (2015) may be under or over reported because participants were drawn from the 2008 GDHS therefore only surviving women were interviewed.

2.8 Previous experience/use of health services and ANC initiation

A woman's previous experience with the use of maternal health services may influence her current health seeking behaviour because some determinants of ANC and delivery care utilization for example, the woman's education may still have the same influence as it did previously (Tadesse et al., 2014). Poor health staff attitude has been mentioned in several studies as a factor that dissuade women from using the services they previously utilized (Amooti-Kaguna & Nuwaha, 2000; D'Ambruose, Abbey, & Hussein, 2005; Mrisho et al., 2007; Paul & Rumsey, 2002).

Findings from a study in Ghana also point out that women are less likely to use services after a previous unpleasant experience (Arthur, 2012). In Malawi, Kenya, Tanzania and Ivory Coast, women who had a previous delivery in a health facility are more likely to deliver again in a health facility, possibly due to a feeling of satisfaction with the services (Stephenson et al., 2006).

2.9 National Health Insurance enrolment status and ANC initiation and delivery place

The removal of user fees in maternal health care aims at contributing to improved access by reducing financial barriers to health seeking behaviour by women. A study in Kenya revealed that women with health insurance delivered in a health facility (Kitui et al., 2013).

Health insurance status has been reported in studies in Ghana to have a strong association with the use of health services (Arthur, 2012; Nketiah-Amponsah, Senadza, & Arthur, 2013; Owoo & Lambon-quayefio, 2013). This association is manifested in the number of ANC visits a woman makes. A study by Dixon et al. (2014) reported that women with health insurance made more ANC visits than those without health insurance, which is similar to findings by Singh et al. (2015) and Thuy Trinh et al. (2007). The time of initiation of ANC was however insignificantly associated with health insurance status. Singh et al. (2015) in their study further reported that women who had valid insurance at time of pregnancy are 25% or more likely to deliver in health facilities.

The enactment of fee exemptions for pregnant women in accessing ANC services and free delivery services are supposed to contribute to increase in early start of ANC and delivery in health facilities. Thus the inclusion of health insurance status in this study was to add to literature the effect of a woman possessing a valid health insurance at the time of pregnancy on the time the woman reports to a health facility to start receiving ANC services and where the woman will deliver thereafter.

The review of literature suggest that socio-demographic factors, geographical and financial factors, cultural perspectives of pregnancy and delivery in health facility affect ANC initiation

and the use of delivery care in health facilities by women thus the inclusion of these factors in this study. This study will add to existing literature by offering an in-depth explanation into how some of these factors affect ANC initiation and health facility delivery by employing a mixed-method approach to research.

This chapter explored the various studies conducted by other writers on the topic and also highlighted some gaps in knowledge from some of the studies. The next chapter will describe the research processes that were employed to meet the objectives of this study.

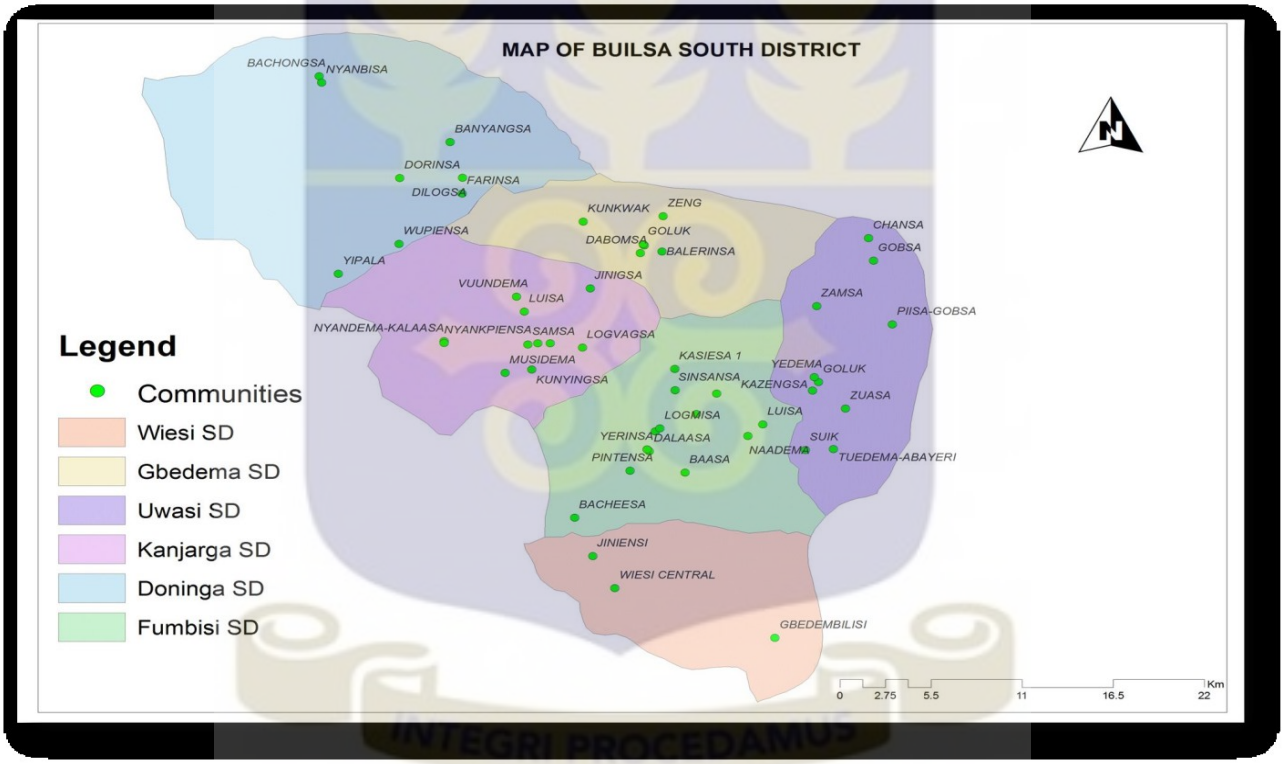
CHAPTER THREE

3.0 METHODOLOGY

This chapter explains the research processes used in this study and include the study design, the sample and sampling techniques used, and the type of analysis employed to meet the objectives of the study.

3.1 Study area

Figure 2: Map of Builsa South District showing the sub-districts (SD) and communities



Source**:** Builsa South District Health Administration (2015)

The study was carried out in June 2016 in the Builsa South district located in the Upper East Region. The district is predominantly rural and lies within the Guinea Savannah woodland of Ghana sharing boundaries with the Builsa North and Mamprugu Moagduri districts in the North and South, Kassena-Nankana Municipal and Sissala districts in East and South-west

respectively. As projected from the 2010 Ghanaian population and housing census, the district has a population of 38,298. Women of child bearing age form 24% (9,192) of the total population of the district. There are two main climatic seasons – a short rainy season which last for the few months in a year and a dry season. The peak rainy season lasts from August to September, during which many communities are inaccessible due to floods. The dry season Starts from November to May with the harmattan winds peaking in January and February. The main occupation of the people is peasant farming.

Concerning health infrastructure, the district has three health centres and fourteen Community-based Health Planning and Services (CHPS) zones spread across six sub-districts (Fumbisi central, Doninga, Gbedema, Uwasi, Wiesi and Kanjarga sub-districts). The availability of health centres and CHPS compounds which provide maternal health services in the communities facilitate access to ANC and delivery services. The settlement pattern is generally dispersed and so the poor road network in the district makes access to health care services by some communities very difficult especially in the rainy season when these communities become inaccessible (Builsa South District Annual Report, 2015).

The district has twenty four primary schools, fifteen junior high schools (JHS) and one senior high school (SHS) (Builsa South District Annual Report, 2015). The predominant ethnic group is Builsa with few Mamprusis and Sissalas. Fulani nomads are also found in sections of the district. Christians and Muslims are the dominant religious groups in the district.

3.2 Study design

A community–based cross sectional study design was employed by the researcher to achieve the study objectives. This method was chosen because it enabled the researcher to collect data on

both the independent and outcome variables simultaneously, and it is comparatively quicker and cheaper to carry out (Mann, 2003). Both quantitative and qualitative data collection techniques were used among women in their child bearing age in the study district. The qualitative method offered respondents the opportunity to speak about their own experiences. The qualitative data were used to explain the quantitative results as the information provided in-depth explanation to the reasons behind the late initiation of ANC and low health facility delivery by pregnant women in the district (Bricki & Green, 2007).

3.3 Study population

The study population for both quantitative and qualitative methods were women in their reproductive age (15-49 years) who have ever delivered and were resident in the district. Structured interviews and focus group discussions (FGDs) were conducted with selected participants.

3.3.1 Inclusion criteria

Only women who delivered in the past six months preceding the survey and were resident in the Builsa south district were included in the study. To minimize recall biases, selected participants were mentally sound and had their ANC record book for the most recent pregnancy available to confirm obstetric history. Participants also consented to participate in the study before they were interviewed.

3.3.2 Exclusion criteria

Any woman resident in the Builsa South District who falls outside the age group of 15-49 years and has not delivered in the past six months preceding the survey and without an ANC record book were excluded from participating in the study.

3.4 Sampling

A multi-stage sampling technique was used to select participating communities and study respondents. First in the quantitative method, lottery method was used to randomly select one community in each sub-district. A total of six communities (Bachongsa, Samsa, Zamsa, Wiesi central, Gbenaasa and Fumbisi central) were selected to participate in the study. To get the number of participants required in each selected community, the total sample size of four hundred and twenty three for the study was allocated proportionally to the selected communities based on the population of women 15-49 years in the community. At the community level, a list of all households with women in the reproductive age who have delivered in the past six months preceding the survey was populated from existing filariasis registers and child welfare clinic registers in the health facilities serving the selected communities. This was done with the support of the community health nurses (CHNs) and community health volunteers (CHVs). Systematic random sampling was used to select the participating households from the existing sampling frame of households by dividing the total number of households in a participating community by the number of households required in that community to get a sampling interval (n). A household was selected randomly within the sampling interval as the starting point using lottery. The subsequent households were selected by adding the n^{th} term to any selected household. Only women from the selected households were interviewed. Whenever a selected household had more than one eligible respondent, one respondent was selected using lottery method.

Four communities (Samsa, Zamsa, Bachongsa and Gbenaasa) out of the six participating communities were selected randomly through lottery for the FGDs. Participants in the FGDs were purposively selected based on age and personal experiences with ANC and delivery through the support of a potential gatekeeper (CHV) (Palys, 2008). Access to the gatekeeper was

via an introduction by the District Director of Health Services (DDHS). A discussion was held by the researcher with the gatekeeper on the details of participants required for the study. The gatekeeper also assisted the researcher to obtain access to study participants, their cooperation, and fostered mutual trust of participants. The group composition was done taking into consideration age so that younger women may not feel uncomfortable sitting among older women.

3.4.1 Sample size

A Sample size (N) of four hundred and twenty three women for the quantitative method was calculated using the single population proportion formula, $N= (Z^2_{1-\alpha/2}) P (1-P)/ d^2$ because the outcome variables are categorical (Aday & Cornelius, 2006) . "P" is the estimated proportion of women who initiate ANC in the first trimester, and "d" is the acceptable margin of error. The following assumptions were made: proportion of first trimester registrants is 49% based on findings from a previous study in Ghana (Abor & Abekah-Nkrumah, 2011), d is 5% , $(Z_{1-\alpha/2})$ at 95% confidence interval is 1.96 and an expected non-response rate of 10%. Four hundred and thirty-one completed questionnaires were returned.

For the qualitative study, each FGD consisted of an average of eight participants (33 discussants in total). The small number of participants enabled the researcher to attain exhaustive discussion of issues relating to the topic while being able to the handle the group dynamics (Wong, 2008).

3.5 Variables

3.5.1 Dependent variables

The main dependent variables in the study were gestational age of pregnancy at first ANC attendance defined as the age of pregnancy (in months) of the woman when she started ANC, the number of ANC visits attained before delivery and the place of delivery. The information on the

gestational age of pregnancy at first ANC visit was gotten by asking the woman the question "At what age (in months) of pregnancy did you start ANC for you recent pregnancy". The response was validated from the ANC record book. The information on the number of ANC visits attained before delivery was from the question "How many visits (excluding visits for own medical care) did you make before delivering [name of child]". The response was also confirmed from the ANC book. The information on the place of delivery was obtained from asking the woman the question "Where did you deliver [name of child]". This response provided was confirmed with what has been documented in the child's road to health record book (child welfare clinic card).

These variables were dichotomized for the analysis; first, gestational age of pregnancy at first ANC attendance was categorized into first trimester (within 12 weeks) coded as "1" and second trimester and beyond (after 12 weeks gestation) coded as "0". Second, the number of ANC visits was categorized into less than four visits (fewer visits) coded "0" and 4 and more visits (recommended visits) coded as "1" and finally, the place of delivery was categorized into health facility if the woman delivered in a hospital, clinic, health centre, CHPS, maternity home coded as "1" and home delivery if the woman delivered at home or any place other than in a health facility coded as "0".

3.5.2 Independent variables

The independent variables are age, marital status, parity, educational level, occupation, religion, ethnicity, validity of health insurance card of the woman during recent pregnancy, exposure to information on ANC and exposure to information on delivery care. These variables were chosen based on findings from previous studies, published literature and field observations. During the analysis the variable age (in years) was regrouped as "15-19", "20-24", "25-29", "30-34", "35-

39" and "40 and above", exposure to information on ANC was categorized into "yes" or "no" and exposure to information on delivery care was also categorized into "yes" or "no".

3.5.3 Variable definition in study

The table below gives the definition of the variables used in this study.

Table 1: Variable definition table

Variable name	Definition in study	Variable type
Age	Self-reported age of respondent at last delivery	Continuous
Marital status	Self-reported marital status as at interview date (Single; Married; Cohabiting; Separated; Widow)	Categorical
Occupation	Current occupation as at interview date (Unemployed; Farmer; Trader/Business/Artisan; Governmental employee; Private sector employee; Others)	Categorical
Educational level	Self-reported highest educational level attained (No education; Primary; middle/Junior High School; Secondary; Tertiary)	Categorical
Religion	Religious denomination of woman at interview date (Traditional; Christian; Muslim; Others)	Categorical
Parity	Number of living born children by the woman (1; 2; 3; 4; 5-7; 8-9; 10+).	Categorical
Ethnicity	Local ethnic group (Builsa; Kantoosi; Mamprusi; Kassena; Sissala; Others)	Categorical
Validity of health insurance card	Having a viable national health insurance registration at time of pregnancy and delivery of index child (Not valid health insurance; Valid national health insurance)	Categorical
Exposure to information on ANC	Hearing information on ANC practices from one or more of the following sources radio, television, health workers, community volunteers, others	Categorical
Exposure to	Hearing information on delivery practices from one or	Categorical

information on delivery care	more of the following sources radio, television, health workers, community volunteers	
Gestation of pregnancy at first ANC attendance	Number of months pregnant at first ANC visit (1; 2; 3; 4; 5; 6; 7 and above) as indicated woman's ANC book	Categorical
Number of ANC visits	Number of ANC follow up visits the woman made during her last pregnancy before delivery (None, 1; 2; 3; 4; 5 and more visits) as indicated in woman's ANC book	Categorical
Place of delivery	Place where woman delivered for last pregnancy (Health facility ; Home; Others) as indicated in child's health record booklet	Categorical

3.6 Data collection tools

Quantitative information was collected using a structured questionnaire (see appendix 2a*)* in English which comprised of both opened and closed ended questions. The questionnaire was administered in the local language (Buili) on any respondent who did not understand English or chose to communicate in the local language. Data collected included the socio-demographic characteristics of respondents, their knowledge on benefits of ANC and delivery in health facilities, and barriers to ANC and delivery care utilization. Ten data collectors with at least secondary education who were fluent in both English and Buili and who were familiar with the customs of the area were employed to assist in the data collection process. Six health workers with similar work experience and experience in maternal health were assigned to supervise the data collection process and perform checks on the completed questionnaire for quality. A two day training was undertaken by the researcher for both data collectors and supervisors to ensure the quality of the field exercise. The training aimed at equipping the data collectors with in-depth

understanding of the questions and interview process. It was centred on translating the questions from English to Builli, how to fill the questionnaire, simulation interviews and a field pre-test in a community outside the study district.

The accuracy of quantitative variables such as the gestational age at registration and the number of ANC visits attained by the participant before delivery were ensured by cross checking the information provided by the participant with what has been documented in the participant's ANC record book. The index child's road to health book was used to confirm the place of delivery.

Qualitative data on ANC and delivery care knowledge and practices in the communities were collected through FGDs using a discussion guide (see appendix 2b). Unlike in-depth interviews, FGDs gathered the views of many respondents in a systematic manner and at the same time. Also, the FGDs allowed participants to share their experiences, attitudes and ideas on ANC initiation and the utilization of delivery services. Additionally, the FGDs allowed for a consensus on the opinions or perceptions held by participants. Finally, they promoted interaction and participation because participants were able to recall past events based on experiences shared by other participants and therefore built upon each other's responses (Lindolf & Taylor, 2011; Wong, 2008). Compared to structured interviews, the flexibility of the discussion guide enabled the researcher to explore further relevant issues that participants raised which were not anticipated to be important by the researcher (Gill, Stewart, Treasure, & Chadwick, 2008).

3.6.1 Pre-testing of data collection tools

The quantitative questionnaire was pretested in a purposively selected community (Chiok) under the Builsa North district on 50 (approximately 11% of the total sample) eligible women while the FGD guide was pre-tested on nine purposively sampled eligible women from the same

community. The pre-test aimed at understanding the appropriateness, clarity and flow of questions of the data collection tools in gathering the desired data. Ambiguous questions were revised. The information gathered from the pretesting process has been excluded in the final study results.

3.6.2 Validity and reliability strategies for qualitative interviews

A venue comfortable and conducive for the discussion and convenient to participants and free from interruptions was agreed upon by participants and the researcher. The Sitting arrangement was circular to enable participants see and hear one another and maintain eye contact. Each discussion lasted an average of 53 minutes and before a discussion started, the moderator and note taker introduced themselves and allowed participants the opportunity to do same.

All the discussions were tape recorded to ensure that the views of participants have been fully captured. In addition to the audio recordings, detailed field notes were taken during every discussion which helped to capture responses and non-verbal actions during the discussion processes. Threats to validity were addressed by the researcher through the collection of rich data in the research process itself; all audio recordings were transcribed verbatim by two independent people with similar experience and compared for consistency. No significant differences were found. In addition, the researcher solicited feedback from participants by sharing the detailed notes recorded with them after each discussion to ensure that participants agreed with the notes as a true interpretation of their opinions. To minimize interviewer biases, the researcher ensured that not only one, but two facilitators moderated the discussions.

3.7 Data processing and analysis

3.7.1 Quantitative methodology

The researcher undertook regular checking of data captured in completed questionnaire daily to ensure that all fields were properly completed and there were no inconsistencies in responses. Identified inconsistencies were resolved immediately by returning to the respondent concerned to make the necessary amendment.

The reviewed data were entered into EpiData Entry Client version 2.0.6.20 (EpiData Association, Denmark) by the researcher to produce a data set. The data set was exported in a STATA data file format for analysis using STATA version 13 (StataCorp LP). Data cleaning was done in STATA to check for data errors and missing values.

Tabulations were done to determine the overall distribution of information under the various exploratory variables. Pearson Chi-square (χ^2) test was used to determine any statistically significant associations between the independent variables and the outcome variables at 95% confidence interval. All tests were two-tailed and the variables that were statistically significant ($p<0.05$) were included in a multivariate logistic regression analysis and adjusted odds ratio (AOR) was calculate to determine the strength of association. A possible correlation between the exposure variables was explored before including them in the multivariate logistic regression model. None were found to be collinear. Results on the socio-demographic characteristics of the study participants were reported using descriptive statistics.

3.7.2 Qualitative methodology

3.7.2.1 Qualitative data analysis

Qualitative data on ANC initiation and delivery place were transcribed full text word-for-word and analysed using the five-steps thematic analysis approach by Braun & Clarke (2006). This technique was considered appropriate for this study because it is flexible to use, and provides a rich analysis of the data generated. The thematic analysis process followed was:

a) Familiarization

The researcher read the transcripts from the FGDs on ANC and delivery practices and barriers to services utilization several times to have an understanding of the content of the data. Ideas and patterns relevant to the study objectives identified during the reading process were written down.

b) Coding

The researcher, after familiarizing with the data, produced initial codes by organizing and documenting ideas and patterns within concepts described in the data on the margins of the transcripts. These codes are labels attributed to specific sections of the transcripts including paragraphs or sentences to aid in the systematic arrangement of important concepts without altering the context in which these concepts appear (Bradley, Curry, & Devers, 2007). All the codes and relevant data extracts on ANC and delivery were collated and used in the later stages of the analysis.

c) Searching for themes

Relevant themes on ANC initiation and delivery place important to the research objectives were documented to attain some patterned meaning within the data set given (Braun & Clarke, 2006). The codes and collated data on ANC and delivery were examined by the researcher to identify significant broader patterns of meaning by sorting and categorizing recurrent and unifying codes.

The data relevant to each candidate theme were collated and reviewed for the viability of each candidate theme.

d) Reviewing themes

The potential themes were refined into real themes and all the extracts under each theme were read thoroughly to identify any coherent pattern. This ensured that there was enough data to support each potential theme. During the refinement process, separate themes that are unifying were collapsed to form one theme.

e) Defining and naming themes

Detailed analysis was carried out on the themes by the researcher to identify the "story" told by each theme in relation to the research objectives. The researcher identified and determined the aspect of the data captured by each theme by paraphrasing responses from respondents in the data extracts and applied quotations where necessary.

3.8 Ethical considerations

The Ethics Review Committee (ERC) of the Research and Development unit of Ghana Health Service granted approval for the study to be conducted (Protocol ID no. GHS-ERC 31/12/15). Permission to carry out the study in the Upper East Region and specifically the Builsa South district was obtained by writing to the Regional Director of Health Services (RDHS). Permission was also sought from the DDHS and community leaders from the sampled communities before the data collection. Participants consented to participate in the study before they were interviewed. This was done through the signing of the consent form after the purpose and nature of the study, and the risks and benefits of participating in the study outlined in the study information sheet section of the consent form (see appendix 1a and 1b) have been explained to the participant. A comfortable venue free from interruptions was agreed upon by both

participants and the researcher. Respondents who participated in the quantitative methods were identified by a three digit case number. Anonymity during FGDs was observed by identifying the participants using pseudonyms instead of their names. In addition, the safety and comfort of participants was ensured at all times, as well as confidentiality and their freedom to withdraw from the discussion if they felt the need to.

3.9 Study assumptions

To achieve the objectives of the study, the following assumptions have been made:

- All communities in the study district are homogenous
- The data collectors carefully administered the questionnaire and the responses provided by the study participants were not altered in anyway prior to data entry
- The questions asked were understood by the study respondents
- That the respondents were truthful and did not give desirable answers
- The views expressed by the respondents is fairly representative of the opinions of the general population and these findings can be applied to the general population
- The data entry was correctly done.

This chapter explained the research methodology used in this study. It highlighted the study design, the sample size and sampling techniques used, the analysis that were undertaken, the ethical considerations and study assumptions made in the study. The next chapter which is chapter four, presents and describes the findings from the study.

CHAPTER FOUR

4.0 RESULTS

This chapter presents the findings from the study. It also describes the distribution of respondents based on the study variables.

4.1 Quantitative results

4.1.1 Socio-demographic characteristics of respondents

Four hundred and thirty-one women in their reproductive age who delivered in the past six months preceding the survey were interviewed. Of the total interviewed (Table 2), 421 (97.7%) belonged to the Builsa ethnic group. The mean age of the respondents was 29.1 years (standard deviation of 7.4 years). About three-quarters (73.8%) of the respondents were between the ages of 20 years, and 29 years. The modal age group was 25-29 years (23.9%). Thirty-three (8.0%) and forty-six (11.0%) women belonged to the age groups of 15-19 years and 40 years and above respectively. Of the 431 respondents interviewed, 94.9 percent were married at the time of the study and 4 percent were single. Also, 177 representing 41.1 percent of the total respondents interviewed had no formal education, 32 percent received primary education, 16 percent attained middle or junior high school, 10 percent had secondary education and less than 1 percent attained tertiary education.

Further, 277 (64.4%) of the 431 respondents said they engaged in farming as their main occupation, 66 (15.3%) were self-employed while 80 (19.0%) reported not engaging in any income generating activity. Additionally, 268 were Christians, and 118 belonged to the traditional religion. Muslims formed 10.4 percent of the total women interviewed.

Regarding parity, the findings of the study show that of the 431 respondents, 342 (79.3%) reported having more than one living child while 89 (20.7%) reported having one living child. The modal birth order was 2 living children (24.4%).

The study considered whether the respondents' were registered unto the national health insurance scheme during their recent pregnancy. The findings revealed that health insurance coverage was high. Of the 431 respondents, 356 (83%) were enrolled unto the national health insurance scheme while 75 (17%) were not enrolled at the time of the study. Of those who were enrolled (356) unto the national health insurance scheme, 72 percent had valid insurance cards during their recent pregnancy while 28 percent did not have valid insurance card during their recent pregnancy.

Table 2: Socio-demographic characteristics of study participants

Variable	Number	Percentage
Age group (years)	**n =431**	
15-19	33	7.7
20-24	101	23.4
25-29	103	23.9
30-34	81	18.8
35-39	67	15.6
40 and above	46	10.7
Marital status		
Single	18	4.2
Married	409	94.9
Cohabiting	4	0.9
Educational level		
No education	177	41.1
Primary	138	32.0
Middle/Junior High School	68	15.8
Secondary	44	10.2
Tertiary	4	0.9
Occupation		

Unemployed	80	18.6
Famer	277	64.3
Self-employed	66	15.3
Formal sector employee	8	1.9
Religion		
Traditional	118	27.4
Christian	268	62.2
Muslim	45	10.4
Parity (Birth order)		
1	89	20.7
2	105	24.4
3	73	16.9
4	87	20.2
5 - 7	63	14.6
8 - 9	14	3.2
10+	0	0.0
Ethnic group		
Builsa	421	97.7
Mamprusi	4	0.9
Kassena	4	0.9
Sissala	2	0.5
Kantoosi	0	0.0
Health insurance enrolment status		
Enrolled	356	82.6
Never enrolled	75	17.4
Validity of insurance card during recent pregnancy		
Valid	257	72.0
Not valid	99	28.0

4.2 Antenatal care utilization

The findings from the study revealed that 426 (98.8%) women out of the total respondents (431) reported using ANC at least once during their recent pregnancy. However, 246 (57.7%) of them sought their first ANC services after the first trimester of their pregnancy (Table 3). The CHPS was the commonest place that most of the women recourse to for ANC services. This was

revealed after 59.2 percent named CHPS as the place they go to receive ANC services, while 40.0 percent mentioned receiving ANC services from a health centre or clinic. One woman however reported receiving ANC services from both CHPS and TBA during her recent pregnancy. Also, 291 (68.3%) respondents reported making four and more ANC follow up visits during their recent pregnancy before delivery.

Table 3: Obstetric history of respondents

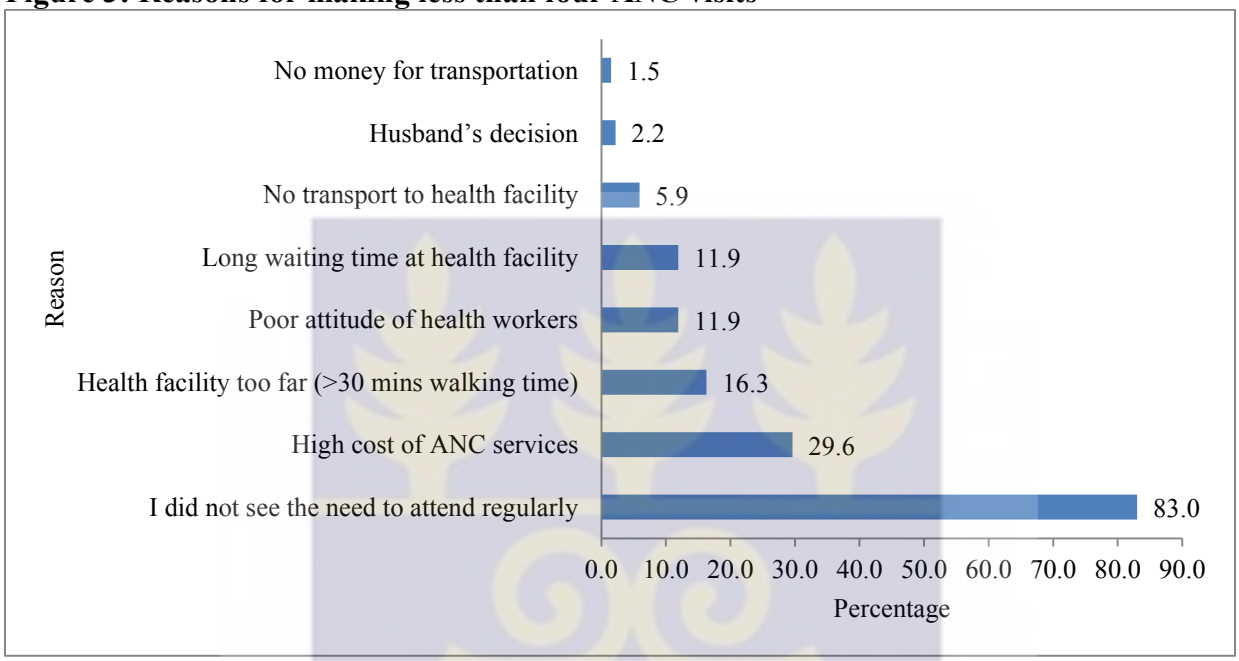
Variable	Number	Percentage
ANC use in last pregnancy	**n = 431**	
Yes	426	98.8
No	5	1.2
	n = 426	
Gestation of pregnancy at first ANC visit		
First trimester	180	42.3
Second trimester	243	57.0
Third trimester	3	0.7
Source of ANC services for last pregnancy		
Hospital	1	0.2
Health centre/clinic	171	40.1
CHPS only	252	59.2
TBA only	1	0.2
CHPS & TBA	1	0.2
Number of ANC visits made before delivery		
1	1	0.2
2	14	3.3
3	120	28.2
4	83	19.5
5 and more	208	48.8

4.2.1 Reasons for making less than four and more ANC visits before delivery

Respondents who attained fewer than the recommended four and more visits were asked to know what accounted for them making fewer visits. The frequently mentioned reasons for making fewer visits were “I did not see the need to attend ANC regularly (83.0%)”, high cost of ANC

services (29.6%), health facility too far; more than 30 minutes walking distance (16.3%), poor attitude of health workers (11.9%) and long waiting time at health facility (11.9%) (Figure 3).

Figure 3: Reasons for making less than four ANC visits



Percentages may not add up to 100 because it is a multiple response question

The reasons cited many times by respondents for the non-attendance of ANC included poor attitude of health workers (40%), no need for ANC (40%) and no money to pay for ANC services (40%). Others reason mentioned were no complication with previous pregnancy (20%) and unintended pregnancy (20%).

4.2.3 Association between respondents' socio-demographic characteristics and first ANC visit

A bivariate analysis using Chi-square (χ^2) test was used to determine any statistically significant relationship between each of the independent variables and the outcome variable, gestational age of pregnancy at first ANC attendance. Values returned with a p-value of less than 0.05 were

considered statistically significant. Five women who reported not attending ANC during their recent pregnancy were excluded from this analysis.

The analysis showed that except for marital status and ethnicity, there was a significant association between most of the independent variables and the outcome variable (Table 4). Mothers who were below the age of 25 years were more likely to start ANC early (within the first three months) relative to mothers who were 25 years and older (p= 0.005). Unemployed mothers (78.2%) compared to mothers who were farmers (51.8%), self-employed (60.6%) and formal sector employees (37.5%) initiated ANC late (p<0.001). The proportion women who initiated ANC late decreased significantly with increasing educational attainment; 6.2 percent of mothers with secondary education and higher were more likely to start ANC from the second trimester of pregnancy compared to 88.4 percent of mothers without any formal education (p<0.001).

The analysis also identified that gestation of pregnancy at first ANC attendance differed among the religious groups. Compared to Muslims (22.2%) and Traditionalists (20.9%), Christian women (55%) were favoured to start ANC in the first trimester of their pregnancy (p<0.001). There was also an association between the birth order of the woman and the gestation of pregnancy at ANC initiation. Respondents who reported having one living child (52.8%) and those who reported having two living children (51.9%) were less likely to start ANC in their second trimester of pregnancy (p<0.001). However, as the birth order increased from three living children upwards, the likelihood of initiating ANC in the first trimester was significantly reduced. Additionally, the outcome was more prominent among mothers who had valid national health insurance cards during their recent pregnancy than mothers who had invalid national

health insurance cards (P<0.001). Furthermore, single mothers were more likely to initiate ANC early compared with their counterparts. This association was however not statistically significant.

Table 4: Association between respondents' socio-demographic characteristics and first ANC visit

Exposure variable	Gestation of pregnancy at first ANC visit (trimester)			
	N=426	1st n (%)	2nd and beyond n (%)	χ^2 (P-value)
Age group (years)	**n**			16.707 (0.005)
15-19	33	20 (60.6)	13 (39.4)	
20-24	101	55 (54.5)	46 (45.5)	
25-29	101	40 (39.6)	61 (60.4)	
30-34	80	29 (36.3)	51 (63.7)	
35-39	65	22 (33.9)	43 (66.1)	
40 and above	46	14 (30.4)	32 (69.6)	
Marital status				2.447 (0.294)
Single	17	10 (58.8)	7 (41.2)	
Married	405	169 (41.7)	236 (58.3)	
Cohabiting	4	1 (25.0)	3 (75.0)	
Occupation				18.883 (0.000)
Unemployed	78	17 (21.8)	61 (78.2)	
Farmer	274	132 (48.2)	142 (51.8)	
Self employed	66	26 (39.4)	40 (60.6)	
Formal sector employee	8	5 (62.5)	3 (37.5)	
Educational status				154.183 (0.000)
No education	172	20 (11.6)	152 (88.4)	
Primary	138	62 (44.9)	76 (55.1)	
Middle/Junior High	68	53 (77.9)	15 (22.1)	
Secondary and above	48	45 (93.8)	3 (6.2)	
Religion				46.352 (0.000)
Traditional	115	24 (20.9)	91 (79.1)	
Christian	266	146 (54.9)	120 (45.1)	
Muslim	45	10 (22.2)	35 (77.8)	
Parity				26.257 (0.000)
1	89	47 (52.8)	42 (47.2)	
2	104	54 (51.9)	50 (48.1)	
3	72	34 (47.2)	38 (52.8)	
4	85	30 (35.3)	55 (64.7)	

5+	76	15 (19.7)	61 (80.3)	
Ethnicity				3.089 (0.378)
Builsa	416	177 (42.6)	239 (57.4)	
Mamprusi	4	0 (0.0)	4 (100.0)	
Kassena	4	2 (50.0)	2 (50.0)	
Sissala	2	1 (50.0)	1 (50.0)	
Validity of insurance card				12.180 (0.000)
Not valid	97	29 (29.9)	68 (70.1)	
Valid insurance	257	130 (50.6)	127 (49.4)	
Exposure to information on ANC				0.462 (0.497)
Yes	408	171 (41.9)	237 (58.1)	
No	18	9 (50.0)	9 (50.0)	
Exposure to information on delivery care				0.992 (0.319)
Yes	391	168 (43.0)	223 (57.0)	
No	35	12 (34.3)	23 (65.7)	

4.2.4 Association between respondents' socio-demographic characteristics and number of ANC visits made before delivery

The results from the bivariate analysis revealed that maternal age, level of educational attainment, religion, parity, having a valid health insurance card during pregnancy were significantly associated with the number of visits made before delivery (Table 5). Women of the youngest age bracket (15-19) were more likely (93.9%) to make the recommended four and more visits than women in the older age groups ($p<0.001$). Women with no formal education were less likely to make four and more visits compared to women with some level of education ($p<0.001$). Christian women (77.1%) were more likely to make four and more visits compared to Muslim women (62.2%) and women who belonged to the traditional religion (50.4%).

With regards to parity, primiparous women made more ANC follow up visits than multiparous women. As the birth order increased, the number of ANC visits made before delivery also decreased ($p<0.001$). Women who had a valid health insurance card during their recent

pregnancy were favoured to make more visits than women who did not have valid health insurance cards during their recent pregnancy; less than half (21.0%) of women with valid health insurance cards during their recent pregnancy made less than four ANC visits compared to about 49.0 percent of women who did not have valid health insurance cards during their recent pregnancy.

The association between the timing of the first ANC visit and the number of visit made before delivery was also explored. The proportion of first trimester women (96.1%) who made four and more ANC follow up visits was twice the proportion of women (48.0%) who started ANC in the second trimester and beyond.($p<0.001$)

Table 5: Association between respondents' socio-demographic characteristics and number of ANC visits made before delivery

Exposure variable		Number of ANC visits		
		<4	4 >	
	N=426	n (%)	n (%)	χ^2 (P-value)
Age	**n**			60.143 (0.000)
15-19	33	2 (6.1)	31 (93.9)	
20-24	101	16 (15.8)	85 (84.2)	
25-29	101	24 (23.8)	77 (76.2)	
30-34	80	33 (41.3)	47 (58.7)	
35-39	65	29 (44.6)	36 (55.4)	
40 and above	46	31 (67.4)	15 (32.6)	
Marital status				1.147 (0.563)
Single	17	4 (23.5)	13 (76.5)	
Married	405	129 (31.8)	276 (68.2)	
Cohabiting	4	2 (50.0)	2 (50.0)	
Occupation				5.057 (0.168)
Unemployed	78	33 (42.3)	45 (57.7)	
Farmer	274	81 (29.6)	193 (70.4)	
Self employed	66	19 (28.8)	47 (71.2)	
Formal sector employee	8	2 (25.0)	6 (75.0)	
Educational status				65.474 (0.000)
No education	172	90 (52.3)	82 (47.7)	

Primary	138	35 (25.4)	103 (74.6)	
Middle/Junior High	68	4 (5.9)	64 (94.1)	
Secondary and above	48	6 (12.5)	42 (87.5)	
Religion				27.169 (0.000)
Traditional	115	57 (49.6)	58 (50.4)	
Christian	266	61 (22.9)	205 (77.1)	
Muslim	45	17 (37.8)	28 (62.2)	
Parity				81.416 (0.000)
1	89	13 (14.6)	76 (85.4)	
2	104	22 (21.2)	82 (78.8)	
3	72	17 (23.6)	55 (76.4)	
4	85	27 (31.8)	58 (68.2)	
5+	76	56 (73.7)	20 (26.3)	
Ethnicity				5.639 (0.131)
Builsa	416	129 (31.0)	287 (69.0)	
Mamprusi	4	2 (50.0)	2 (50.0)	
Kassena	4	2 (50.0)	2 (50.0)	
Sissala	2	2 (100.0)	0 (0.0)	
Validity of insurance card				26.007 (0.000)
Not valid	97	47 (48.5)	50 (51.5)	
Valid insurance	257	54 (21.0)	203 (79.0)	
Exposure to information on ANC				0.450 (0.502)
Yes	408	128 (31.4)	280 (68.6)	
No	18	7 (38.9)	11 (61.1)	
Exposure to information on delivery care				1.216 (0.270)
Yes	391	121 (30.9)	270 (69.1)	
No	35	14 (40.0)	21 (60.0)	
Gestation of pregnancy at first ANC visit				111.293(0.000)
First trimester	180	7 (3.9)	173 (96.1)	
Second trimester and beyond	246	128 (52.0)	118 (48.0)	

4.3 Delivery Care

4.3.1 Place of delivery and assistance at delivery

The findings revealed that of the 431 respondents interviewed, 270 (62.6%) reported delivering the index child in a health facility while 161 (37.4%) said they delivered at home (Table 6). All

the deliveries that occurred in the facility were assisted by an SBA. Of the 270 women who delivered in the health facility, 228 (84.4%) had their delivery assisted by a midwife, 25 (9.3%) were assisted by a doctor and only 17(6.3%) were assisted by a CHN. It is worth mentioning that, CHNs are only permitted to conduct a delivery when the pregnant woman presents with third stage labour (head in vagina) and a midwife is not available. This may be the reason behind the few deliveries by the CHN.

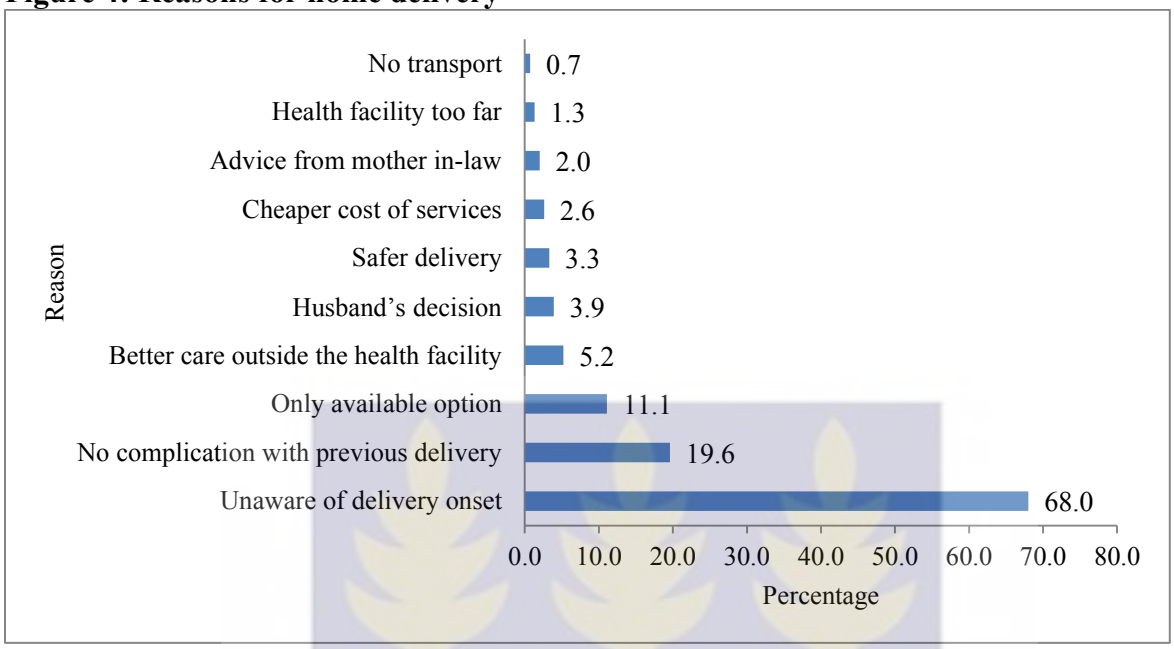
Table 6: Place of delivery and assistance at health facility delivery

Variable	Number	Percentage
Place of delivery		
Health facility	270	62.6
Home	161	37.4
Assistance at health facility delivery		
Doctor	25	9.3
Midwife	228	84.4
CHN	17	6.3

4.3.2 Reasons for home delivery

Of the 161 women who delivered at home, 68 percent mentioned that they were unaware of the labour and delivery onset. No complication with previous delivery accounted for about 20 percent of the home deliveries. Further, 11 percent did not have any other available place of delivery other than the home while the lack of transport contributed less than 1 percent to the proportion of home deliveries recorded in this study (Figure 4).

Figure 4: Reasons for home delivery



Percentages may not add up to 100 because it is a multiple response question

4.3.3 Association between respondents' socio-demographic characteristics and place of delivery

In the bivariate analysis exploring the association between the exposure variables and place of delivery, maternal age, maternal employment, maternal education, religion, parity, health insurance status, and exposure to information on delivery care were found to be significantly associated statistically, with the outcome at $p<0.05$ (Table 7). Five women who did not attend ANC were excluded from this analysis.

Home deliveries increased with increasing maternal age. Women younger than 35 years were more likely to deliver in a health facility compared to those who are older than 35 years. The association between maternal age and place of delivery was significant at $p<0.001$. Regardless of the type of work the woman was involved in, employed women delivered more in health facilities compared to unemployed women ($p<0.001$). The proportion of deliveries occurring in a

health facility decreased with decreasing educational level of attainment. Women with secondary and higher education (91.7%) were more likely than women with junior high education (88.2%), primary education (69.6%) or no education (40.7%) to deliver in a health facility ($p<0.001$). The proportion of Christians who delivered in a health facility was about 72 percent (192) compared to 66.7 percent (30) of Muslims and 41.7 percent (48) of women belonging to the Traditional religion. The association between religion and place of delivery was significant at $p<0.001$. The birth order of the woman also significantly influenced the place where the woman delivered ($p<0.001$). There was an inverse relationship between parity and health facility delivery; as the parity increased, the proportion of women who delivered in a health facility decreased and vice versa. About 75 percent (192) of women who had valid health insurance cards during their recent pregnancy delivered in a health facility relative to 25 percent (65) of women who did not have valid health insurance cards during their recent pregnancy ($p<0.001$). Women (65.7%) who heard information on delivery care during their recent pregnancy were more likely than women (37.1%) who did not hear information during their recent pregnancy to deliver in a health facility ($p = 0.001$).

The number of ANC follow up visits a woman made before delivery was also strongly associated with the place where she delivered. Home delivery was 6 times likely (85.2%) among women who made less than four ANC visits before delivery compared to women who made four and more visits (14.1%) ($p<0.001$). Marital status and ethnicity did not show any statistical significance with place of delivery.

Table 7: Association between respondents' socio-demographic characteristics and place of delivery

Exposure variable		Place of delivery		
	N=426	Health facility n (%)	Home n (%)	χ^2 (P-value)
Age (years)				42.676 (0.000)
15-19	33	28 (84.9)	5 (15.1)	
20-24	101	81 (80.2)	20 (19.8)	
25-29	101	66 (65.4)	35 (34.6)	
30-34	80	48 (60.0)	32 (40.0)	
35-39	65	31 (47.7)	34 (52.3)	
40 and above	46	16 (34.8)	30 (65.2)	
Marital status				0.644 (0.725)
Single	17	12 (70.6)	5 (29.4)	
Married	405	255 (63.0)	150 (37.0)	
Cohabiting	4	3 (75.0)	1 (25.0)	
Occupation				24.234 (0.000)
Unemployed	78	31 (39.7)	47 (60.3)	
Farmer	274	187 (68.3)	87 (31.7)	
Self employed	66	45 (68.2)	21 (31.8)	
Formal sector employee	8	7 (87.5)	1 (12.5)	
Educational status				75.049 (0.000)
No education	172	70 (40.7)	102 (59.3)	
Primary	138	96 (69.6)	42 (30.4)	
Middle/Junior High	68	60 (88.2)	8 (11.8)	
Secondary and above	48	44 (91.7)	4 (8.3)	
Religion				32.29 (0.000)
Traditional	115	48 (41.7)	67 (58.3)	
Christian	266	192 (72.2)	74 (27.8)	
Muslim	45	30 (66.7)	15 (33.3)	
Parity				62.054 (0.000)
1	89	77 (86.5)	12 (13.5)	
2	104	73 (70.2)	31 (29.8)	
3	72	50 (69.4)	22 (30.6)	
4	85	47 (55.3)	38 (44.7)	
5+	76	23 (30.3)	53 (69.7)	
Ethnicity				2.779 (0.427)
Builsa	416	263 (63.2)	153 (36.8)	
Mamprusi	4	4 (100.0)	0 (0.0)	
Kassena	4	2 (50.0)	2 (50.0)	
Sissala	2	1 (50.0)	1 (50.0)	

Validity of insurance card				20.521 (0.000)
Not valid	97	48 (49.5)	49 (50.5)	
Valid insurance	257	192 (74.7)	65 (25.3)	
Exposure to information on ANC				2.904 (0.088)
Yes	408	262 (64.2)	146 (35.8)	
No	18	8 (44.4)	10 (55.6)	
Exposure to information on delivery care				11.31 (0.001)
Yes	391	257 (65.7)	134 (34.3)	
No	35	13 (37.1)	22 (62.9)	
Number of visit made before delivery				
Less than 4 visits	135	20 (14.8)	115 (85.2)	200.834 (0.000)
4 and more visits	291	250 (85.9)	41 (14.1)	

4.4 Determinants of antenatal care first trimester initiation and place of delivery

All variables which were significant statistically with gestation of pregnancy at first ANC visit and place of delivery were put in a multivariate logistic regression model. The reference groups were given adjusted odds ratio (AOR) of 1.00. After adjusting for the effect of the other variables in the multivariate logistic regression, only educational attainment (Table 8) was on one hand still significantly associated with the timing of the first ANC visit. Increased level of educational attainment was associated with increased odds of initiating ANC early. Compared to a woman with no education (Reference group), a woman with primary education had more than 5 times the odds [(AOR: 5.40, 95%, CI: 2.71-10.76, $p<0.001$)] of initiating ANC in the first trimester. However, women with secondary education had 154 times the odds [(AOR: 153.70 95% CI: 33.27-710.14, $p<0.001$)] of booking early at ANC compared to the reference group.

On the other hand, educational attainment, having a valid health insurance card during recent pregnancy and exposure to information on delivery care during the recent pregnancy remained statistically significant at $p<0.05$ in determining place of delivery after adjusting for the effects

of the other variables. The adjusted odds ratio showed that as the level of educational attainment of the woman increased, the chances of delivering at home were significantly reduced. Women with secondary education had 7 times the odds [(AOR: 7.09, 95% CI: 1.96 - 25.73, p = 0.003)] of delivering in a health facility compared to women without any education. Also women with junior high education had 3 times increased odds [(AOR: 6.59, 95% CI: 2.11 - 20.52, p = 0.001)] of delivering in a health facility relative to women with primary education [(AOR: 2.12, 95% CI: 1.10 - 4.06, p = 0.024)]. In addition, women with valid national health insurance cards during their recent pregnancy were more than 2 times [(AOR: 2.32, 95% CI: 1.23 - 4.36, p=0.009)] likely to deliver in a health facility compared to women who did not own a valid national health insurance during pregnancy. Further, women who were not exposed to information on delivery care during their recent pregnancy compared to women who are exposed had 78% less the chances of delivering in a health facility [(AOR: 0.22, 95% CI: 0.06 – 0.78, p = 0.036)].

Table 8: Determinants of antenatal care first trimester initiation and place of delivery from multivariate logistic regression

Exposure variable	Gestation of pregnancy at first ANC visit		Place of delivery	
	AOR (95% CI)	P-value	AOR (95% CI)	P-value
Age (years)				
15-19	1.00		1.00	
20-24	0.94 (0.27-3.30)	0.928	1.76 (0.39-8.01)	0.465
25-29	0.56 (0.14-2.27)	0.417	1.78 (0.36-8.79)	0.478
30-34	0.86 (0.19-3.94)	0.849	1.18 (0.23-6.17)	0.845
35-39	0.92 (0.18-4.65)	0.919	0.85 (0.16-4.59)	0.852
40 and above	1.12 (0.20-6.30)	0.899	0.59 (0.10-3.54)	0.562
Occupation				
Unemployed	1.00		1.00	
Farmer	4.40 (1.73-11.18)	0.002	10.27 (4.11-25.70)	0.000
Self employed	2.01 (0.64-6.29)	0.233	4.88 (1.69-14.09)	0.003
Formal sector employee	1.65 (0.20-13.91)	0.643	3.78 (0.31-46.18)	0.298

Educational status				
No education	1.00		1.00	
Primary	5.40 (2.71-10.76)	0.000	2.12 (1.10-4.06)	0.024
Middle/Junior High	50.94 (16.74-155.01)	0.000	6.59 (2.11-20.52)	0.001
Secondary and above	153.70 (33.27-710.14)	0.000	7.09 (1.96-25.73)	0.003
Religion				
Traditional	1.00		1.00	
Christian	1.59 (078-3.22)	0.198	1.32 (0.68-2.55)	0.410
Muslim	0.59 (0.19-1.80)	0.352	2.42 (0.83-7.04)	0.104
Parity				
1	1.00		1.00	
2	3.89 (1.26-11.94)	0.018	0.30 (0.09-1.01)	0.052
3	2.98 (0.87-10.18)	0.081	0.23 (0.06-0.89)	0.034
4	3.21(0.89-11.57)	0.074	0.17 (0.04-0.65)	0.009
5+	0.96 (0.22-4.19)	0.954	0.06 (0.01-0.26)	0.000
Validity of insurance card				
Not valid	1.00		1.00	
Valid insurance	1.69 (0.85-3.35)	0.135	2.32 (1.23-4.36)	0.009
Exposure to information on delivery care				
Yes	NS*		1	
No			0.22 (0.06-0.78)	0.036

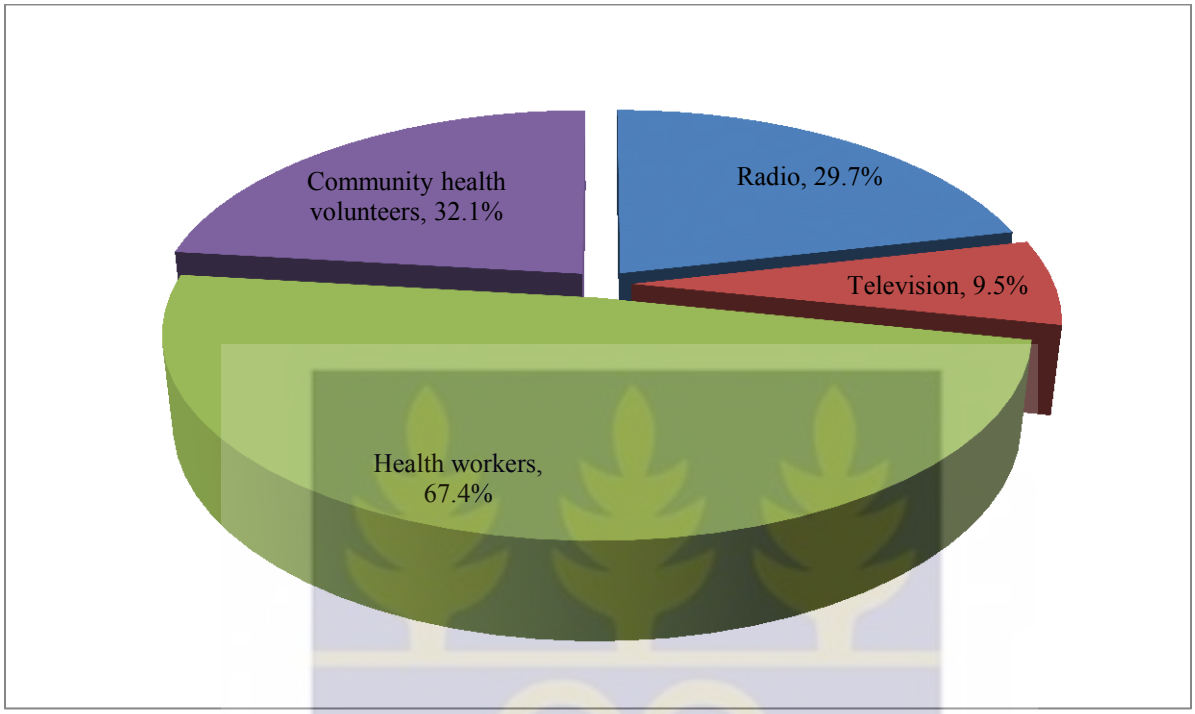
NS*- not significant in bivariate analysis

4.5 Exposure to information on Maternal Health

4.5.1 Sources of information on ANC

Study participants were asked about their exposure to health information concerning ANC during their recent pregnancy. Of the total number of respondents, 411 (95.4%) reported hearing information on ANC during their recent pregnancy and 20 (4.6%) said they did not hear information on ANC during their recent pregnancy. The frequently mentioned sources (Figure 5) of ANC information were health workers (67.4%), community health volunteers (32.0%), radio (29.7%), and television (9.5%).

Figure 5: Sources of information on ANC

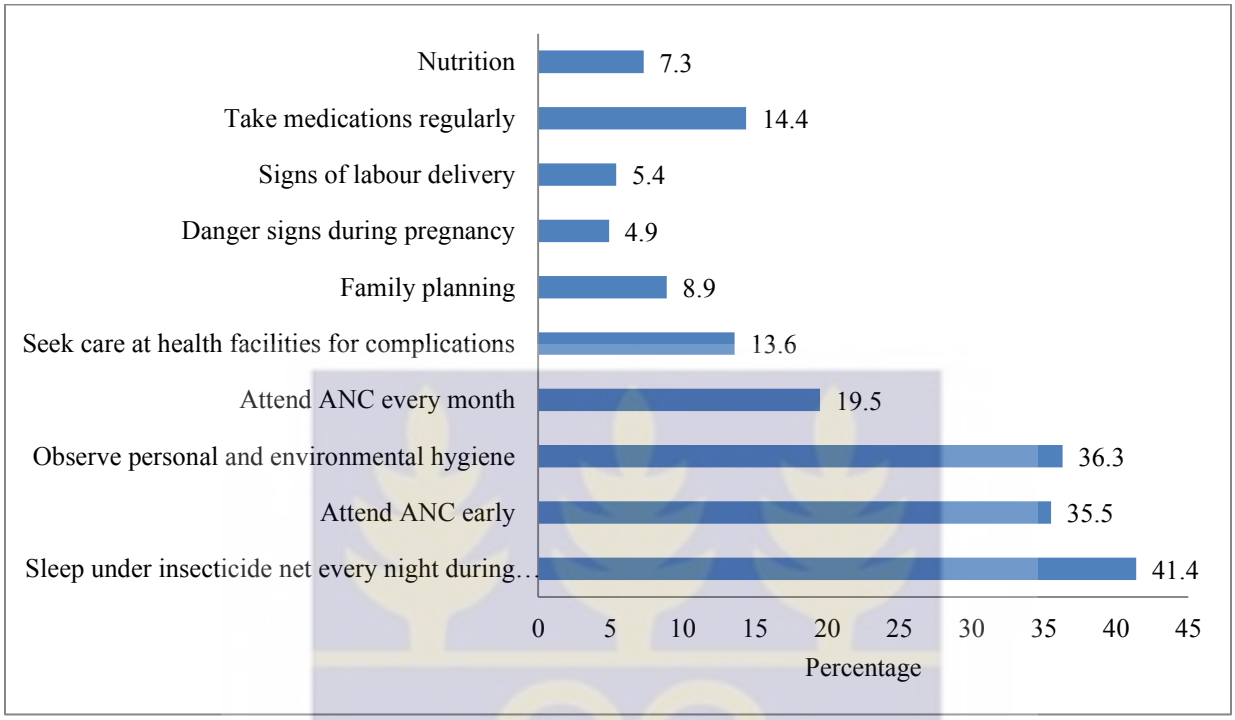


Percentages may not add up to 100 because it is a multiple response question

4.5.2 Areas covered by ANC information

Sleeping under insecticidal treated net every night during pregnancy (41.4%), personal and environmental hygiene (36.3%), early start of ANC (35.5%) and attend ANC every month (19.5%) were frequently mentioned by respondents as areas covered by information on ANC which they heard during their recent pregnancy (Figure 6).

Figure 6: Areas covered in ANC information

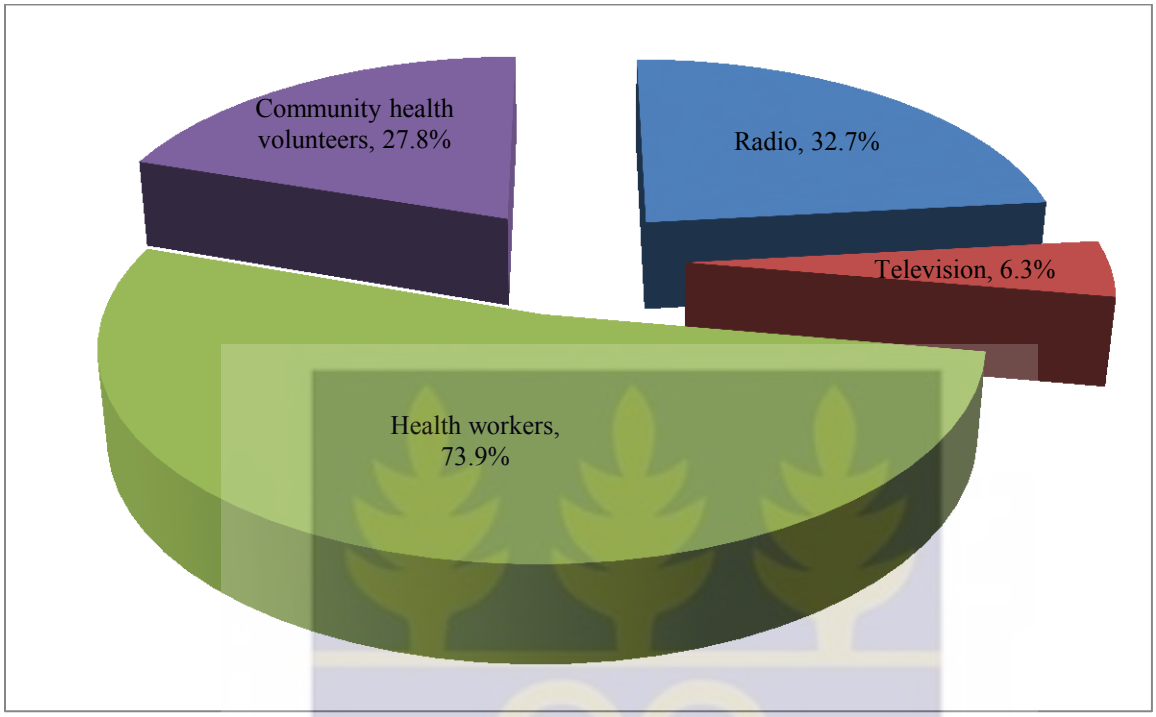


Percentages may not add up to 100 because it is a multiple response question

4.5.3 Sources of information on delivery care

The proportion of the study participants who reported hearing information on delivery care during their recent pregnancy was 91.6 percent (395). Only 8.4 percent (40) reported not hearing information on delivery care. The commonest source (Figure 7) of information was the health worker (73.9%) as it was frequently mentioned by the participants followed by the radio (32.7%), and the community health volunteer (27.8%). Television was mentioned 25 times (6.3%).

Figure 7: Sources of delivery care information

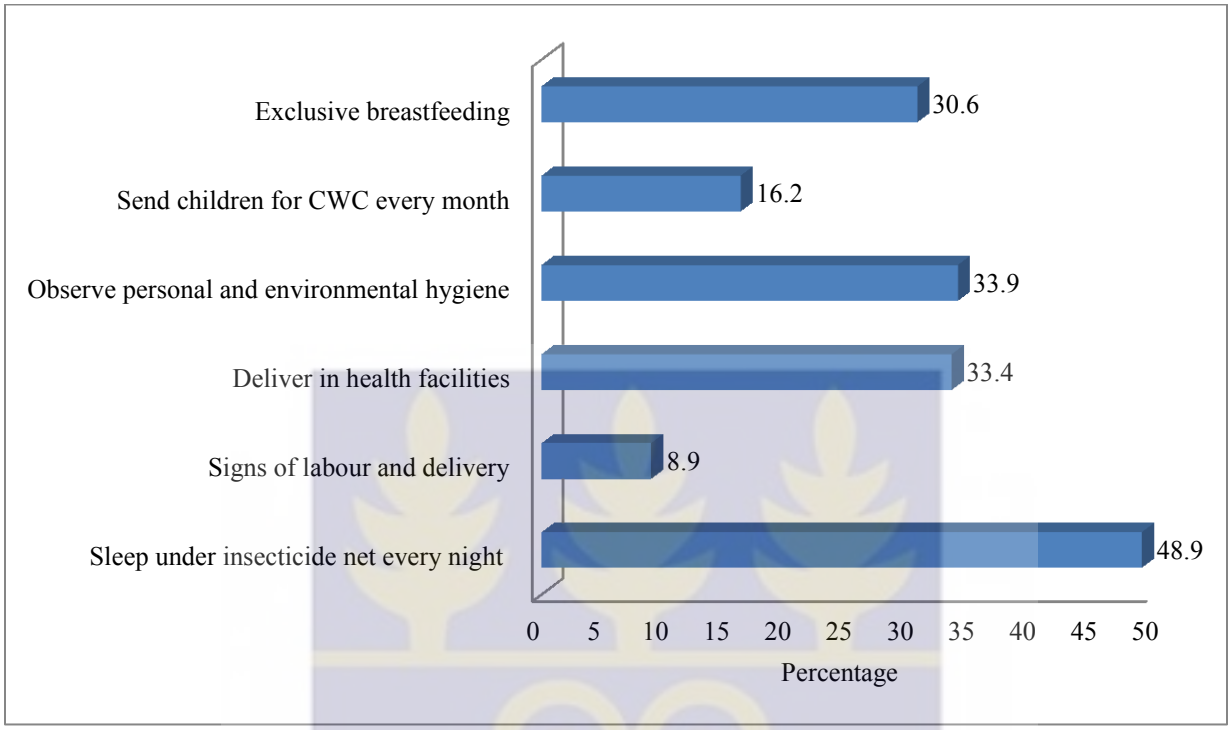


Percentages may not add up to 100 because it is a multiple response question

4.5.4 Areas covered by delivery care information

The use of insecticidal treated net every night (48.9%), personal and environmental hygiene (33.9%), deliver in health facilities (33.4%) exclusive breastfeeding (30.6%), send children for child welfare clinic (CWC) every month were the frequently mentioned areas covered by information on delivery care as reported by the study participants (Figure 8).

Figure 8: Areas covered in delivery care information



Percentages may not add up to 100 because it is a multiple response question

4.6 Qualitative results

Four discussions were held with thirty three women aged 15-49 years who had delivered before to explore the reasons behind the late initiation of ANC, and why some women still preferred delivery at home to delivery at the health facility. The discussions allowed participants the opportunity to share their own experiences and thoughts freely regarding ANC and delivery care practices. To ensure confidentiality, participants in each discussion were given numbers ranging from one to nine as names which they used throughout the discussion. For example participant one was given number one, and referred to as R1 in the analysis, participant two was given number two and referred to as R2 in that order till the last participant

4.6.1 Demographic characteristics of study participants

The minimum age was 19 years and the maximum age was 40 years with a mean age of 28.8 years. All the participants (33) were married at the time of the study. With regards to educational attainment, 16 (48.5%) had no education, 10 (30.3%) schooled up to primary level, 6 (18.2%) attained junior high education and 1 (3.0%) had secondary education.

4.6.2 Themes emerging from discussions

4.6.2.1 Participants' opinions on timing of the first ANC visit

Participants were asked the ideal time that women should start ANC. Majority said that the best time to begin ANC is in the first trimester. Though the first trimester was mentioned by most of the discussants as the ideal time to start ANC, they also mentioned that the pregnancy should be three months old by which time there are visible signs of pregnancy like the protrusion of the abdomen before the woman can start going for ANC. This, they said, is a means of confirming pregnancy status. However, only one participant disagreed and said initiating ANC in the second trimester was ideal; her reason being that some women do not show signs of pregnancy in the first three months and others, especially women who are pregnant for the first time may not know the signs of pregnancy.

> *"When you suspect pregnancy and tell the house people that you are pregnant they will give you lorry fare and some money to go and do the necessary things (ANC services). If you get there and it is confirmed that it is not pregnancy, the house people will be very angry with you because they feel you deceived them to spend their money on other things that were not necessary. You have to allow the abdomen to protrude, at about three months' time, to be sure you are pregnant before you can inform your husband and his family that you are going for ANC". (R2, Gbenaasa)*

> *"I think the three months is okay. The reason being that in the first and second months you might say you are pregnant when it is actually false. But in the third month if the*

same signs of pregnancy show up, you are then sure that it is pregnancy so you can then go to the facility to start ANC. In the first and second months, the nurses normally ask why you think you are pregnant and there you do not really have answers to give to them". (R8, Bachongsa)

"I think four months is the ideal. I say this because as you wait to be sure you are pregnant there are some people who do not show the signs through vomiting or anything so you will not think of it as pregnancy. Some first time expectant mothers don't even know the signs of pregnancy until months have come to pass". (R2, Samsa)

4.6.2.2 Place of ANC and reasons for attending ANC

The purpose of attending ANC was discussed with participants to assess their reasons for attending ANC. The participants revealed that there are people (TBAs) in their communities who render ANC services but they recourse to using health facilities for their ANC services. The CHPS and health centre were the common mentioned places where women received care. The major reasons frequently mentioned by discussants for attending ANC were to check the health of the woman and see if the baby is lying well in the womb. Other participants mentioned to receive medicines for the health of the woman and the unborn baby and to receive health education as reasons for attending ANC at the facilities.

"Now the pregnancies are like emergency conditions; they are stronger than the pregnant women themselves unlike that of our grandparents that eventually resulted in safe delivery even if they do not go to the health facility. There are so many diseases now that affect women so one has to go to the facility immediately so that they can get medicine for her to get well. This will help in the turning and positioning of the baby and the general health of the unborn baby. They will educate you on how to prepare for delivery so that the delivery will result in a healthy mother and baby. That is the reason why we go to the health facilities". (R4, Samsa)

"When you go for ANC and there is something wrong with you or the pregnancy, the orientation of the foetus or something wrong with the foetus, once they are health experts they will be able to help us". (R1, Gbenaasa)

"Like they said, the baby might not be lying in the correct position and when you go for ANC they can help position the baby well. When you also have a disease that you can transfer to the baby the nurses can prevent the transfer to the baby in the womb". (R2, Zamsa)

4.6.2.3 Understanding delayed access to ANC

This study aimed at unravelling the factors that make women initiate ANC in the second trimester and beyond. Findings from the discussions revealed that the general practice of most women in the study district is booking at ANC after the first trimester. On why women in their communities start seeking ANC services late, many causal factors were mentioned including hiding of pregnancy from the general public, no complication with pregnancy, no need for ANC, husband's decision, long walking time to health facility. However, aside these others mentioned unplanned pregnancy, to confirm pregnancy, unaware of pregnancy and taboos in some communities which require that some traditional rites are performed before the woman can attend ANC especially with first time pregnant women as some of the reasons for the late start of ANC in their communities.

"This does not apply to only school ladies but also married women. If a pregnancy comes unplanned they both become angry with themselves and this brings about carelessness on the part of the lady and she will not attend early". (R9, Samsa)

"There are some pregnancies that have negative reactions to the body and that will signify you that you are pregnant and therefore have to go to the hospital. Others are such that they do not show any signs and no one will know it is pregnancy. The effects of the pregnancies prompt most women to go to the health facility on time so that they give medicines. But if it does not worry you there won't be anything to motivate you to go to the hospital. Others do not even realize they are pregnant until it is four months. But it is mostly because they do not feel anything wrong with them even if they know that they are pregnant". (R2, Zamsa)

"This morning we were discussing a lady who went to the facility to test. The facility has things (kits) that they use to test for pregnancies and they will confirm that you are pregnant but later on you will not see any pregnancy. So if you rush in going to check for pregnancy when it is not meanwhile you would have broken the news to your husband that you are pregnant they will not understand you. If they do not see the pregnancy as time goes on they will summon you to explain where the pregnancy has gone to. They will accuse you of aborting it". (R2, Samsa)

4.6.2.4 Delivery at home in spite of the free maternal health services

Respondents mentioned that, many women in the study district still delivered at home in spite of the implementation of the free maternal health services policy. Pregnant women who delivered in health facilities where there are skilled attendants to ensure safer delivery had access to free delivery services. The reasons why some women still delivered at home in spite of the user fee exemptions policy on delivery care was also explored during the FGDs. The findings show that financial barriers still exist and are accountable for some of the home deliveries. Discussants frequently mentioned the inability of women to afford the "delivery items" (Dettol, bleach, soap, pad and mackintosh) required by women in labour as the reason for delivering at home. The poor attitude of health staff was also mentioned as a key reason for home deliveries. Other reasons mentioned as regards why some women in the communities delivered at home included taboos, and onset of labour and delivery occurring at night – coupled with the lack of reliable transportation to the facility.

"Some have given the testimony that they went to deliver at a health facility and after the delivery the midwife asked her to give her the pad she brought. When she failed to provide it the midwife pushed her out to go home. She used her cloths to cover herself but said that if she had delivered in the house all these would not have happened to her. That is why some people refuse to go to the health facility. If they do not have the necessary items they will not go to the health facility to deliver. They say that if they go without them the midwives will insult and humiliate them". (R4, Gbenaasa)

"When I was pregnant I used to attend ANC regularly but the buying of the items for the delivery made me a victim. I couldn't buy the items so I didn't go to deliver at the facility. When labour started I didn't know how I was going to get to the health facility. Whenever I deliver I make them aware that I have delivered so that they keep the date and other records for me. That is what I do". (R7, Zamsa)

"You will like to deliver at the facility but your in-laws will say that the women in their family do not deliver at the health facility so they will not allow you to go. They claim it is a taboo in their family so you cannot go to a health facility to deliver. The will frighten you that if you disobey their customs you will end up dying at the facility. You will therefore have to deliver at home". (R6, Bachongsa)

4.6.3 Exposure to information on maternal health

4.6.3.1 Sources of information on ANC

When discussants were asked where they heard information on ANC from, the commonest source named was health workers. Other sources mentioned were the radio, and from community health volunteers. Many said the information they heard concerned nutrition during pregnancy, while others also mentioned that they were educated on how to maintain optimal health of themselves and the unborn baby, hygiene practices and attending ANC. On the average discussants mentioned that health information on ANC was received once in a month during their monthly ANC attendance sessions.

"They told us that when you are pregnant you have to go for ANC because it will help you the mother, they will also check the orientation of the baby. They also said the health sector have passed a law that every pregnant woman should go for ANC". (R4, Samsa)

"They teach us how to be hygienic. They teach us to sleep under treated mosquito nets and what means to eat in order that nothing will happen to us. They also counsel us on the need to keep coming for ANC". (R3, Gbenaasa)

4.6.3.2 Sources of information on delivery care

Concerning delivery care, health workers, radio and community volunteers were mentioned as the sources of information on delivery by participants. Participants added that information received covered family planning, exclusive breastfeeding, birth preparedness, hygiene and feeding children after six months of age.

> *"They tell us how we will take care of the baby when we deliver. They also tell us that it is important to exclusively breastfeed the baby. They educate us on the benefits of exclusive breastfeeding. They teach us to practice it for six months and when we also start to give the babies food, we should start with soft food. After sometime when she is able to eat semi-solid foods then you can introduce her to other varieties of food". (R3, Bachongsa)*

> *"When you deliver at either the home of hospital they will tell you that you should not give the child water until it is 6 months old". (R2, Zamsa)*

CHAPTER FIVE

5.0 DISCUSSION

This Chapter presents a detailed discussion of the findings presented in the previous chapter. The discussion will contextualize the findings in relation to the literature presented in previous chapters within this dissertation, and assess how far the research questions have been answered.

5.1 ANC coverage and utilization

The ultimate aim of maternal health care is for women to initiate ANC early in the first trimester so that there is enough time for key obstetric services to be rendered before delivery. The findings from this study show that almost all the women (98.8%) interviewed utilized ANC at least once during their recent pregnancy with a large proportion (68.3%) making four and more visits. These findings compare favourably with the GDHS 2014 findings and other researches (Abor & Abekah-Nkrumah, 2011; Ghana Statistical Service, Ghana Health Service, & ICF International, 2015; Kitui, Lewis, & Davey, 2013).

An analysis conducted by WHO by regions revealed that globally, except for women in sub-Saharan Africa, most women initiated ANC in the first trimester (AbouZahr & Tessa Wardlaw, 2003). This study is consistent with this analysis and findings from other studies (Abor & Abekah-Nkrumah, 2011; Akazili et al., 2011) conducted in Ghana in that majority of the women in this study commenced ANC in the second trimester of pregnancy. The late start of ANC which implies fewer follow up visits before delivery has the tendency of reducing the effectiveness of some necessary obstetric interventions. These interventions are either started late in pregnancy or not completed before the woman delivers. The FGDs revealed that the reasons why women start ANC late are because the pregnancy is unplanned, they want to confirm

pregnancy, and avoid going for many visits especially where the facility is far; that is more than 30 minutes walking distance and there is no means of transport. These findings agree with the findings of a study conducted elsewhere (Haddrill et al., 2014)

5.2 Factors influencing first trimester ANC initiation and delivery place

The proportion of women interviewed who delivered in a health facility was 62.7 percent. This estimate is higher compared to the rates reported in other studies (Akazili et al., 2011; Mills et al., 2007) conducted in the same region but lower than what has been reported nationally (Ghana Statistical Service et al., 2015). Unaware of delivery onset and no complications with previous deliveries were the major causes mentioned for home deliveries in the structured interviews. In the discussions however, the inability to afford materials such as Dettol, bleach, soap, pad and rubber sheets required for delivery, poor attitude of health staff and taboos were mentioned as the inhibitors of health facility delivery. These findings conform to what have been reported in other studies (Crissman et al., 2013; Sychareun et al., 2015).

The age of the woman, level of educational attainment, occupation, parity, religious affiliation and having a valid insurance during pregnancy were the socio-demographic and economic factors that significantly influenced the timing of ANC initiation and delivery place in the bivariate analysis.

Maternal age was strongly associated with the use of ANC and delivery services. It was deduced from the study results that younger women (25 years and below) were more likely to initiate ANC in the first trimester and deliver in health facilities compared to older women. This could be because younger women may consider themselves at high risk of pregnancy complications and therefore take the needed precautions to avert any unforeseen maternal complications. This

assertion contradicts the finding of Atinga, Baku, & Adongo (2014) in their study conducted in urban Ghana where they reported that older women were more likely to use delivery care but in conformity with other studies conducted in Tanzania, Ethiopia and Kenya (Gross et al., 2012; Ikamari, 2004; Mpembeni et al., 2007; Wado et al., 2013).

The findings of this study indicate that women with primary education were five times more likely to book early for ANC and six times more likely to deliver in a health facility compared to women without education. However women with secondary and higher education were more likely than women with junior high and primary education to initiate ANC in the first trimester and deliver in a health facility. The association between maternal education and the use of maternal health services was strongest in secondary and higher education relative to primary and no education as reported in several studies (Oladokun et al., 2010; Stephenson et al., 2006; Wado et al., 2013) which the findings of this study reinforces. Educated women are better positioned in understanding and appreciating the benefits of initiating ANC early and using an SBA. Aside this, they are more likely to be empowered to make reasonable decisions regarding the use of ANC and delivery care. Further, highly educated women will have a positive attitude towards receiving maternal health information.

This study did not find any significant association between marital status, and ethnicity and the use of maternal health services which supports the findings of Gross et al. (2012) from their study in Tanzania. Some studies in Ghana and Kenya have reported an association between the marital status and ethnicity of the woman and the use of ANC and delivery care (Abor & Abekah-Nkrumah, 2011; Kitui et al., 2013; Sakeah et al., 2014). This study also found an association between maternal employment and ANC initiation and the use of health facility for

delivery. The findings show that, women employed in the formal sector were better positioned to initiate ANC early in the first trimester and deliver in a health facility compared to women in the sales and business (self-employed) industry, and housewives. This supports the findings of Addai (2000) and other studies in Africa (Chama-chiliba & Koch, 2013; Dixon, Tenkorang, Luginaah, Kuuire, & Boateng, 2014). A woman who is employed could mean high income and thus an improvement on the purchasing power of the woman. She can therefore afford modern medical care even if the services were not rendered free.

Multiparous women may consider themselves experienced in child birth and due to this they may not see the need to start ANC early. This study found that parity was significantly associated with the use of ANC and delivery services; as the birth order increased, the use of maternal health services decreased. In this study, women with a birth order of 1-2 living children were favoured to start ANC early and deliver in a health facility. This could be that women with one or two children deemed themselves inexperienced in child birth. The association between parity and the use of ANC and delivery have been reported in studies conducted in Nigeria, Kenya and Senegal (Faye et al., 2011; Oladokun et al., 2010; van Eijk et al., 2006). The religious affiliation of a woman may be modelled by different beliefs system. These beliefs to some extent may influence how she thinks and behaves and may be able to influence her use of maternal health services. The finding of this study that Christian women were more likely than Muslim women and women of the traditional religion to initiate ANC early and deliver in a health facility conforms with the findings of other studies conducted in Ghana, Nigeria and Kenya (Dixon et al., 2014; Gyimah et al., 2006; Iyaniwura & Yussuf, 2009). Further research is needed into how the religious affiliation of the woman actually influences her use of maternal health services.

Having a valid health insurance card during pregnancy was found to be associated with the use of maternal health services. Women with valid health insurance cards during pregnancy were more likely relative to women without valid health insurance cards to initiate ANC early and deliver in a health facility with SBA. Other studies in Ghana have also reported an association between health insurance and the use of health services (Arthur, 2012; Nketiah-Amponsah et al., 2013; Singh et al., 2015). The implementation of the national health insurance scheme and the user fees exemptions on maternal health services are to contribute to the removal of financial barriers and increase the use of health services. The association between cost and the use of maternal health services has been explored by Asundep et al. (2014). Though a small proportion of women in this study cited cost as a barrier to the use of ANC and delivery care services, a significant proportion of deliveries still occurred at home despite the user fee exemption policy implemented. This may be attributed to the "other costs" that women incur which are not covered by health insurance including cost of transportation, cost of buying materials such as Dettol, soap, bleach, sanitary pad and mackintosh for delivery in health facilities. This was revealed in the FGDs. This implies that the national health insurance is only able to remove direct financial barriers to accessing maternal health care while the indirect financial barriers still exist. This finding from the FGDs agrees with what has been reported in other studies (Crissman et al., 2013; Moyer et al., 2013)

Exposure of women to maternal health information may enhance their knowledge on the dangers of pregnancy and delivery. This study identified that exposure to information on ANC and delivery care was significantly associated with delivery in health facilities in the bivariate analysis. Women who reported hearing information on ANC and delivery care (frequency not considered) were favoured to deliver with an SBA than women who did not. A study in Ghana

also reported similar findings (Mills et al., 2007). The association between exposure to information on maternal health and the use of delivery care has been explored in studies conducted in Zambia, Mali and Ethiopia where all reported an association (Gage, 2007; Hailu & Berhe, 2014; Stekelenburg et al., 2004).

After controlling for the effects other variables in the multivariate analysis, level of maternal education was the only significant determinant of both ANC initiation and place of delivery. The significance of higher maternal education on the use of maternal health services in Ghana has been documented in previous studies (Atinga et al., 2014; Mills et al., 2007; Oppong, Anette, & Ellen, 2014). This stresses the importance and need for girl child education as a way of improving maternal health.

5.3 ANC attendance and the place of delivery

The gestational age of pregnancy at ANC initiation, and the number of ANC follow up visits made before delivery were also significantly associated with place of delivery. The study found that women who initiated ANC in the first trimester were more likely to deliver in a health facility compared to women who initiated late which is consistent with a study conducted in Kenya (Ochako et al., 2011). Also, four and more ANC visits have been identified as a precursor for health facility delivery from studies conducted in Asia and Africa (Stephenson et al., 2006). The conclusion drawn by these studies has been corroborated by the findings of this study as women who made four and more visits were more likely to deliver in a health facility compared to those who made fewer visits.

The findings of this study are also indicative of the fact that health workers and community health volunteers are vital in health promotion activities. They were mentioned as the common

sources of information on ANC and delivery by the respondents in both structured interviews and FGDs. Information on maternal health can easily be passed on to women in their communities using the CHNs and CHVs.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study explored the determinants of ANC initiation and their effects on place delivery using both quantitative and qualitative methods. The main purpose was to identify factors which influenced the timing of the first ANC visit and how they affect the place where the woman delivers. The study found that most women in the study district use ANC at least once in their recent pregnancy though late booking was prevalent. The proportion of women who delivered in health facilities was slightly high (about 63.0%).

Independently, factors such as maternal age, occupation, educational attainment, religion, parity, having a valid health insurance card during pregnancy and exposure to information on delivery were significantly associated with the timing of first ANC visits and delivery care. Women below the age of 25 years, Christian women, women having one or two living children, women with valid health insurance cards during their recent pregnancy and women who were exposed to information on delivery care were more likely comparatively to start ANC in the first trimester and deliver in health facilities with an SBA. The gestational age of pregnancy at first ANC visit and the number of ANC follow up visits made before delivery were also significantly associated with the place of delivery. Women who started ANC early in the first trimester were more likely to make four and more ANC visits and deliver in a health facility compared to women who started ANC in their second trimester of pregnancy and beyond. Maternal education was the only determinant which influenced both the timing of the first ANC visit and the place of delivery after controlling for the effects of the other variables. The findings suggest that there is urgent

need to advocate for and invest in girl child education as this can greatly promote better maternal health seeking behaviour and thereby contributing to reducing maternal morbidity and mortality.

Health workers and CHVs have been identified as key sources of maternal health information. They can be used as tools in promoting better health seeking behaviour at the community level by empowering them with behaviour change communication skills.

6.2 Recommendations

Based on the findings of this study, the researcher recommends the following;

- First, at the policy level laws should be enforced promoting girl child education and should include policies that will retain the female child in school up to secondary education and higher, and granting access to sexual and reproductive health information and services by young girls to empower them to be able to take decisions regarding their sexual and reproductive health to prevent unwanted pregnancies and contracting sexually transmitted infections. The inclusion of cost of Dettol, bleach and other materials for delivery purchased by expectant mothers in the national health insurance scheme could contribute to increased utilization of health facility delivery.

- Second, the determinants of ANC first trimester initiation and delivery care have been identified as level of educational attainment, having a valid health insurance during pregnancy and exposure to information on delivery care. Health care providers at the facilities can identify potential women who are unlikely to deliver in health facilities from the routinely collected data on ANC women. This provides an opportunity to

strategize to ensure that such identified women are supported (for example through more specialised home visits) to deliver in health facilities.

- Third, focused ANC should be intensified and more counselling on birth preparedness to include recognizing signs of labour and delivery by pregnant women, and a plan for a place of delivery

- Finally, health education and counselling on ANC and delivery during ANC will enlighten only women who are already utilizing health facilities. Therefore, community sensitization campaigns could be used as tools to reach out to all women in the communities and encourage them to register early at ANC.

6.3 Study strengths and limitations

This study has strengths and limitations. The strengths are that, first it restricted study participants to only women who delivered in past six months preceding the survey to minimize recall biases. Second, records such as ANC record book were used to confirm some of the reported information provided by the respondent for example gestation of pregnancy at first ANC visits thereby ensuring the reliability of the information provided by participants on these variables. However one limitation of this study lies in the study design. Being cross-sectional in nature only enables it to identify association and not causality. The results of this study may not also be applied to women who did not access ANC during pregnancy since they were not included in the analysis of the determinants of ANC first trimester initiation and place of delivery.

REFERENCES

Abor, P., & Abekah-Nkrumah, G. (2011). The socio-economic determinants of maternal health care utilization in Ghana. *International Journal of Social Economics*, *38*(7), 628–648.

AbouZahr, C., & Tessa Wardlaw. (2003). *Antenatal Care in Developing Countries: Promises, achievements and missed opportunities: An analysis of trends, levels and differentials, 1990-2001*. Geneva.

Adanu, R. M. K. (2010). Utilization of Obstetric Services in Ghana between 1999 and 2003. *African Journal of Reproductive Health*, *4*(3), 153–158.

Aday, L. A., & Cornelius, L. J. (2006). *Designing and Conducting Health Surveys: A Comprehensive Guide* (3rd ed.). 989 Market Street, San Francisco, CA 94103-1741: JOSSEY-BASS A Wiley Imprint.

Addai, I. (2000). Determinants of Use of Maternal-Child Health Services in Rural Ghana. *Journal of Biosocial Science*, *32*(1), 1–15.

Akazili, J., Doctor, H. V., Abokyi, L., Hodgson, A., & Phillips, J. F. (2011). Is there any relationship between antenatal care and place of delivery ? Findings from rural northern Ghana. *African Journal of Health Sciences*, *18*(1), 62–73.

Amoakoh-coleman, M., Ansah, E. K., Agyepong, I. A., Grobbee, D. E., Kayode, G. A., & Klipstein-grobusch, K. (2015). Predictors of skilled attendance at delivery among antenatal clinic attendants in Ghana : a cross-sectional study of population data. *BMJ*, 1–10. http://doi.org/10.1136/bmjopen-2015-007810

Amooti-Kaguna, B., & Nuwaha, F. (2000). Factors influencing choice of delivery sites in Rakai district of Uganda. *Social Science Medicine*, *50*(2), 203–213.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior*, *36*(1), 1–10.

Arthur, E. (2012). Wealth and antenatal care use: implications for maternal health care utilisation in Ghana. *Health Economics Review*, *2*(1), 14.

Asundep, N., April, C., Cornelius, T., Tameru, B., Ada, A., Kui, Z., & Pauline, J. (2014). Determinants of access to antenatal care and birth outcomes in Kumasi, Ghana. *J Epidemiol Glob Health*, *3*(4), 279–288. http://doi.org/10.1016/j.jegh.2013.09.004.Determinants

Atinga, R. A., Baku, A. A., & Adongo, P. B. (2014). Drivers of Prenatal Care Quality and Uptake of Supervised Delivery Services in Ghana. *Annals of Medical and Health Sciences Research*, *4*(Suppl 3), S264–S271. http://doi.org/10.4103/2141

Awoonor-Williams, J. . (2015). *2014 Annual Report*. Bolgatanga.

Babinard, J., & Roberts, P. (2006). *Maternal and Child Mortality Development Goals : What Can the Transport Sector Do?*

Bina, G., & Mathews, S. A. (2009). Women's Empowerment, Sociocultural Contexts, and Reproductive Behaviour in Nepal. *Asia-Pacific Population Journal*, *24*(2).

Biritwum, R. . (2006). Promoting and Monitoring Safe Motherhood in Ghana. *Ghana Medical Journal*, *40*(3), 78–79.

Birungi, H., Nyarko, P., Askew, I., Ajayi, A., & Jehu-appiah, C. (2006). Priority Setting for Reproductive Health at the District Level in the context of Health Sector Reforms in Ghana April 2006, (April).

Bloom, S. S., Lippeveld, T., & Wypij, D. (1999). Does Antenatal Care Make a Difference to Safe Delivery ? A Study in Urban Uttar Pradesh , India. *Health Policy and Planning*, *14*(1), 38–48.

Bradley, E. H., Curry, L. a., & Devers, K. J. (2007). Qualitative Data Analysis for Health Services Research: Developing Taxonomy, Themes, and Theory. *Health Services Research*, *42*(4), 1758–1772.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Bricki, N., & Green, J. (2007). *A Guide to Using Qualitative Research Methodology*. *Medecins Sans Frontieres Field Research*. New York.

Builsa South District Annual Report. (2015). *2014 Annual Report, Builsa South District, Upper East Region*.

Campbell, O. M. R., & Graham, W. J. (2006). Strategies for reducing maternal mortality : getting on with what works. *Lancet Maternal Survival Series*, *368*, 1284–1299.

Chakraborty, N., Islam, M., Chowdhury, R., Wasimul, B., & Hanum, H. (2003). Determinants of the use of maternal health services in rural Bangladesh. *Health Promotion International*, *18*(4), 327–337.

Chama-chiliba, C. M., & Koch, S. F. (2013). Utilization of focused antenatal care in Zambia : examining individual- and community-level factors using a multilevel analysis. *Health Economics Review*, *30*, 78–87.

D'Ambruose, L., Abbey, M., & Hussein, J. (2005). Please Understand when I Cry out in Pain: women's accounts of maternity services during labour and delivery in Ghana. *BMC Public Health*, *5*, 140.

Dairo, M. ., & Owoyokun, K. . (2010). Factors affecting the utilization of antenatal care services in Ibadan, Nigeria. *Benin Journal of Postgraduate Medicine*, *12*(1), 3–13.

Deo, K. K., Paudel, Y. R., Khatri, R. B., Bhaskar, R. K., Paudel, R., Mehata, S., & Wagle, R. R. (2015). Barriers to Utilization of Antenatal Care Services in Eastern Nepal. *Frontiers in Public Health*, *3*, 197.

Dixon, J., Tenkorang, E. Y., Luginaah, I. N., Kuuire, V. Z., & Boateng, G. O. (2014). National health insurance scheme enrolment and antenatal care among women in Ghana : is there any relationship ? *Tropical Medicine and International Health*, *19*(1), 98–106.

Esena, R. K. (2014). *A Dictionary of Health Care* (Second Edi). Accra, Ghana.

Esena, R. K., & Sappor, M. (2013). Factors Associated With The Utilization Of Skilled Delivery Services In The Ga East Municipality Of Ghana Part 2 : Barriers To Skilled Delivery. *International Journal of Scientific and Technology Research*, *2*(8), 195–207.

Faye, A., Niane, M., & Ba, I. (2011). Home birth in women who have given birth at least once in a health facility : contributory factors in a developing country. *Acta Obstetricia et Gynecologica Scandinavica*, *90*(2011), 1239–1243. http://doi.org/10.1111/j.1600-0412.2011.01163.x

Fekadu, M., & Regassa, N. (2014). Skilled delivery care service utilization in Ethiopia : analysis of rural-urban differentials based on national demographic and health survey (DHS) data. *African Health Sciences*, *14*(4), 974–984.

Gabrysch, S., & Campbell, O. M. (2009). Still too far to walk: Literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth*, *9*(1), 34.

Gabrysch, S., Cousens, S., Cox, J., & Campbell, O. M. R. (2011). The influence of distance and level of care on delivery place in rural Zambia: A study of linked national data in a geographic information system. *PLoS Medicine*, *8*(1). http://doi.org/10.1371/journal.pmed.1000394

Gage, A. (2007). Barriers to the utilization of maternal health care in rural Mali. *Scocial Science Medicine*, *65*(8), 1666–1682.

Geelhoed, D., Agadzi, F., Visser, L., Ablordeppey, E., Asare, K., O'Rourke, P., … van Roosmalen, J. (2006). Maternal and fetal outcome after severe anemia in pregnancy in rural Ghana. *Acta Obstetricia et Gynecologica Scandinavica*, *85*(10), 1165–1171.

Ghana Health Service. (2013). *2013 Annual Reproductive and Child Health Report , Ghana Health Service*. Accra, Ghana.

Ghana Health Service. (2015). *2014 Annual Report*. Accra.

Ghana Statistical Service. (2013). *2010 Population & Housing Census*.

Ghana Statistical Service, Ghana Health Service, & ICF International. (2015). *Ghana Demographic and Health Survey 2014*. Rockville, Maryland, USA.

Ghana Statistical Service, Ghana Health Service, & Macro International Inc. (2007). *Ghana Maternal Health Survey 2007*. Calverton Maryland, USA.

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal*, *204*(6), 291–295.

Gross, K., Alba, S., Glass, T. R., Schellenberg, J., & Obrist, B. (2012). Timing of antenatal care for adolescent and adult pregnant women in south-eastern Tanzania. *BMC Pregnancy and Childbirth*, *12*(1), 16.

Gurmesa, T. (2009). Antenatal Care Service Utilization and Associated Factors in Metekel Zone, Northwest Ethiopia. *Ethiop J Health Dev.*, *19*(2), 111–119.

Gyimah, S. ., Takyi, B. K., & Addai, I. (2006). Challenges to the reproductive-health needs of African women : On religion and maternal health utilization in Ghana. *Social Science and Medicine*, *62*(2006), 2930–2944.

Haddrill, R., Jones, G. L., Mitchell, C. a, & Anumba, D. O. (2014). Understanding delayed access to antenatal care: a qualitative interview study. *BMC Pregnancy and Childbirth*, *14*(1), 207.

Hailu, D., & Berhe, H. (2014). Determinants of institutional childbirth service utilisation among women of childbearing age in urban and rural areas of Tsegedie district , Ethiopia. *Midwifery*, *30*(2014), 1109–1117. http://doi.org/10.1016/j.midw.2014.03.009

Hazemba, A. N., & Siziya, S. (2002). Choice of place for childbirth : prevalence and correlates of utilization of health facilities in Chongwe district , Zambia. *Medical Journel of Zambia*, *35*(2), 53–57.

Ikamari, L. D. . (2004). Maternal Health Care Utilization in Teso District. *African Journel of Health Science*, *11*(1-2), 21–32.

Iyaniwura, C. A., & Yussuf, Q. (2009). Utilization of Antenatal care and Delivery services in Sagamu , South Western Nigeria. *African Journel of Reproductive Health*, *13*(3), 111–122.

Jammeh, A., Sundby, J., & Vangen, S. (2011). Barriers to emergency obstetric care services in perinatal deaths in rural gambia: a qualitative in-depth interview study. *ISRN Obstetrics and Gynecology*, *2011*, 981096. http://doi.org/10.5402/2011/981096

Kawungezi, P. C., Akiibua, D., Aleni, C., Chitayi, M., Kazibwe, A., Sunya, E., … Nakubulwa, S. (2015). Attendance and Utilization of Antenatal Care(ANC) Services: Multi-Center Study in Upcountry Areas of Uganda. *Open J Prev Med.*, *5*(3), 132–142.

Kitui, J., Lewis, S., & Davey, G. (2013). Factors influencing place of delivery for women in Kenya : an analysis of the Kenya demographic and health survey , 2008 / 2009. *BMC Pregnancy and Childbirth*, *13*, 1–10.

Lindolf, T. R., & Taylor, B. C. (2011). *Qualitative Communication Research Methods* (3rd ed.). SAGE Publications, Inc.

Magadi, M., Diamond, I., & Rodrigues, R. (2000). The determinants of delivery care in Kenya. *Social Biology*, *47*(3-4), 164–188.

Magadi, M., Madise, J., & Rodrigues, R. (2000). Frequency and timing of antenatal care in Kenya: Explaining the variations between women of different communities. *Social Science and Medicine*, *51*(2000), 551–561.

Målqvist, M., Sohel, N., Do, T. T., Eriksson, L., & Persson, L.-åke. (2010). Distance decay in delivery care utilisation associated with neonatal mortality . A case referent study in northern Vietnam. *BMC Public Health*, *10*(1), 762. http://doi.org/10.1186/1471-2458-10-762

Mann, C. J. (2003). Observational research methods . Research design II : cohort,cross-sectional, and case-control studies. *Emergency Medicine Journal : EMJ*, *20*, 54–61.

Mills, S., Williams, Æ. J. E., & Adjuik, Æ. M. (2007). Use of Health Professionals for Delivery Following the Availability of Free Obstetric Care in Northern Ghana. *Maternal Child Health Journal*, *12*, 509–518. http://doi.org/10.1007/s10995-007-0288-y

Moyer, C. A., & Mustafa, A. (2013). Drivers and deterrents of facility delivery in sub-Saharan Africa: a systematic review. *Reproductive Health*, *10*(1), 40. http://doi.org/10.1186/1742-4755-10-40

Mpembeni, R. N. M., Killewo, J. Z., Leshabari, M. T., Massawe, S. N., Jahn, A., Mushi, D., & Mwakipa, H. (2007). Use pattern of maternal health services and determinants of skilled care during delivery in Southern Tanzania : implications for achievement of MDG-5 targets. *BMC Pregnancy and Childbirth*, *7*(29), 1–7.

Mrisho, M., Schellenberg, J., Mushi, A., Obrist, B., Mshinda, H., Tanner, M., & Schellenberg, D. (2007). Factors affecting home delivery. *Tropical Medicine and International Health*, *12*(7), 862–872.

Navaneetham, K., & Dharmalingam, A. (2002). Utilization of Maternal Health Care Services in Southern India. *Journal of Social Sciences and Medicine*, *55*(10), 1849–1869.

Ndyomugyenyi, R., Neema, S., & Magnussen, P. (1998). The use of formal and informal services for antenatal care and malaria treatment in rural Uganda. *Health Policy and Planning*, *13*(1), 94–102.

Nguyena, H. T. H., Hatt, L., Islam, M., Sloan, N. L., Chowdhury, J., Schmidt, J.-O., … Wang, H. (2012). Encouraging maternal health service utilization : An evaluation of the Bangladesh voucher program. *Social Science and Medicine*, *74*(2012), 989–996.

Nieburg, P. (Center for S. and I. S. (2012). *Improving Maternal Mortality and Other Aspects of Women ' s Health*. Washington, DC.

Nketiah-Amponsah, E., Senadza, B., & Arthur, E. (2013). Determinants of utilization of antenatal care services in developing countries Recent evidence from Ghana. *African Journal of Economics and Management Studies*, *4*(1), 58–73.

Ochako, R., Fotso, J., Ikamari, L., & Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya : Insights from the Kenya Demographic and Health Survey , 2003. *BMC Pregnancy and Childbirth*, *11*(1), 1–9.

Odoi-Agyarko, H. (2003). *Profile of Reproductive Health Situation in Ghana*.

Oguntunde, O., Aina, O., Ibrahim, M. S., & Umar, H. S. (2010). Antenatal Care and Skilled Birth Attendance in Three Communities in Kaduna State , Nigeria. *African Journel of Reproductive Health*, *14*(3), 89–96.

Okiwelu, T., Hussein, J., Adjei, S., Arhinful, D., & Armar-klemesu, M. (2007). Safe motherhood in Ghana : Still on the agenda ? *Health Policy*, *84*(2007), 359–367.

Oladokun, A., Oladokun, R. . ., Morhason-Bello, I., Bello, A. ., & Addokum, B. (2010). Proximate predictors of early antenatal registration among Nigerian pregnant women. *Annals of African Medicine*, *9*(4), 222–225.

Oppong, A. B., Anette, A., & Ellen, C. (2014). Spatial Analysis of Skilled Birth Attendant Utilization in Ghana. *Global Journal of Health Sciences*, *6*(4). http://doi.org/10.5539/gjhs.v6n4p117

Overbosh, G. ., Nsowah-Nuamah, N. N. ., van den Boom, G. J. ., & Damnyag, L. (2004). Determinants of Antenatal Care Use in Ghana. *Journal of African Economies*, *13*(2), 277–301.

Owoo, N. S., & Lambon-quayefio, M. P. (2013). National health insurance , social influence and antenatal care use in Ghana. *Health Economics Review*, *3*(19), 1–12. Retrieved from Health Economics Review

Palys, T. (2008). Purposive sampling. In L. *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, CA: Sage.

Paul, B., & Rumsey, D. (2002). Utilization of health facilities and trained birth attendants for childbirth in rural Bangladesh: an emperical study. *Social Science Medicine*, *54*(112), 1755–1765.

Raatikainen, K., Heiskanen, N., & Heinonen, S. (2007). Under-attending free antenatal care is associated with adverse pregnancy outcomes. *BMC Public Health*, *7*, 268.

Raghupathy, S. (1996). Education and use of maternal health care in Thailand. *Social Sciences Medicine*, *43*(4), 459–471.

Ronsmans, C., & Graham, W. . (2006). Maternal Survival 1 Maternal mortality : who , when , where , and why. *The Lancet*, *368*, 1189–1200. http://doi.org/10.1016/S0140-6736(06)69380-X

Sakeah, E., Doctor, H. V, McCloskey, L., Bernstein, J., Yeboah-Antwi, K., & Mills, S. (2014). Using the community-based health planning and services program to promote skilled delivery in rural Ghana: socio-demographic factors that influence women utilization of skilled attendants at birth in Northern Ghana. *BMC Public Health*, *14*(1), 344.

Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A.-B., Daniels, J., … Alkema, L. (2014). Global causes of maternal death: A WHO systematic analysis. *The Lancet Global Health*, *2*(6), 323–333.

Simkhada, B., Teijlingen, E. R. Van, Porter, M., & Simkhada, P. (2008). Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. *Journel of Advanced Nursing*, *61*(3), 244–260.

Singh, K., Osei-Akoto, I., Otchere, F., Sodzi-Tettey, S., Barrington, C., Huang, C., … Speizer, I. (2015). Ghana's National Health insurance scheme and maternal and child health: a mixed methods study. *BMC Health Services Research*, *15*(108), 1–13.

Stanton, C., Blanc, A. K., Croft, T., & Choi, Y. (2007). Skilled Care at Birth In The Developing World: Progress to Date And Strategies For Expanding Coverage. *Journal of Biosocial Science*, *39*, 109–120. http://doi.org/10.1017/S0021932006001271

Stekelenburg, J., Kayanamina, S., Mukelabai, M., Wolffers, I., & van Roosmalen, J. (2004). Waiting too long: low use of maternal health services in Kalabo Zambia. *Tropical Medicine and International Health*, *9*(3), 390–398.

Stephenson, R., Baschieri, A., Clements, S., Hennink, M., & Madise, N. (2006). Contextual Influences on the Use of Health Facilities for Childbirth in Africa. *American Journal of Public Health*, *96*(1), 84–93.

Stephenson, R., & Tsul, A. (2002). Contextual influences on reproductive health service use in Uttah Pradesh, India. *Studies in Family Planning*, *33*(4), 309–320.

Tadesse, B., Mulat, A., & Gashaw, A. (2014). Previous Early Antenatal Service Utilization Improves Timely Booking : Cross-Sectional Study at University of Gondar Hospital , Northwest Ethiopia. *Journal of Pregnancy*, *2014*, 1–7.

Thaddeus, S., & Maine, D. (1994). Too far to walk: Maternal mortality in context. *Social Science and Medicine*, *38*(8), 1091–1110.

Thuy Trinh, L. T., Dibley, M. J., & Byles, J. (2007). Determinants of Antenatal Care Utilization in Three Rural Areas of Vietnam. *Public Health Nursing*, *24*(4), 300–310.

Titaley, C. R., Dibley, M. J., & Roberts, C. L. (2010). Factors associated with underutilization of antenatal care services in Indonesia: results of Indonesia Demographic and Health Survey 2002/2003 and 2007. *BMC Public Health*, *10*, 1–10. http://doi.org/10.1186/1471-2458-10-485

Tuladhar, H., & Dhakal, N. (2011). Impact of Antenatal Care on Maternal and Perinatal outcome : A Study at Nepal Medical College Teaching Hospital, *6*(2), 37–43.

van Eijk, A. M., Bles, H. M., Odhiambo, F., Ayisi, J. G., Blokland, I. E., Rosen, D. H., … Lindblade, K. a. (2006). Use of antenatal services and delivery care among women in rural western Kenya: a community based survey. *Reproductive Health*, *3*, 2.

Villar, J., Ba'aqeel, H., Piaggio, G., Lumbiganon, P., Belizán, J. M., Farnot, U., … Berendes, H. (2001). WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care. *The Lancet*, *357*, 1551–1564.

Wado, Y. D., Afework, M. F., & Hindin, M. J. (2013). Unintended pregnancies and the use of maternal health services in Southwestern Ethiopia. *BMC International Health and Human Rights*, *13*(1), 36.

Wagle, R. R., Sabroe, S., & Nielsen, B. B. (2004). Socioeconomic and physical distance to the maternity hospital as predictors for place of delivery: an observation study from Nepal. *BMC Pregnancy and Childbirth*, *4*, 8. http://doi.org/10.1186/1471-2393-4-8

Witter, S., Arhinful, D., Kusi, A., & Zakariah-Akoto, S. (2007). The Experience of Ghana in Implementing a User Fee Exemption Policy to Provide Free Delivery Care. *Reproductive Health Matters*, *15*(30), 61–71.

Wong, L. P. (2008). Focus group discussion: a tool for health and medical research. *Singapore Medical Journal*, *49*(3), 256–260.

World Health Organization. (2002). *WHO Antenatal Care Randomized Trial: Manual for the Implementation of the New Model*. Geneva.

World Health Organization. (2004). *Making pregnancy safer: the critical role of the skilled attendant. A joint statement by WHO, ICM and FIGO*. Geneva. Retrieved from http://whqlibdoc.who.int/publications/2004/9241591692.pdf

World Health Organization. (2014). *World Health Statistics 2014*. Geneva.

World Health Organization, Unicef, UNFPA, World Bank, & United Nations population Division. (2014). *Trends in Maternal Mortality: 1990-2013. Estimates by WHO,UNICEF, UNFPA, The World Bank and the United Nations population Division*. Geneva.

Yeboah, M. K. (2012). Social Support and Access to Prenatal Health Services : A Study of Pregnant Teenagers in Cape Coast , Ghana. *Journal of Science and Technology*, *32*(1), 68–78.

Zeine, A., Woldie, M., & Ololo, S. (2010). Factors Influencing Antenatal care Utilization in Hadiya Zone. *Ethiopian Journal of Health Science*, *20*(2), 75–82.

APPENDICES

Appendix 1a: Consent form for women 15-49 years in structured interview

DEPARTMENT OF POPULATION, FAMILY AND REPRODUCTIVE HEALTH

SCHOOL OF PUBLIC HEALTH, LEGON GHANA

CONSENT FORM FOR WOMEN 15-49 YEARS IN STRUCTURED INTERVIEW

Title: Determinants of Antenatal care initiation and their effects on place of delivery in the Builsa South District of the Upper East Region

Researcher: Michael Boah

Research Supervisor: Dr Agnes M. Kotoh, Lecturer School of Public Health, University of Ghana Legon

PART I: INFORMATION SHEET

Introduction

I am Michael Boah, a Masters student of the School of Public Health, Legon. I am conducting a study on Determinants of antenatal care initiation and their effects on place of delivery. I am going to give you information and invite you to be part of this study. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the study. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask.

Purpose and Nature of the Study

This study will involve your participation in responding to some questions about antenatal care and delivery on a face-to-face basis that will take less than an hour to complete. You are being invited to take part in this study because I feel that your experience as a mother can contribute much to

my understanding and knowledge of local health practices among women in your community. Many women in your community are not able to start antenatal care early when they are pregnant and some do not deliver in health facilities. I want to find out what makes some women not to start antenatal care early and deliver at home. The information you will give will help us to learn what to do so that women in this community and other communities can start antenatal care early and deliver in health facilities

Potential Risks and Discomforts

I am asking you to share with me some very personal and confidential information, and you may feel uncomfortable talking about some of the topics. You do not have to answer any question or take part in the research if you don't wish to do so. You do not have to give me any reason for not responding to any question, or for refusing to take part in the research

Possible Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to promote early start of antenatal care by women in your community

Additional Costs and Compensation

You will not be compensated for participating in the study. If you agree to participate in the study, I will visit you at home or any place that you think is comfortable for you. I will only ask you to spare some of your time to answer the questions I will ask

Confidentiality

If you participate in the study, other community members who see us together may ask you questions about the study. I will not share information about you to anyone outside who is not part of the study team. The information that I will collect from this study will be used for academic purposes. A number instead of your name will be used for any information about you. Only I will know what your number is and I will lock that information up with a lock and key. It will not be shared with or given to anyone

Sharing the Results

Nothing that you tell me will be shared with anybody outside the study team, and nothing will be attributed to you by name. The knowledge that I will get from this study will be shared with the District Director of Health so that they will see what to do to improve maternal health services in your community. I may publish the results so that other interested people may learn from the study.

Voluntary Participation and Right to Withdraw from the Study

You do not have to take part in this study if you do not wish to do so, and choosing to participate will not affect you in any way. You may withdraw from the study at any time that you wish. I will give you an opportunity at the end of the interview to review your responses, and you can ask to change any responses that you want. You do not have to give me any reason for withdrawing.

Contacts for Additional Information

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following: Michael Boah, School of Public Health, Legon on the following numbers 0208404184/0244876056, or email boahmichael@yahoo.com or Dr Agnes Kotoh, School of Public Health, Legon on 0208088267, or email nyamikye@yahoo.co.uk or Hannah Frimpong, Ghana Health Service Ethics Review Committee on 0243235225, email hanna.frimpong@ghsmail.org

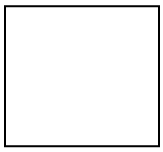
PART II: CERTIFICATE OF CONSENT

I have been invited to participate in a study about antenatal care and delivery. The document describing the benefits, risks and nature and purpose of the study has been read and explained to me. I have been given an opportunity to have any questions about the study answered to my satisfaction. I agree voluntarily to participate in this study**.**

_____	_____		_____
Full name of participant	Signature or	Thumb print	Date

Declaration by witness (if participant cannot read the form herself)

I was present while the benefits, risks and nature and purpose of the study were read to the participant. All questions were answered and the participant has agreed voluntarily to take part in the study



_____ _____ _____

Full name of witness Signature of witness or Thumb print Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this study have been explained to the above individual to the best of my ability. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the consent has been given freely and voluntarily

_____ _____ _____

Name of researcher Signature Date

Appendix1b: Consent form for women in focus group discussions

DEPARTMENT OF POPULATION, FAMILY AND REPRODUCTIVE HEALTH

SCHOOL OF PUBLIC HEALTH, LEGON GHANA

CONSENT FORM FOR WOMEN 15-49 YEARS IN FGDS

Title: Determinants of Antenatal care initiation and their effects on place of delivery in the Builsa South District of the Upper East Region

Researcher: Michael Boah

Research Supervisor: Dr Agnes M. Kotoh, Lecturer School of Public Health, University of Ghana Legon

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Purpose and Nature of the Study

This study will involve your participation in responding to some questions about antenatal care and delivery in a group discussion that will take about an hour and half to complete. You are being invited to take part in this study because I feel that your experience as a mother can contribute

much to my understanding and knowledge of local health practices among women in your community. Many women in your community are not able to start antenatal care early when they are pregnant and some do not deliver in health facilities. I want to find out why it happens that way. The information you will give will help us to learn what to do so that women in this community and other communities can start antenatal care early and deliver in health facilities.

Potential Risks and Discomforts

There are no potential risks. You may only feel uncomfortable talking about some issues that you consider personal and confidential. You do not have to answer any question or take part in the study if you don't wish to do so. You do not have to give me any reason for not responding to any question, or for refusing to take part in the study.

Possible Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to promote early start of antenatal care by women in your community.

Additional Costs and Compensation

You will not be compensated for participating in the study. If you agree to participate in the study, I will visit you at home or any place that you think is comfortable for you. I will only ask you to spare some of your time to answer the questions I will ask.

Confidentiality

If you participate in the study, other community members who see us together may ask you questions about the study. I will ask you and others in the group not to talk to people outside the group about what was said in the group. You should know, however, that I cannot stop or prevent participants who were in the group from sharing things that should be confidential.

Sharing the Results

Nothing that you tell me will be shared with anybody outside the study team, and nothing will be attributed to you by name. The knowledge that I will get from this study will be shared with the District

Director of Health so that they will see what to do to improve maternal health services in your community. I may publish the results so that other interested people may learn from the study.

Voluntary Participation and Right to Withdraw from the Study

You do not have to take part in this study if you do not wish to do so, and choosing to participate will not affect you in any way. You may withdraw from the discussion at any time that you wish. I will give you an opportunity at the end of the interview to review your responses, and you can ask to change any responses that you want. You do not have to give me any reason for withdrawing.

Contacts for Additional Information

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following: Michael Boah, School of Public Health, Legon on the following numbers 0208404184/0244876056, email boahmichael@yahoo.com or Dr Agnes M. Kotoh, School of Public Health, Legon on 0208088267, email nyamikye@yahoo.co.uk or Hannah Frimpong, Ghana Health Service Ethics Review Committee on 0243235225, email hanna.frimpong@ghsmail.org

PART II: CERTIFICATE OF CONSENT

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Full name of participant Signature or Thumb print Date

Declaration by witness (if participant cannot read the form herself)

I was present while the benefits, risks and nature and purpose of the study were read to the participant. All questions were answered and the participant has agreed voluntarily to take part in the study

_____	_____		_____
Full name of witness	Signature of witness or	Thumb print	Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this study have been explained to the above individual to the best of my ability. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily

_____	_____	_____
Name of researcher	Signature	Date

Appendix 2a: Questionnaire for women 15-49 years in structured interview

SCHOOL OF PUBLIC HEALTH, LEGON GHANA

Determinants of Antenatal Care Initiation and their Effect on Place of Delivery in the Builsa South District of the Upper East Region

Questionnaire for women 15-49 years

Compound name:…….Community name……...

Date of interview……/……/… **Record interview start time…….**

QNo	Question	Code
	SOCIO-DEMOGRAPHIC DATA	
1	**Age of respondent at <u>time of delivery</u>** (in completed years)…… (confirm from any valid ID)	Q1age
2	**Marital status** Single……1 Married……2 Cohabiting…… ……3 Separated……4 Widow……5 **(CIRCLE ONLY ONE)**	Q2mar_st
3	**Respondent's occupation** Unemployed……1 Farmer……2 Trader/Business……3 Government employee……4 Private sector employee……5 Others (*specify)*…… **(CIRCLE ONLY ONE)**	Q3occup
4	**Highest educational level attained** No education……1 Primary ……2 Middle/Junior High School……3 Secondary……4 Tertiary ……5 **(CIRCLE ONLY ONE)**	Q4educ
5	**Religion** Traditional……1 Christian……2 Muslim……3 Others *(specify)*…… **(CIRCLE ONLY ONE)**	Q5relig
6	**Parity (number of living born children the woman has)**	Q6parity

	1……...1 2……..2 3……...3 4……4 5-7……5 8-9……...6 10+……..7 **(CIRCLE ONLY ONE)**	
7	**Ethnicity** Builsa……...1 Kantoosi……..2 Mamprusi……3 Kassena ……..4 Sissala……..5 Others (*Specify*)…… **(CIRCLE ONLY ONE)**	Q7ethnic
8	**Were you registered unto the National Health Insurance Scheme in your last pregnancy?** ***(If yes ask to see card)*** Yes……1 No……2 → **SKIP TO Q10** **(CIRCLE ONLY ONE)**	Q8insura
9	**Health insurance card validity status (as at last pregnancy)** Not valid health insurance……1 Valid health insurance……2 Not applicable……88 **(CIRCLE ONLY ONE)**	Q9valdins
	KNOWLEDGE ON BENEFITS OF ANC AND USE OF ANC	
10	**Did you attend ANC for your most recent child [name]?** Yes……1 No……2 → **SKIP TO Q16** **(CIRCLE ONLY ONE)**	Q10anc_at
11	**At what age (in months) of pregnancy did you start ANC for your recent pregnancy?(*comfirm from ANC record book)*** 1month……1 2 months……2 3months……3 4 months……4 5months……5 6months……6 7months and above……7 Not applicable……88 **(CIRCLE ONLY ONE)**	Q11gest
12	**Where did you receive ANC services for [name of recent child]? (probe) (Confirm from ANC book)** Health centre……1 CHPS……2 TBA……3 Hospital……4	Q12wheranc

	Others *(specify)*…….. Not applicable……..88 **(CIRCLE ALL THAT APPLY)**	
13	**How many visits (excluding visits for own medical care) did you make before delivering [name]?(*confirm with ANC book)*** 1……..1 2……..2 3……..3 4……..4 5 and more……..5 Not applicable……88 **(CIRCLE ONLY ONE)**	Q13visits **SKIP TO Q15**
14	**What is/are your reasons for making this number of visits?(*refer to 13)*(probe)** Nearest health facility too far (**record estimated walking time)**……1 No transport to health facility……..2 High cost of ANC……..3 I did not see the need to attend ANC regularly……4 Poor attitude of health workers……5 Long waiting time at facility……6 No money for transportation……7 Husband's decision……8 Others (*Specify*)…… Not applicable……..88 **(CIRCLE ALL THAT APPLY)**	Q14reas
15	**Why did you attend ANC? (probe)** To check baby's health……1 To see if baby is lying well……..2 To receive immunizations……3 Advice from health workers ……..4 Better services available at health facility……..5 To check my health……6 Husband's decision……..7 Others *(specify*…… Not applicable……88 **(CIRCLE ALL THAT APPLY)**	Q15whyanc
16	**Why didn't you attend ANC? (probe)** I did not see the need for ANC……1 I had no complication with pregnancy……..2 Unintended pregnancy……3 No money for ANC services……4 Health facility too far **(record estimated walking time)**……5 Poor attitude of health workers……6 Medicines given at health facility are not good……..7 Others *(specify)*…….. **(CIRCLE ALL THAT APPLY)**	Q16noanc **SKIP if response to Q10 is …1**
17	**In your <u>opinion</u> at what age of pregnancy should a woman start ANC?** 1month……..1 2 months……..2	Q17oppanc

	3months……3 4 months……..4 5months……...5 6months……6 7months ……..7 8 months and above……8 I don't know……9 → **SKIP TO Q19** **(CIRCLE ONLY ONE)**	
18	**What is your reason(s) for your answer? (probe)** No problem/complication with pregnancy……...……..1 Unintended pregnancy……..……2 No money to pay for ANC services……3 Health facility too far **(record estimated walking time)..**……4 Check the health of the baby……..……5 To identify complications……..……6 No money for transport……7 Husband's decision……8 Others (*Specify)*…….…….. Not applicable……88 **(CIRCLE ALL THAT APPLY)**	Q18oppreas
19	**In your opinion why should a pregnant woman attend ANC? (probe)** To check my health and baby's health……..1 To see if baby is lying well……...2 To receive immunizations……...……...3 Advice from health workers and others……..……..4 Better services at health facility……5 Husband's decision……..……..6 Others *(specify)*…… I don't know……7 **(CIRCLE ALL THAT APPLY)**	Q19oppatt
20	**In your opinion why would a pregnant woman NOT attend ANC? (probe)** If she does not see the need for ANC……1 No problem/complication with pregnancy……..2 Unintended pregnancy……3 No money to pay for services……4 Far distance to health facility……..……..5 Poor attitude of health workers……6 No national health insurance……...……7 No money for transport……8 Others *(Specify)*…….. I don't know……..9 **(CIRCLE ALL THAT APPLY)**	Q20oppno
21	**In your opinion why do some women start ANC late (that is after 3 months)? (probe)** No need for early initiation……..1 Unaware of pregnancy……2 No complications with previous pregnancy……3 No money for ANC……4 Husband's decision not to let her go for ANC……..5	Q21opplate

	Health facility too far……..6 Lack of transport to health facility……..7 Poor attitude of health workers……8 Medicines given at health facility are not good……...9 Others *(specify)*…….. I don't know……..10 **(CIRCLE ALL THAT APPLY)**	
	DELIVERY CARE	
22	**Where did you deliver [name]?** Health facility……..1 Home……...2 → **SKIP TO Q25** Others *(specify)*.....…… **(CIRCLE ONLY ONE)**	Q22delvr
23	**Who assisted in delivery at the health facility? (Probe)** Doctor ……1 Midwife ……2 Community health nurse……3 Other nurse (GN, EN etc.)……4 I don't remember……5 Other (*specify)*…… Not applicable……88 **(CIRCLE ONLY ONE)**	Q23delasst
24	**Why did you deliver [name] at a health facility? (probe)** Safer delivery……...1 Advice from health workers ……..2 Previous complications with child birth……..3 Better care in health facility..……4 Husbands decision……..5 Advice from family members……..6 Others (*specify)*…..…… Not applicable……88 **(CIRCLE ALL THAT APPLY)**	Q24hfdelvr
25	**Why did you deliver [name] there (i.e. outside a health facility)? (probe)** Safer delivery……..……1 Advice from mother-in-law……2 No complications with previous deliveries……3 Better care outside a health facility……4 Cheaper cost for services……5 Husbands decision……6 Only available option……7 Unaware of delivery (sudden labour)……..8 Others (*Specify*)…… **(CIRCLE ALL THAT APPLY)**	Q25hmdelvr **SKIP if response to Q22 is …1**
26	**In your <u>opinion</u> why would a woman <u>DELIVER</u> in a health facility? (probe)** Safer delivery……1 Advice from health workers ……..……2 Previous complications with child birth……3 Better care available at health facilities…..……..4 Husbands decision……5	Q26ophfdel

	Only available option……..6 Advice from family members……7 Others (*Specify*…… I don't know……8 **(CIRCLE ALL THAT APPLY)**	
27	**In your opinion why would a woman NOT DELIVER in a health facility? (probe)** No problem/complication with pregnancy……..1 Unaware of delivery (sudden labour)……2 No money……3 Husband's decision……4 Distance to health facility too far……5 Poor attitude of health workers……6 Poor services at health facility……..7 Others *(specify)*…….. I don't know……8 **(CIRCLE ALL THAT APPLY)**	Q27opndel
28	**What are the benefits from delivering in a health facility? (probe)** Safer delivery……1 Quality care for mother and baby……..2 Good medicines……3 Others (*Specify*)……... **(CIRCLE ALL THAT APPLY)**	Q28benhf
	EXPOSURE TO INFORMATION ON MATERNAL HEALTH	
29	**Where did you hear information on ANC services during your recent pregnancy? (probe)** Radio……1 TV……..…2 Health workers……3 Community volunteers……4 Others (*Specify*)…… I did not hear information on ANC……..5 → **SKIP TO Q32** **(CIRCLE ALL THAT APPLY)**	Q29ancinfo
30	**How often did you hear information on ANC?** Daily ……1 Weekly……2 Less than 3times a month……3 More than 4 times in a month……4 Yearly ……..……5 Only mass campaigns……..6 Others (*Specify*) …… Not applicable……....88 **(CIRCLE ONLY ONE)**	Q30hwoftanc
31	**What did the information say or cover? (probe)** Sleep under insecticide net every night during pregnancy……..1 Attend ANC early……2 Observe personal and environmental hygiene……3 Attend ANC every month……..……..…..4 Seek care at health facility for complications……5	Q31ancinfocov

	Family planning……..……6 Danger signs during pregnancy……..……7 Signs of labour and delivery……8 Take medications regularly……..9 Others (*specify)*…… Not applicable……88 **(CIRCLE ALL THAT APPLY)**	
32	**Where did you hear information on delivery care during your recent pregnancy?(probe)** Radio……..…1 TV……...2 Health workers……3 Community volunteers……4 Others (*Specify*)…… I did not hear information on delivery care……5→ **(CIRCLE ALL THAT APPLY)**	Q32delinfo **END INTERVIEW**
33	**How often did you hear information on delivery care?** Daily ……1 Weekly……..2 Less than 3times a month……..3 More than 4 times in a month……..4 Yearly ……..5 Only on mass campaigns……6 Others (*Specify*) …… Not applicable……88 **(CIRCLE ONLY ONE)**	Q33hwoftdel
34	**What did the information say or cover? (probe)** Sleep under insecticide net every night ……..1 Signs of delivery/labour……..2 Deliver in health facilities……3 Observe personal and environmental hygiene……4 Send children for CWC monthly……5 Exclusive Breastfeeding ……6 Others (*specify)*…… Not applicable……88 **(CIRCLE ALL THAT APPLY)**	Q34delinfocov
35	**Is there any question (s) or contribution you will want to make towards this study?**	

Thank participant for her time **Interview end time:**

Interviewer name……

Appendix 2b: Focus group discussion guide for women 15-49 years

DETERMINANTS OF ANTENATAL CARE INITIATION AND THEIR EFFECTS ON PLACE OF DELIVERY

FOCUS GROUP DISCUSSION GUIDE FOR WOMEN 15-49 YEARS

Guide for Moderator

Welcome participants and introduce yourself and note taker. Ask group participants to introduce themselves. Explain that the note taker is available to record detailed notes of the discussion process.

Explain that the study is for academic purposes and the aim is to gain an in-depth understanding of the practices and experiences regarding maternal health in their community especially issues relating to ANC and delivery. You hope that their responses to the questions will be important in understanding the situation and the knowledge gained will be shared with the District Health Team to help to improve maternal health care in their area. The discussion will last about 60-90 minutes and because of the exhaustive nature of the discussion, you will ask their permission to record the discussion to be certain that you have captured their views fully. Explain that you will like to assure them of confidentially and to this end you will assign to them pseudonyms (show cut card boards with numbers) which they will use throughout the discussion as their names. Also explain that whatever that will be discussed should not be shared with anyone outside the group. Ask if anyone has a question to ask about the information sheet given or the study before you can proceed. Ensure informed consent forms have been signed or thumb printed by participants. Ask permission to turn on the recorder.

Breaking the ice

First, I would like to ask you some questions about your community:

1. What are the major health care problems of this community?
2. What problems affect only women? (Probe)

Now we are going to talk about antenatal care practices in your community

DISCUSSION OF ANC PRACTICES

- At what period of pregnancy do women in this community start attending ANC?
  - Ask participants to share their own experiences
- What do you think is the best time to begin antenatal care? Why? [probe]
- Where do women in this community normally go to receive care when they are pregnant? [probe]
- Why do women in this community seek antenatal care? [probe]
- Why do some women in this community start ANC late? [probe]
- What are the benefits of going to the health facility early (rather than late) in pregnancy to seek ANC? [probe]
- What happens at the health facility when you visit for ANC? [probe]

DISCUSSION ON DELIVERY PRACTICES

We are now going to talk about delivery practices in your community

- Where do most women in this community deliver?
- What other delivery places do women use in this community? [probe]
- Why do some women in this community deliver at the health facility? [probe]
- What happens at the health facility when you visit for delivery? [probe]
  - Ask participants to share personal experiences

- Why do some women in this community deliver outside the health facility?[probe]
- What are the problems that women in this community face during labour and delivery? [probe]
- How can these problems be solved or improved?[probe]

MATERNAL HEALTH INFORMATION

- Where do women in this community hear information on ANC? [probe]
- How often do women in this community hear health information on ANC? [probe]
- What is the information always about? [probe]
- Where do women in this community hear information on delivery care? [probe]
- How often do women in this community hear health information on delivery care? [probe]
- What is the information always about? [probe]

We have come to the end of our discussion. Is there anything that you will like to add to the discussion?

Thank participants for their participation