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SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF HEALTH POLICY MANAGEMENT AND ECONOMICS



**UTILISATION OF ANTENATAL CARE SERVICES AMONG WOMEN IN
THE ASUTIFI SOUTH DISTRICT OF THE BRONG-AHAFO REGION,
GHANA**

BY

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OF PUBLIC HEALTH IN HEALTH SERVICES PLANNING AND
MANAGEMENT**

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DECLARATION

I hereby do declare that except for reference to other people's work which have been duly acknowledged, this piece of work is my own composition and neither in whole nor in part has this work been presented for the award of a degree in this university or elsewhere.

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DEDICATION

I dedicate this piece of work to my religious and biological family - the Missionary Sisters of Our Lady of Apostles (Ghana Province), my parents, siblings and friends, especially Rev. Sr. Doris Benneh Gyan - for their enormous support and encouragement.

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DEFINITION OF TERMS

Antenatal care services Health care services rendered to a woman during the period of pregnancy

Parity Number of deliveries a woman has had

Preterm A baby born before 37 weeks of gestation

Postnatal period A period immediately after delivery up to 42 weeks after delivery

Maternal mortality Death of a woman due to pregnancy or childbirth or its complications

Neonatal mortality A baby dying before 28 days of birth

Stillbirth A baby dying before birth or within 24 hours of birth

Asphyxia A condition where there is inadequate supply of oxygen to the body tissues

Hydrocephaly A baby born with abnormally big head due to excess fluid accumulation in the brain

LIST OF ABBREVIATION/ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
ASDH	Asutifi South District Health Directorate
CHRPE	Committee on Human Research Publications and Ethics
CHPS	Community-based Health Planning Services
CI	Confidence Interval
GSS	Ghana Statistical Service
NHIS	National Health Insurance Scheme
RDW	Recently Delivered Women
TBA	Traditional Birth Attendant
WHO	World Health Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Emergency Fund

ABSTRACT

Maternal and neonatal health remain a global concern. Many interventions have been initiated over the years to improve the health of the mother and the baby before and during pregnancy and after delivery. Antenatal care services have been found to be one of the effective measures to improve maternal and neonatal health. Currently, the WHO has developed a new model of ANC services that requires every pregnant woman to have a minimum of 8 ANC visits during pregnancy. This study seeks to assess the utilisation of ANC services among women in the Asutifi South District of the Brong-Ahafo Region. It is a cross-sectional study involving 422 participants aged 15-49 who have recently delivered in the district attending post-natal services who were selected by using simple random technique. Data were analysed using STATA version 14.0. Logistic regressions were run to assess the factors influencing utilisation of ANC services and pregnancy outcomes. From the study, 18.5% of respondents made eight or more ANC visits during pregnancy. Although, all the respondents in the study ever attended ANC services during pregnancy, the study revealed a knowledge gap in the timing for ANC among respondents. Among the factors studied, ANC utilisation was significantly influenced by marital status, knowledge on the required number of ANC visits, partner and family accompaniment. Respondents who had knowledge on the number of required ANC visits during pregnancy had higher odds of making eight or more visits (AOR=11.769, CI=5.459-25.370). Additionally, respondents who made eight or more ANC visits had significantly higher odds of having babies with birth weight of 2.5kg and above (AOR= 3.623, 95%CI= 1.274-10.301). Therefore, there is a need to create awareness on the required number of ANC visits to be made during pregnancy among pregnant women in the district. Additionally, families, partners and community members should be encouraged to support and accompany pregnant women for ANC services.

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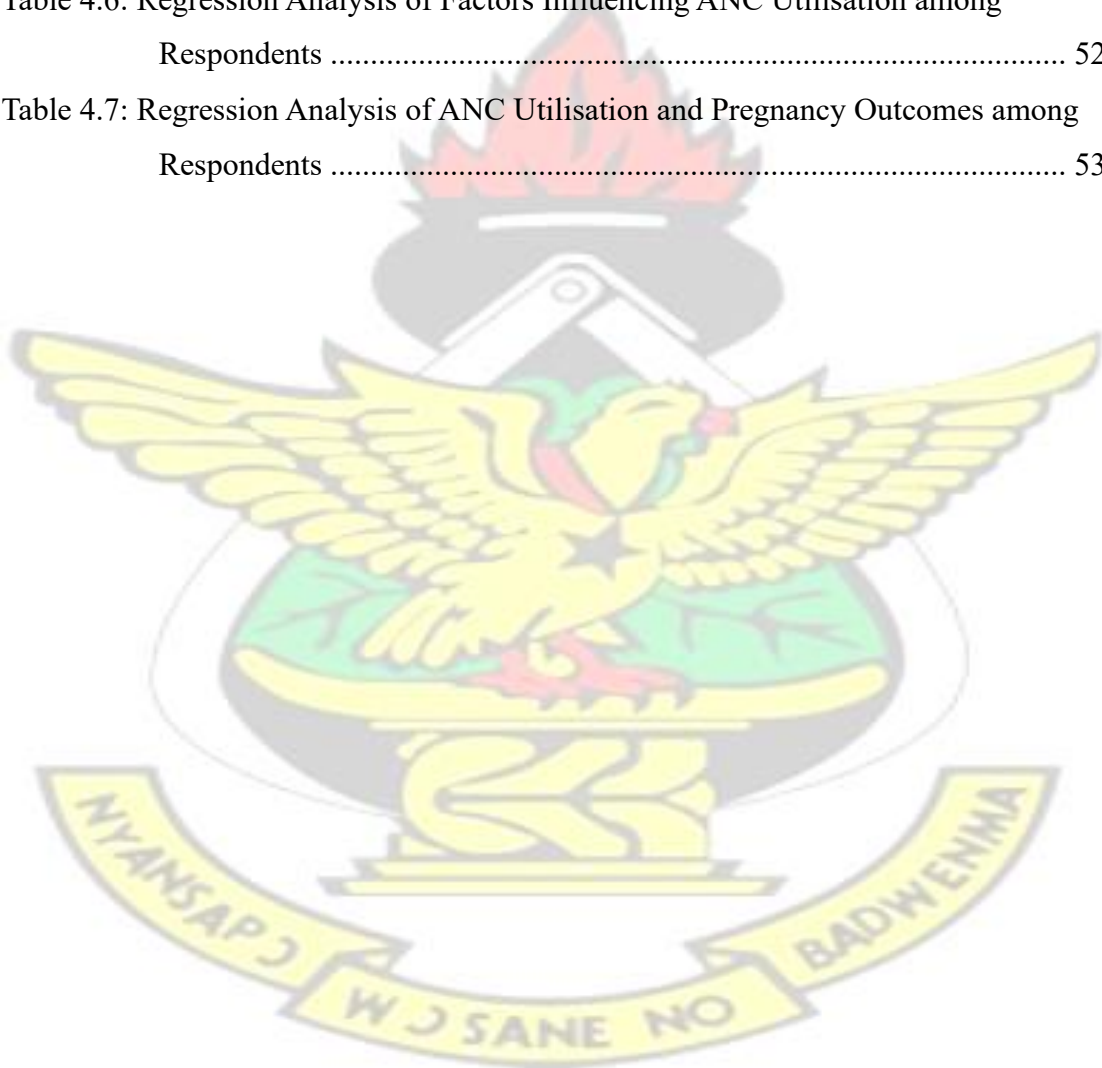
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CHAPTER ONE

1.0 Introduction

This chapter presents the background information of antenatal care services, statement of the problem, and rationale of the study. It further presents the conceptual framework with reference to Anderson's health care utilisation framework, research questions, general and specific objectives, a profile of the study area, the scope of the study and organisation of the report.

1.1 Background Information

Women of reproductive age are at risk of pregnancy and childbearing-related complications. Many women lose their lives in the process of delivery or within 42 days after delivery (World Health Organisation [WHO], 2007). Globally, maternal deaths have seen a reduction over the past twenty-five (25) years with 44% reduction in maternal mortality rate. Maternal death per 100,000 live births was 216 in 2015 with a range between 207 and 249 as against 385 in 1990 with a range from 359 to 427 all per 100,000 live births (WHO, 2015). The regional maternal mortality rate was highest in 2015 among sub-Saharan African countries with a rate of 546 (511652) and lowest in developed countries with a rate of 12 (11-14) per 100,000 live births (Alkema *et al.*, 2016).

It has therefore become a global concern, to improve maternal and newborn health and reduce maternal mortality (WHO, 2007). To be able to make an informed decision in meeting the post-MDG, a comprehensive understanding of the drivers of progress in reducing maternal mortality and the factors hindering this progress is necessary (Alkema *et al.*, 2016). Antenatal care service has become crucial in the life of the pregnant woman and the unborn baby as it helps to monitor the health of the mother as

well as the progress of the pregnancy (Benova *et al.*, 2018). Though substantial progress has been made in reducing maternal mortality, pregnancy-related morbidity and mortality remain unreasonably high and countries need to go beyond the cliché of survival to maximizing health for women and their unborn babies. The WHO, therefore, has recommended a minimum of eight (8) antenatal care visits for every woman during the period of pregnancy. The rationale for the eight visits is the desire to ensure a world where every pregnant woman and baby will receive quality care throughout pregnancy, delivery and the postnatal period (WHO, 2016).

According to the WHO, antenatal care (ANC) services have been reported to be saving the lives of pregnant women and their babies through timely and appropriate evidence-based practices. Similarly, ANC decreases maternal and perinatal morbidity and mortality directly and indirectly through early detection and treatment of pregnancy-related complications and identification of women and young girls who are at risk of developing complications during labour and delivery by referring to the appropriate level of care (WHO, 2016).

1.2 Statement of the Problem

Maternal and neonatal health are a growing concern for all, especially as maternal and perinatal morbidity and mortality continue to be high particularly in low income and middle-income countries (Benova *et al.*, 2018). Even though there is a decline in maternal mortality globally, developing countries such as Ghana continue to experience a high rate of maternal mortality. A study indicated that developing countries alone account for 99% (302,000) of the total maternal deaths globally, with sub-Saharan Africa, including Ghana, accounting for approximately 66% (210,000). This shows that the rate of decline in maternal mortality differs greatly between regions (WHO, 2015). Similarly, the global annual neonatal mortality for 2016 was 2.6 million. Thus, 7,000

babies die every day before completing the first month of life. Neonatal mortality accounted for 46 percent of all deaths in the under-five group, which shows an increase from 41 percent in 2000 (The United Nations, 2017). Maternal health care utilisation which has been shown to have a positive effect on maternal and neonatal health is found to be influenced by geographical location and socio-economic status. Ghana, in the year 2005, instituted the free maternal health services policy (pro-poor) as a strategy for the poor to have access to quality maternal care during the period of pregnancy and delivery and also to increase the percentage of skilled birth attendance in the country (Benneh & Esena, 2015). This initiative has shown to have improved skilled birth attendance from 44% to 49% during the —free antenatal care and 54% during the —free delivery period (Johnson *et al.*, 2016).

With the introduction of focused antenatal care services for women during pregnancy in 2002, the number of pregnant women accessing antenatal services increased. Nonetheless, between the year 2007 and 2014, only 64% of women made the recommended four antenatal care visits globally. In spite of the benefits inherent in the focused antenatal care services, pregnant women were limited by this same policy to only four visits during pregnancy, thereby increasing the risk of perinatal mortality by 15% and clients becoming dissatisfied as contact with the health care provider was limited. As a result, the WHO recommended a minimum of eight antenatal care visits for pregnant women other than the previous four visits to ensure adequate monitoring of the pregnant woman and the unborn child (WHO, 2016).

Despite the benefits of antenatal care services derived by the pregnant woman and the unborn baby, studies have shown that ANC utilisation is still poor among pregnant women in Africa and that most of them do not make the required number of visits due to several factors such as access to ANC services, availability of transportation,

influence of family/husband, proximity of health facility, perceived risk, religious beliefs, insurance status and socio-cultural factors, among others (Wilunda *et al.*, 2017).

In 2017, the Asutifi South District recorded 1,151 new ANC registrants with 10,733 total attendants. Of the total number attending ANC clinic, only 11% (1,156) made 4 or more visits and 2.3 % (242) made 8 or more visits. However, the majority, 53% (613), of the new registrants registered for ANC services during the first trimester whilst 35% (397) registered during the second trimester and 8% (92) registered during the third trimester (ASDHR, 2017). This report further indicated that about half of pregnant women did not register antenatal care services during the first trimester or at the early stages of their pregnancy. Additionally, the majority of the pregnant women who utilise antenatal care services in the district do not make the current eight minimum antenatal visits recommended by the WHO in 2016 and some do not start antenatal care services at the right time of pregnancy whilst many more do not even access antenatal care services during pregnancy.

Also, stillbirths, especially fresh ones which can be controlled with proper monitoring during ANC services, continue to be on the rise in the district. Fresh stillbirths increased from 0.5% in 2015 to 0.6% in 2017 (ASDHR, 2017).

1.3 Rationale of the Study

In Africa, the period of parturition is marked by moments of happiness by the woman, their family and the society at large. After birth, the woman is expected to remain healthy for a period of 42 days and the newborn baby is welcomed into the family with joy (Baffour-Awuah *et al.*, 2015). A study by Lincetto *et al.* (2013) asserted that quality maternal care services are important to both the pregnant woman and the health of the unborn baby. Quality ANC services have been found to promote the health of pregnant

women and the unborn baby as it promotes the use of skilled birth attendance during delivery and contributes to good health.

The majority of the pregnant women who utilise ANC services in the Asutifi South District did not make the current eight minimum antenatal visits recommended by the WHO in 2016, and what accounts for this is unknown. Therefore, a comprehensive understanding of the determinants of antenatal care utilisation is important to guide the development of focused and evidence-based interventions to improve maternal and neonatal health in the district. The study will also equip healthcare providers with the knowledge of the determinants of poor and irregular antenatal care utilisation and how to control them where possible as well as improve the services they render to women during pregnancy. Additionally, the study will help pregnant women to participate fully in ANC services provided by health facilities in the district and also take responsibility for their health during pregnancy. Furthermore, there has been no research in the district as a whole targeting the utilisation of ANC services in the district.

In view of this, the study will employ the Andersen's health care utilisation model to assess the utilisation of ANC services among women in the Asutifi South District of the Brong-Ahafo Region in order to inform policy makers to develop appropriate strategies to improve antenatal care utilisation among women in the district.

1.4 Conceptual Framework

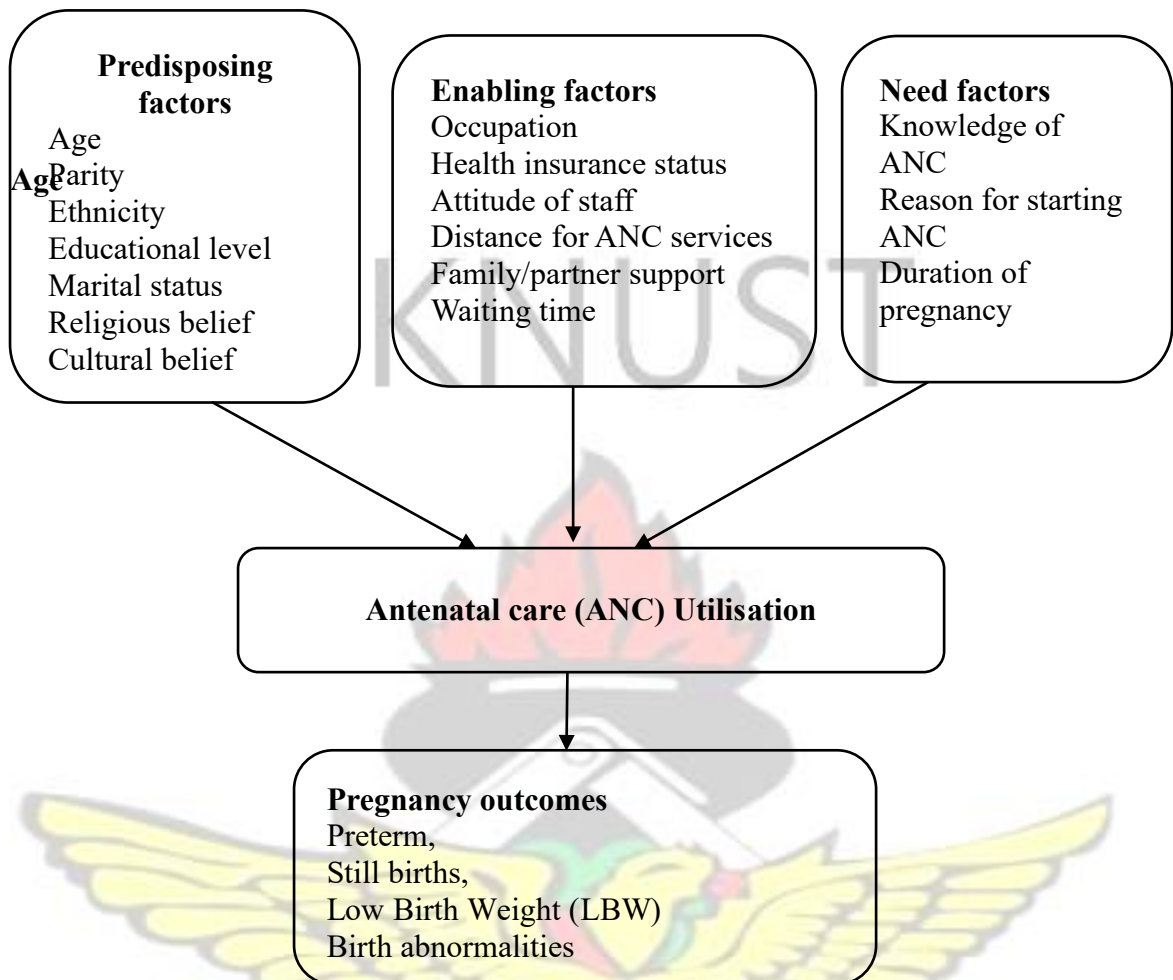


Figure 1: Conceptual Framework

Source: Author's construct, 2018 (adapted from Andersen's model, 1995)

To understand the factors influencing utilisation of ANC among women in the Asutifi South District, the Andersen's Framework of Health Service Utilisation was used in this study. This conceptual framework has been adopted by many researchers in explaining utilisation of health services. It is a model that demonstrates the factors influencing the use of health services by individuals. The model categorizes the determinants of health service utilisation into three factors: predisposing, enabling and need. According to this model, the predisposing factors are the basic characteristics of

the population, enabling factors are those that help improve or impede the utilisation of health services, and need factors are those conditions that will create the need for the individual to seek health care (Andersen, 1995).

For the purposes of this study, the predisposing factors are: age, ethnicity, educational level, marital status, parity, religion and culture. Enabling factors are occupation, health insurance status, distance from ANC services, family/partner support, waiting time and health providers' attitude. And need factors are reason for starting ANC, duration of pregnancy, and knowledge of ANC. The utilisation of ANC services and its influence on pregnancy outcome (preterm birth, low birth weight, stillbirths and birth abnormalities) will be explored.

1.5 Research Questions

The study will seek to answer the following questions:

1. Are there any patterns of ANC utilisation among women in the reproductive age in the Asutifi South District?
2. What are the factors influencing ANC utilisation among women in the reproductive age in the Asutifi South District?
3. Is there any relationship between ANC utilisation and pregnancy outcomes in the Asutifi South District?

1.6 General Objectives

The study sought to explore Antenatal Care Services Utilisation among women in their reproductive age (15-49 years old) and its influence on pregnancy outcomes in the Asutifi South District of the Brong-Ahafo Region.

1.7 Specific Objectives

The research will address the following specific objectives:

1. To determine the patterns of ANC utilisation among women of reproductive age in the Asutifi South District;
2. To identify the factors that influence ANC utilisation among women of reproductive age in the Asutifi South District;
3. To ascertain the relationship between ANC utilisation and pregnancy outcomes in the Asutifi South District.

1.8 Health Profile of the Study Area

The study was conducted within the Asutifi South District in the Brong-Ahafo Region of Ghana. The district is one of the twenty-three (23) administrative districts in the Brong-Ahafo Region. The new district was carved out of the then Asutifi District in July 2012 with its district capital being Hwidiem. A report by the 2010 Population and Housing Census indicated that the district has a population of 53,584 (Ghana Population and Housing Census, 2010). According to the 2017 annual performance review, the district now has a total population of 64,219, with four sub-districts, and 105 communities. It is found in the western part of Brong-Ahafo Region and borders with Asutifi North District to the North, Ahafo Ano North District to the East, Asunafo Municipal to the West, Atwima Mponua District to the South-East, and Asunafo South District to the South-West. The three-dominant religious affiliation in the district in descending order are Christianity, followed by Islam and the Traditional religion. The Health Directorate is headed by the District Director of Health Services with support from the District Accountant, the Disease Control Officer, Health Information Officer, Nutrition Officer and a Stenographer. Health facilities are found in all sub-districts as well as strategic communities to ensure equity in the provision of basic health care. The district has three (3) health centres, four (4) Community-based Health Planning Services (CHPS) compounds and twenty-three (23) CHPS zones, one

private maternity home and one Catholic Hospital which serves as the district hospital and receives referrals from the other facilities in the district and beyond.

1.9 Scope of the Study

The study focused on utilisation of antenatal care services among women of reproductive age (15-49 years old) in the Asutifi South District who have recently delivered a live baby or had a stillbirth. Various factors that influence ANC utilisation, such as predisposing, enabling and need were studied and relationships between ANC utilisation and pregnancy outcomes were explored.

1.10 Organisation of the Report

Chapter One comprises an overview of antenatal care utilisation in the world, comprising specific to sub-Saharan Africa with special emphasis on the study area. The problem under study with its contributing factors and the rationale for the study were elaborated. Chapter One also looks at the research questions, general and specific objectives, the conceptual framework, the scope of the study and the profile of the study area. Chapter Two involves the literature review of other similar studies.

Chapter Three consists of the methodology of the study, which comprises study type and design, study population, sample size, study variables, data collection techniques and tools. Data handling techniques and analysis, ethical consideration, assumption and limitation of the study are considered in this chapter. Chapter Four presents the results of the study with respect to the specific objectives of the study. Chapter Five discusses the results of the study in relation to other similar studies as per the literature review and finally, Chapter Six looks at the conclusion and recommendations of the study.

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents and examines existing literature relating to the study. The purpose of this chapter is to present an overview of what has already been done in the field of antenatal care utilisation. In this chapter, the views of various researchers are put side by side to determine both the congruencies and the inconsistencies in their views. The consistencies of the findings give the researcher a fair idea of what to expect as the outcome of the study. A review of journal articles, newspapers, unpublished works and other electronic sources was done.

2.1 Antenatal Care Services

There is evidence that reasonable cost-interventions exist that help to prevent and treat maternal complications that arise out of pregnancy. The WHO has recommended antenatal care services as a measure to monitor the health of the mother and the unborn child during pregnancy. Antenatal care services is defined as education and health care given to a pregnant woman or adolescent by a skilled professional in order to ensure good health of the pregnant woman and the baby during the period of pregnancy (WHO, 2016).

In 2016, the WHO instituted the current ANC model that allows a pregnant mother to have a minimum of eight antenatal visits before delivery as a shift from the Focused Antenatal Care (FANC) which had a minimum of four visits for every pregnant woman before delivery (WHO, 2016). The current ANC model by the WHO is to ensure that every pregnant woman is scanned during the early periods of pregnancy before 24 weeks to estimate accurately the gestational age of the foetus and help to identify

multiple pregnancies and any foetal abnormalities (Tunçalp *et al.*, 2017). Table 2.1 depicts the antenatal care model currently recommended by the WHO versus the FANC model which recommended only four visits for the pregnant women.

Table 2.1: WHO FANC Model versus 2016 WHO ANC Model

WHO FANC model	2016 WHO ANC model
First trimester	
Visit 1: 8-12 weeks	Contact 1: up to 12 weeks
Second trimester	
Visit 2: 24-26 weeks	Contact 2: 20 weeks Contact 3: 26 weeks
Third trimester	
Visit 3: 32 weeks Visit 4: 36-38 weeks	Contact 4: 30 weeks Contact 5: 34 weeks Contact 6: 36 weeks Contact 7: 38 weeks Contact 8: 40 weeks
Return for delivery at 41 weeks if not given birth	

Source: Author's construct, 2018 (adapted from WHO, 2016)

2.2 Pattern of Antenatal Care Utilisation

Antenatal care utilisation differs among women. Abimbola *et al.* (2016), in their study, found ANC services to be high among respondents, with 89.4% of them patronizing antenatal care services during their last pregnancy, and the majority of them (86.9%) making three or more antenatal visit. In a study by Shaora *et al.* (2015), 89.6% of the respondents had registered for antenatal care services during pregnancy. Out of this, 64.5% had registered for antenatal care services during the first trimester, 15.2% during the second trimester and 9.9% during the third trimester. For the number of visits made, 63% had three (3) or more visits, 26.6% had less than three (3) visits and 10.4% did not make a single visit to the antenatal clinic during pregnancy.

A study in Surendranagar district in India showed similar results of antenatal care registration where the majority (88.77%) of respondents had registered for antenatal care services at the health facility. In contrast were the results on the timing of antenatal care registration where the majority (54.25%) had registered during the second trimester, 24.38% during the first trimester and 10.14% during the third trimester. With the number of antenatal visits, the majority (59.18%) made three or more visits, 27.94% made less than three visits whilst 12.88% made no visit during pregnancy (Bhimani *et al.*, 2016). Similarly, a study in Rwanda showed that minority of respondents (35%) booked their ANC during the first trimester whilst majority of respondents (65%) booked ANC late (Gudayu *et al.*, 2014).

In a study conducted by Villadsen *et al.* (2014), antenatal care utilisation during pregnancy was found to be high among respondents, as 86% of the respondents utilised antenatal care services during their last pregnancy. The majority (60%) attended their first visit during the second trimester. For the frequency of attendance, only 3% made one visit, 25% made four visits and 44% made more than four visits. Another study has also found similar results, the reports of which showed a majority of women (75%) registering for their first antenatal visit in the second trimester (Roberts *et al.*, 2015). Moreover, a study found 102 (39.84%) and 101 (38.45%) of its participants booking for antenatal care services during pregnancy in the first and the last trimesters respectively whereas the minority 53 (20.70%) booked for antenatal care services during the second trimester (Shafqat *et al.*, 2015).

Onasoga Afolayan *et al.* (2012), in their study, found a majority of the respondents (56.9%) accessing antenatal care services regularly during pregnancy, 39.2% occasionally, and 3.9% never attending ANC. Of these, the majority (57%) attended antenatal care in their first trimester of pregnancy, 25.6% in their second trimester and

17.4% in their last trimester. A study in Indonesia reported that a majority of respondents (77.9%) had more than four antenatal visits during pregnancy whilst only 22.1% had less than four visits (Agus *et al.*, 2012). In Kumasi, a study result showed that 1.1% of the respondents did not utilise antenatal care services during pregnancy, 10% had 1 to 3 visits, 45.9% had 4 to 7 visits and 42.5% had 8 to 13 visits (Asundep *et al.*, 2013).

A study in North-West Ethiopia indicated that 35.4% of the respondents had timely registration for antenatal care services ranging from 4 weeks to 36 weeks and the peak being 12 weeks. Majority of the respondents (64.6%) registered late for antenatal care services whilst 1.5% booked near to the time of delivery (Gudayu *et al.*, 2014). Gudayu *et al.* further revealed that women aged 25 years and below are two times more likely to access antenatal care services during pregnancy at the scheduled time than women who are more than 25 years of age.

A study in Nigeria on the factors affecting the utilisation of antenatal care services in Ibadan by Dairo and Owoyokum (2010) showed that majority (76.8%) of the respondents attended antenatal care services at least once during their last pregnancy. Of this total number, 28% accessed antenatal care services from private hospitals, 24.4% from primary health care centres, 15.6% from specialist hospitals, 14% from general hospitals, 8.8% from maternity homes, 8.5% from teaching hospitals and 0.7% from mission hospitals. In a study by Berhe *et al.* (2014), the results indicated that the majority of the respondents who utilised antenatal care services (62.1%) gave their reasons for the choice of the health facility as by reason of proximity, 44(19.6%) time of services being convenient, 32 (14.3%) as the good behavior of the staff, 27 (12.1%) as the high quality of services rendered by the facility and 24 (10.7%) as low or no cost for antenatal services charged whilst 5 (2.2%) gave other reasons.

2.3 Factors Influencing Antenatal Care Utilisation

Andersen (1995) identified three factors that influence health care utilisation among individual persons and they are grouped into predisposing, enabling and need factors. The factors influencing the utilisation of antenatal care in this study will be discussed with focus on Andersen's model of health care utilisation.

2.3.1 Predisposing factors

2.3.1.1 Age of the woman and ANC utilisation

A study in Nigeria identified age as a significant factor that influences the utilisation of antenatal care services among women in their reproductive age. The results of this study showed a high utilisation rate of ANC (79%) among women who were 25 years or more whilst women less than 25 years had a lower utilisation rate of 68.9% (Dairo & Owoyokun, 2010). On the contrary, women who are 25 years old or less are more likely to access antenatal care than women who are more than 25 years. Similarly, women in the younger age group are more likely to utilise antenatal care services four times more than women in the older age group (Pandey & Karki, 2014). Another study in Nigeria reported that women who are younger (30 years or less) utilised antenatal care services (87.6%) more than those in the older group of 30 years and above (12.4%) (Awusi *et al.*, 2009).

According to Rurangirwa *et al.* (2017), women in the higher age group of more than 25 years are less likely to utilise antenatal care services during pregnancy than their counterparts in the lower age group of 25 years or less. Gudayu *et al.* (2014) also found in their study that women who are 25 years or less are two times more likely to access antenatal care services during pregnancy than women who are more than 25 years old. However, in a study by Kalule-Sabiti *et al.* (2013), age was found to be moderately or

insignificantly associated with antenatal care utilisation among women. In much the same way, a study by Abimbola *et al.* (2016) found age to be insignificantly a barrier to a woman's utilisation of antenatal care services during pregnancy. Wilunda *et al.* (2015) also, in their study, found a woman's age to be negatively associated with her utilisation of antenatal care services during pregnancy.

2.3.1.2 Woman's education and ANC utilisation

A study in Uganda revealed that women with no formal education are less likely to access antenatal care services during pregnancy than their counterparts with primary education. The odds of women with basic education utilising antenatal care services is 2.05 times higher than those with no formal education. Women with secondary or higher education have 2.56 odds higher of utilising antenatal care services during pregnancy than women with no education (Kalule-Sabiti *et al.*, 2013). Similarly, a study in Eastern Nepal indicates that a woman's education has a high significance with her antenatal care utilisation during pregnancy (Deo *et al.*, 2015). Umar and Bawa (2015) asserted that women with primary education (AOR = 2.40) are more likely to use antenatal care services during pregnancy and also make the required number of antenatal care visits than their counterparts who are illiterate.

Moreover, according to Bhimani *et al.* (2016), a woman's education has a significant association with antenatal care utilisation. Women with higher educational status have increased antenatal care utilisation as compared to women who are illiterate. A higher proportion of illiterate, about 60.76 %, do not utilise ANC services during pregnancy as compared to 25% of women who are educated who do not utilise during pregnancy. A study in Nigeria also found a significant association between a woman's education and her utilisation of ANC during pregnancy with a P-value of 0.05%. This indicates

that a woman's education has a positive effect on her utilisation of antenatal care services during pregnancy (Onasoga Afolayan *et al.*, 2012). Similar to the study of Onasoga Afolayan *et al.*, a study in Kumasi, Ghana, also identified woman's educational level as being significant to ANC utilisation during pregnancy (Asundep *et al.*, 2013).

Assfaw and Sebastian (2010), in their study, revealed that approximately 78.5% of women with primary education and 86% with secondary education utilised ANC services during pregnancy whilst only 52% of their counterparts who were illiterate utilised ANC services. Mothers who had primary education (odds of 3.6) were higher in terms of utilisation of ANC services than those with no education, and the mothers with secondary education or higher (odds of 5.6) were more likely to utilise ANC services than those who had no education. Another study also indicated that 96% of women with post-secondary education, 69% with secondary education and 46% with primary education utilised ANC whilst only 23% of women with no formal education utilised antenatal care services during pregnancy (Awusi *et al.*, 2009).

2.3.1.3 Marital status and antenatal care utilisation

In a study by Assfaw and Sebastian (2010), 55.7% of married women utilised ANC services than their counterparts who were single (32.3%). Women who were married (odds of 2.2) were higher in terms of utilisation of ANC services during pregnancy than their counterparts who were single. Similarly, divorced women (odds of 1.1) were more likely to utilise ANC services than women who were single.

Results from another study revealed that women who are single, divorced, widowed or separated have a higher risk (odds of 2.99) of poor ANC utilisation services as compared to their counterparts who were married or co-habited (Rurangirwa *et al.*,

2017b). Single women, divorced and widowed women were less likely to utilise antenatal care services, compared to their counterparts who were married or cohabited (Sakeah *et al.*, 2017).

2.3.1.4 Parity of woman and antenatal care utilisation

The number of children a woman has delivered plays a role in the utilisation of ANC services. A study found that 19% of women with four (4) children and above utilised ANC services less as compared to 71.5% of women with less than four (4) children (Awusi *et al.*, 2009). Similarly, a study in Zambia found high parity as a barrier to ANC utilisation during pregnancy (Chama-Chiliba & Koch, 2015). A similar result was found in the study of Bhimani *et al.* (2016), who asserted that as the woman's parity increased, her ANC utilisation level decreased.

However, in Nigeria, a study reported that women who have 1 to 2 children are 1.61 times more likely to access ANC services than their counterparts who have no children (Babalola, 2014). Abimbola *et al.* (2016), in their study, also found that the higher a woman's parity, the better her utilisation of ANC services during pregnancy as only 3.5% respondents with four or more children did not utilise ANC services.

The difference that was observed was statistically significant with a P- value of 0.027. On the contrary, Onasoga Afolayan *et al.* (2012), in their study, found no association between a woman's parity and her utilisation of ANC services during pregnancy, with a P-value of >0.05%.

2.3.2 Enabling factors

2.3.2.1 Woman's occupation/employment and antenatal care utilisation

Women who are employed are more likely to utilise ANC services than women who are not employed, with odds ratio of 1.21 (Babalola, 2014). Employment status and ANC utilisation were found to be highly significant with a P-value of 0.000 (Abimbola *et al.*, 2016). On the contrary, women who are housewives are more likely to patronize ANC services better than their counterparts who are working (Bhimani *et al.*, 2016). Women belonging to certain category of professionals like lawyers, teachers, health workers etc. are more likely to patronize ANC services and make the required number of visits than their counterparts who are unemployed (Umar & Bawa, 2015). However, Dulla *et al.* (2017), in their study at Southern Ethiopia, found no statistical association between employment status and ANC utilisation among women during pregnancy.

2.3.2.2 Cultural beliefs and antenatal care utilisation

Women who have faith in traditional healers were less likely to utilise ANC services during pregnancy than women who do not believe in traditional healers (Deo *et al.*, 2015). A study found a positive correlation between traditional beliefs and pregnant women's choice for Traditional Birth Attendants (TBA) during pregnancy as the pregnant women trust the TBA's for their skills, special care for pregnant women and their respect for local customs (Agus *et al.*, 2012). In some cultures, women who are pregnant are told not to seek health services as they believe that pregnancy is not a disease but a normal process (Chorongo *et al.*, 2016).

2.3.2.3 Religious beliefs and antenatal care utilisation

Bhimani *et al.* (2016), in their study, found no significant association between a woman's religious beliefs and her utilisation of ANC services during pregnancy. Contrary, a study found religion as a factor that influences utilisation of ANC services among pregnant women. In this study, the religion of the women —*Imani moja*” (one faith) discouraged them from seeking medical care from health care providers during pregnancy as it encourages one to rely on God to heal them (Chorongo *et al.*, 2016). A study on utilisation of ANC services in Ibadan, Nigeria, revealed that Christian women utilise ANC services less than Muslim women during pregnancy, with a P- value of <0.05%. The study further found that Muslim women access ANC services more than their counterparts of other religions during pregnancy (Dairo & Owoyokun, 2010). Individuals with high religiosity are found to utilise health care services less. This was confirmed in a study by Muhwava *et al.* (2016) that women who were highly religious utilised ANC services less during pregnancy than women who were not highly religious, hence high religiosity is considered a challenge to ANC utilisation during pregnancy.

2.3.2.4 Family/partner support and antenatal care utilisation

Women who had no family, friends' and husband support had poor utilisation of ANC services as compared to their counterparts who had family, friends' and husband support, with odds of 1.71 (Rurangirwa *et al.*, 2017b). In a similar study, majority of the participants indicated that they did not receive any encouragement from their partners to utilise ANC services during pregnancy. However, the few of them who had encouragement from their partners utilised ANC services during pregnancy (Assfaw & Sebastian, 2010).

2.3.2.5 Health care providers' attitude and ANC utilisation

A study found 42.5% of respondents receiving education on detecting and managing danger signs during pregnancy. However, women with high level of education were less satisfied with education given by health care providers (Edie *et al.*, 2015). Similarly, a study found that majority of the respondents were reported to have received education on the signs of complications to look out for during pregnancy whilst 34% were reported to have received no education on this (Kabir & Khan, 2013). In much the same way, Dulla *et al.* (2017), in their study, found 57% of the respondents having knowledge on the danger signs of pregnancy whilst 43% had no knowledge on the danger signs of pregnancy. The study further revealed that women who had knowledge on the danger signs of pregnancy were 7 times more likely to access ANC services than their counterparts who had no knowledge on the danger signs of pregnancy.

Edie *et al.* (2015), in their study, also found higher percentage (91.4%) of the women accessing ANC services during pregnancy to be satisfied with the care that they received. Majority of the respondents were not satisfied with the seats provided as they felt the benches at some health facilities were too hard for them to sit on. In much the same way, Chorongo *et al.* (2016) found that only 6.3% of the respondents in their study reported that they were dissatisfied with the health care providers' attitude whilst 92.7% reported they were satisfied with the health providers' attitude.

2.3.2.6 Health insurance status and antenatal care utilisation

A study in Indonesia found only 13.1% of its respondents having health insurance during pregnancy whilst the majority (86.9%) did not have health insurance and so paid for their services by themselves (Agus *et al.*, 2012). Health insurance status is significant in ANC utilisation among women during pregnancy. Zuhair and Roy (2017),

in their study, found health insurance as having a positive association with ANC utilisation among women during pregnancy. According to Sakeah *et al.* (2017), women with health insurance during pregnancy utilised ANC services more than their counterparts who had no health insurance (AOR: 2.03; 95% CI; 0.16-0.87).

2.3.2.7 Distance travelled and antenatal care utilisation

Though distance to the nearest health facility is thought to have an influence on health care utilisation, a study in Zambia found out that distance does not play a significant role in inadequate antenatal care utilisation among pregnant women in Zambia but rather plays an important role in service delivery (Chama-Chiliba & Koch, 2015). Contrary to the study in Zambia, a study in Nigeria found a significant association between proximity to health facility and utilisation of ANC services among women in Nigeria (Babalola, 2014).

Similar to the study of Babalola (2014) is the study by Onasoga Afolayan *et al.* (2012), which showed a significant association between distance and ANC utilisation among pregnant women. In this study, most of the respondents (53.1%) took one bus before reaching the nearest health facility, 30.3% live within a walking distance while the minority (16.3%) took two or more buses to get to the clinic. Long distance has been found to be a barrier to ANC utilisation among women during pregnancy. De Allegri *et al.* (2011), in their study, revealed that living within 5 km from a health facility has a positive association with ANC utilisation during pregnancy. In much the same way, long distance has been found to be associated with fewer ANC visits during pregnancy (Abimbola *et al.*, 2016; Ali *et al.*, 2016).

2.3.2.8 Waiting time and antenatal care utilisation

Long waiting times at health facilities has been found to pose a barrier to ANC utilisation among pregnant women and this is confirmed in a study by Chorongo *et al.* (2016), who found long waiting time of 2 hours or more as significant to utilisation of ANC services among pregnant women during pregnancy, with odds of 3.21. Ye *et al.* (2010), however, in their study, revealed that the majority of the respondents (71.3%) did not have to wait for long to receive ANC services when they visited the antenatal clinic whilst the minority of respondents (28.7%) reported that they had to wait for long hours before receiving ANC services at the clinic.

2.3.3 Need factor

2.3.3.1 Reason for starting ANC

Several reasons influence utilisation of ANC services among women during pregnancy. A study found that the majority of its respondents (85.7%), when asked about their main reason for attending ANC services during pregnancy, stated that they were sick or were in need of treatment or had a health problem, whilst 8.4% stated their main reason was regular medical check-ups (Berhe *et al.*, 2014). Similarly, a study results revealed that majority of the respondents who utilised ANC services during pregnancy (81.8%) stated that their main reason for starting ANC services was a health problem they faced. The minority (18.2%), on the other hand, said their main reason for starting ANC service was regular check-ups to prevent pregnancy complications (Wolderufael, 2018).

2.3.3.2 Duration of pregnancy

During the first stages of pregnancy, some women do not feel the need to access health care. A study reported that majority of women tend to access ANC services during the

second trimester of their pregnancy. According to this study, out of the total number of pregnant women accessing ANC services, 71.7% utilised ANC during the second trimester, 16.2% during the first trimester and the remaining 12.1% during the third trimester (Wolderufael, 2018).

2.3.3.3 Knowledge of women on ANC and ANC utilisation

The media plays an essential role in the utilisation of ANC services as it serves as a means of information on ANC for most women (Bbaale, 2011). The media as a means of communication has been found to have a positive association with ANC utilisation as it creates awareness among women (Zuhair & Roy, 2017). Television (TV) plays a vital role in the utilisation of ANC services during pregnancy. In a study by Kabir and Khan (2013), the chi-square analysis revealed a strong association between ANC utilisation and women who watch TV. A study found the majority of respondents (58.1%) as having good knowledge on overall ANC services, with a score of 70% and more and 41.9% as having poor knowledge with a score less than 70% (Patel *et al.*, 2016).

In a study by Ojong *et al.* (2015), the results also indicated that majority of the respondents had good knowledge of ANC services while the minority had poor knowledge of ANC services. Similar to the study by Ojong *et al.* is the result found in the study by Shora *et al.* (2015), which indicates that majority of the respondents had good knowledge of ANC services during pregnancy. Majority of the women (86.2%) who participated in the study were aware of early antenatal registration and iron-folic acid supplementation, 61.60% were aware of the importance of TT injection during pregnancy. Knowledge about the number of antenatal visits during pregnancy was poor as only 10.9% knew that more than three (3) antenatal visits were important during the

period of pregnancy for the pregnant woman and the unborn child as it ensures frequent contact between the women and the health care provider.

Edie *et al.* (2015), in their study, found that participants had high knowledge on timing of ANC, goals of ANC services and the number of ANC visits for pregnant women during pregnancy. Knowledge has a significant influence on ANC utilisation among women. Generally, women with adequate knowledge of maternal health care services have been reported to have four or more antenatal visits during pregnancy than women with poor knowledge on maternal health care (Deo *et al.*, 2015; Simkhada *et al.*, 2008). Knowledge of maternal health has been shown to have a positive and a significant association with ANC utilisation, with a P-value of $< 0.05\%$. Women who have good knowledge of maternal health are 6.5 times more likely to utilise ANC services than women who were deficient in knowledge of maternal health and ANC services (Ye *et al.*, 2010). Also, in Nigeria, a study on utilisation of ANC showed a high significance with a woman's knowledge of ANC services and her utilisation of ANC services, with a P-value of $< 0.05\%$ (Onasoga Afolayan *et al.*, 2012).

In a study by Edie *et al.* (2015), the majority of the participants affirmed that ANC services during pregnancy were good for both the woman and the unborn child. On knowledge of the right timing of ANC services during pregnancy, a study in Ethiopia found 25% of the participants responding that the right time for first antenatal visit is within the first three months of pregnancy, 53.3% beyond three months whilst the remaining 22.1% did not know the right time to begin ANC services (Gudayu *et al.*, 2014).

In the study of Onasoga *et al.* (2012), the results revealed that majority of the respondents had enough knowledge on the importance of ANC services given to a woman during pregnancy. In a similar study, the results indicated that women who had

knowledge on the number of ANC visits to be made during pregnancy had higher chances of utilising ANC services more than women who had no knowledge on the required number of ANC visits during pregnancy, with odds ratio of 2.75, 95% CI 1.89-4.01 (Wilunda *et al.*, 2015).

2.4 Relationship between Antenatal Care Utilisation and Pregnancy Outcomes

A study in Nigeria revealed 15.9% of the study participants delivering their babies at the home with no skilled birth attendants or delivering at traditional homes with Traditional birth attendants (TBA) (Abimbola *et al.*, 2016). Another study also revealed that majority of the respondents (95.9%) delivered at home whilst 4.1 % delivered at various health facilities. Results from this study showed that greater number of women who accessed ANC services during pregnancy (OR=4.6, 95% CI=1.9 -11.8) delivered at a health facility than their counterparts who had not received antenatal care services during pregnancy (Assfaw & Sebastian, 2010).

However, Shora *et al.* (2015), in their study, found the majority of the respondents (79.1%) delivering at the health facility whilst the minority (20.9%) delivered at home. A similar study revealed that 69.4% of respondents who delivered at the health facility delivered at the hospital, 27.1% delivered at the health centres and 3.5% delivered at other facilities (Wilunda *et al.*, 2015).

Poor pregnancy outcomes such as still births, low birth weight and preterm were found to be associated with poor ANC utilisation of less than four antenatal visits during pregnancy (OR= 14.76, CI 95%, P value= 0.05%) (Chorongo *et al.*, 2016). Similarly, a study found majority of the respondents (84.9%) out of the 89.9% accessing ANC services early in pregnancy to have full-term babies at delivery than their counterparts who did not utilise ANC services early during pregnancy (Shora *et al.*, 2015).

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter deals with the methodological approaches that were used in this study. It presents the description of the study design, study setting, sampling, study variables, data collection techniques, data collection procedure, data processing and analysis, pre-testing, ethical consideration, limitations and assumptions.

3.1 Study Methods and Design

An observational study approach was adopted in this research, specifically a facilitybased cross-sectional survey which consists of five (5) health facilities in the Asutifi South District. A cross-sectional study is preferable precisely because it intends to take a snapshot (both exposure and outcome are measured at the same time) of the present situation pertaining to antenatal care utilisation in the Asutifi South District in the Brong-Ahafo Region of Ghana. Moreover, due to the short academic calendar provided for the course, a cross-sectional study is the most appropriate option. Lastly, it is inexpensive and has the potential to produce valid and reliable scientific information.

3.2 Data Collection

This is the process of selecting subjects and gathering data from them. This section highlights the data collection tools used and how these helped achieve the research objectives.

3.2.1 Data Collection Techniques and Tools

The study made use of both primary and secondary sources of data. For the primary data, a quantitative method of data collection (specifically, structured questionnaire, comprising closed and open-ended questions) was employed to solicit information from subjects. Data were collected by the researcher and four trained research assistants. The questions were administered to the recently delivered women (RDW) in their reproductive age (15-49 years old) who consented to participate in the study. Both Twi (the local language) and English were used in administering the questions to the women through face-to-face communication and self-administering respectively.

The data were collected for a period of ten (10) days in the month of September. Again, secondary data were collected from participants' ANC folder using questionnaire for information pertaining to antenatal care utilisation and pregnancy outcomes (low birth weight, preterm birth, stillbirths and birth abnormalities).

3.3 Study Population

The study population comprised women in their reproductive age (15-49 years old) who had delivered a live baby or who had had stillbirth in the Asutifi South District and were attending postnatal services.

3.3.1 Inclusion Criteria

The eligibility criteria comprised recently delivered women (RDW) in their reproductive age (15-49 years old) who had lived in the district for at least one year before delivery. RDW is defined as any woman who has delivered a live baby or stillbirth in the last nine (9) months preceding the study (from January, 2018 to September, 2018).

3.3.2 Exclusion Criteria

Women in the district who delivered earlier than January, 2018 were not recruited into the study and those who had delivered but were less than 15 years or more than 49 years were also not recruited. Women who were between the ages of 15 and 49 who had delivered recently but have not lived in the district for one year before delivery were not eligible as well.

3.4 Study Variables

Two types of variables are involved in this study, thus, dependent and independent variables.

3.4.1 Dependent Variable

The dependent variable for the study is the utilisation of antenatal care services (less than eight or more antenatal visits during the last pregnancy).

3.4.2 Independent Variable

The independent variables for predisposing factors are: Age, Educational level, Marital status, Religion, Culture. Enabling factors; Occupation, Health insurance status, Distance from ANC services, Family\partner support, Waiting time and health providers attitude. Need factors are: Disease in pregnancy, Duration of pregnancy and Knowledge of ANC services. The pattern of ANC utilisation is to be explained by ANC attendance during pregnancy, timing of first ANC registration and frequency of ANC attendants.

3.5 Sampling

The study employed probability sampling techniques in selecting study participants.

Five health facilities namely, Elizabeth Hospital, Blessed Family Maternity Home, Acherensua Health Centre, Nkasiem Health Centre and Dadiesoaba Rural Clinic were selected as the study sites. This is because these facilities are the only health facilities in the district where deliveries are conducted. The St. Elizabeth Hospital is the only hospital in the district whilst the maternity home is also the only privately-owned facility in the district. The remaining three facilities are the only government facilities where deliveries are conducted in the district. In all, a total of five health facilities out of nine health facilities in the district were involved in the study. For the selection of participants, the sample required for each facility was calculated with the number of deliveries per month in each facility.

At each health facility, women in their reproductive age (15-49 years old) who had delivered a live baby or stillbirth in the last nine (9) months preceding the study and were at the health facility either attending postnatal services or had just delivered were selected by simple random technique. The women were asked to pick up a piece of paper with a 'YES' or a 'NO'. Those who picked a 'YES' were selected for the study after they had consented to participate in the study. These groups of women were used because they patronized postnatal care services and skilled delivery the most in the district and could easily be reached at the respective health facilities.

The simple random technique allows subjects to have equal chances of being selected and the approach is devoid of bias. The use of the simple random technique is informed by the researcher's intention of giving each subject an equal chance to participate in the study. In all, a total of four hundred and twenty-two (422) women in their reproductive ages (15-49) were involved in this study.

3.5.1 Sample size estimation

Antenatal care utilisation prevalence in the Asutifi South District was made to be 50% for the estimation of the sample size since there were no previous studies. The formula for calculating the sample size as given by Kirkwood and Sterne (2003) is hereby employed:

$$\text{Sample Size} = n = \frac{Z^2 pq}{d^2}$$

where,

n= the required sample size

Z= the standard normal variate (at 5% type 1 error ($P < 0.05$) = 1.96)

p= the estimated proportion in the target population is 50% (0.50)

q= 1-p (1-0.5 = 0.50)

d= the degree of accuracy desired at 0.05 (absolute error or precision)

n= 384

non-respondent rate of 5% = $5/100 \times 384$

non-respondent rate = 38

the required sample size is $384 + 38 = 422$

Adding the non-respondent rate of 10% gives the sample size of four hundred and twenty-two (422). Hence, the required sample size for the study was four hundred and twenty-two (422).

Table 3.1: Required Sample Size for Selected Facilities

Facility code	Name of facility	Number of deliveries (June)	Proportion	Sample required
01	St. Elizabeth Hospital	220	220/288*422	322
02	Blessed Family Maternity Home	17	17/288*422	25
03	Acherensua Health Centre	14	14/288*422	21
04	Nkasiem Health Centre	17	17/288*422	25
05	Dadiesoaba Rural Clinic	20	20/288*422	29
	Total	288	422	422

Source: Author's Construct, 2018

3.6 Pre-testing

Prior to the actual collection of data, there is the need to conduct the study in another facility with similar characteristics to enable the study instruments to be re-designed if necessary. In line with this, pre-testing was carried out at Kenyasi health Centre in the Asutifi North district which has similar characteristics as the health facilities in the Asutifi South district to help make any necessary changes before the final administration of the questionnaire.

3.7 Data Handling

The data were collected by the researcher and four trained research assistants. Each questionnaire was coded and all data collected were edited and kept in an envelope under lock and key. The data were entered into an excel spreadsheet for transfer to a statistical software for analysis.

3.8 Data Analysis

Data collected were entered into STATA version 14.0 and analyzed. Descriptive statistics such as mean, frequencies and proportions were run on all the study variables to assess the distribution patterns to inform the subsequent analysis. Additionally, a univariate and multivariate analysis were run to determine the relationship between the

dependent variable (eight antenatal visits during the last pregnancy) and the independent variables (Age, Educational level, Parity, Ethnicity, Marital status, Religion, Culture, Occupation, Health insurance status, Distance from ANC services, Family/partner support, Knowledge of antenatal care services, waiting time, Reason for starting ANC, Duration of pregnancy). The pattern of antenatal care utilisation was measured in frequencies and percentages.

Logistic regression analysis was further run to establish the strength of the association between antenatal care utilisation and pregnancy outcomes and odds ratio was measured. All statistical analysis was done at 0.5 level of significance.

3.9 Ethical Consideration

The study protocols were sent to the Committee on Human Research Publications and Ethics (CHRPE) of Kwame Nkrumah University of Science and Technology (KNUST) for approval and permission was sought from the District Health Directorate as well as the study participants. The study participants were given consent information concerning the study, and they could choose either or not to participate in the study. They were encouraged to exercise their right to pull out from the study if they so desired and no penalties were attached to such withdrawals. Questionnaire numbers were used instead of respondents' name in order to ensure anonymity and confidentiality of respondents and information respectively.

3.10 Study Limitations

Translation of the questionnaire into the local language affected the study as some medical terms do not have equivalent local words. Also, like any other cross-sectional study, the study was not able to measure any causal relationship as it sought to take a snapshot of the current situation pertaining to antenatal care utilisation. Some women

were also not able to remember all their antenatal care history as they had forgotten them. Furthermore, the study was conducted in five health facilities in the district where deliveries are carried out and so most likely, it excluded some women since not all women would have been present at the selected facilities during the data collection process. Part of the data was also obtained from records filled by health professionals who provided antenatal care services as well as those who conducted delivery. Therefore, there is the possibility that some information was not correctly documented.

3.11 Assumptions of the Study

It is assumed that the sample is normally distributed and will, therefore, produce similar results if carried out in other settings with 95% confidence.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the finding of the study with reference to the objectives under study. The findings are presented in tables and begin with description of the findings.

4.1 Socio- Demographic Characteristics of Respondents

Table 3 displays the socio-demographic characteristics of respondents. From the table below, majority of the respondents were between the ages of 25 and 29, whilst those between the ages of 15 and 19 were the minority. The majority (54.5%) of the respondents had parity between 3 and 4, followed by those with parity between 1 and 2 (34.8%) and the minority (10.7%) with parity of 5+. More than half (52.8%) of the respondents were Akans, followed by those from the North (33.4%), then Ewes (10.7%) with the least being Gas (3.1%).

Most of the respondents (73.7%) were from Hwidiem sub-district, followed by respondents from Dadiesoaba sub-district (13.0%), followed by respondents from both Acherensua and Nkasiem sub-districts (6.6%). The majority (63.5%) were married, 18.3% were co-habiting, 16.8% were single, 1.2% were separated and 0.2% were widowed. More than half (55.9%) of the respondents had basic education, 17.4% had secondary education and 13.7% were without education whilst the minority (13%) of the respondents had tertiary education. Majority (85.1%) of the respondents were Christians, followed by Muslims (11.6%), 2.1% had no religious affiliation and the minority (1.2%) belonged to the Traditional Religion. Most of the respondents were employed, with 30% engaged in trading, 23.5% engaged in farming, 8.8% being teachers, 4.7% being health sector workers and 34% engaged in other activities such as sewing, baking, hairdressing and cooking.

Table 4.1: Socio-demographic Characteristics of Respondents

Variable	Frequency	Percentage (%)
Age (in years) n=422		
15-19	42	10.0 23.9
20-24	101	31.5 19.7
25-29	133	14.9
30-34	83	
35+	63	
Parity (n=422)		
1-2	147	34.8 54.5
3-4	230	10.7
5+	45	
Ethnicity (n=422)		
Akan	223	52.8
Ewe	45	10.7 3.1
Ga	13	33.4
North	141	
Community of residence (in sub-district) n=422		
Acherensua sub	28	6.6
Dadiesoaba sub	55	13.0
Hwidiem sub	311	73.7
Nkasiem sub	28	6.6

Marital status (n=422)		
Single	71	16.8
Married	268	63.5
Separated	5	1.2
Widow	1	0.2
Co-habiting	77	18.3
Educational level (n=422)		
None	58	13.7 55.9
Basic	236	17.4
Secondary	74	13.0
Tertiary	54	
Religion (n=422)		
None	9	2.1
Christian	359	85.1
Muslim	49	11.6
Traditional worshiper	5	1.2
Others	0	0
Occupation (n=422)		
Trading	122	30.0
Farming	99	23.5
Teaching	37	8.8
Health worker	20	4.7
Others	144	34.0

Source: Field data, 2018

4.2 Pattern of ANC Utilisation

Table 4.1 shows results of the pattern of ANC utilisation among respondents. All the respondents (100%) in the study patronized ANC services during their last pregnancy. Majority (48.6%) of them registered during the second trimester, 45.7% registered during the first trimester and the minority (5.7%) registered during the third trimester. The majority (44.1%) of the respondents stated that their main reason for initiating ANC services was checkups, 41.0% said they started ANC because they were sick, 12.8% responded they wanted to have safe delivery, whilst 2.1% stated that they wanted to be educated on pregnancy issues. Most of the respondents (81.5%) made less than 8 ANC visits during their last pregnancy whilst 18.5% made 8 or more ANC visits during their last pregnancy.

Most of the respondents had their ANC services at the facility within their sub-district and some accessed other ANC services at the St. Elizabeth Hospital. The majority

(81.5%) attended St. Elizabeth Hospital, 7.1% attended ANC at Dadiesoaba Rural Clinic, 6.6 % had their ANC at Nkasiem Health Centre, 6.4% had theirs at Acherensua Health Centre whilst 5.9% of the respondents attended Blessed Family Maternity Home.

Regarding the reasons for choice of facility for ANC services, 100% of respondents from both Blessed Family and Dadiesoaba, 86.2% and 84% from Nkasiem and Acherensua Health Centres respectively and 62.9% from St. Elizabeth Hospital stated that their choice of facility for ANC services was by reason of proximity. Other reasons for patronizing ANC services at St. Elizabeth were given as: because it is a hospital (17.1%), provision of quality care (13.6%), good staff attitude (3.2%), referral for further management in pregnancy (3%).

Table 1.2: Pattern of ANC Utilisation

Variable	Frequency	Percentage (%)
Use of ANC services during last pregnancy (n=422)		
Yes	422	100
No	0	0
Duration of pregnancy at first ANC (n=422)		
4-12	193	45.7
13-24	205	48.6
25+	24	5.7
Mean \pmSD (15.3\pm6.6)		
Main reason for starting ANC (n=422)		
Check ups	186	44.1
Education	9	2.1
Safe delivery	54	12.8
Was sick	173	41.0
Number of ANC visits (n=422)		
<8	344	81.5
8 or more	78	18.5
Mean \pmSD (5.5\pm2.0)		
Attended ANC at St. Elizabeth (n=422)		
Yes	344	81.5
No	78	18.5
Attended ANC at Blessed Family (n=422)		
Yes	25	5.9
No	397	94.1
Attended ANC at Acherensua HC (n=422)		
Yes	27	6.4
No		

	385	93.6
Attended ANC at Nkasiem HC		
Yes	28	6.6
No	393	93.4
Attended ANC at Dadiesoaba rural clinic		
Yes	30	7.1
No	392	92.9
Reason for choosing St. Elizabeth (n=344)		
Proximity	217	62.9 13.6
For quality care	47	17.1
It's a hospital	59	3.2
Staff attitude	11	3.2
Referral	10	
Reason for choosing Blessed family (n=25) Proximity		
	25	100.0
Reason for choosing Acherensua health Centre (n=28)		
Proximity	23	85.2
For quality care	3	11.1
Staff attitude	1	3.7
Reason for choosing Nkasiem health Centre (n=28)		
Proximity	24	85.7
Staff attitude	4	14.3
Reason for choosing Dadiesoaba rural clinic (n=30) Proximity		
	30	100.0

Source: Field data, 2018.

4.3.1 Predisposing factors

4.3.1.1 Cultural beliefs

Table 4.2 presents results of the factors influencing ANC utilisation among participants in this study. With respect to cultural beliefs preventing the utilisation of ANC services during pregnancy, the majority (76.5%) responded that there were no cultural beliefs that prevented them from patronizing ANC services whilst, 23.5% stated that there were cultural beliefs that prevented them from accessing the required number of ANC services during pregnancy. The beliefs stated were: pregnancy is not a disease (28.3%), one must not be seen in the early stages of pregnancy (22.2%), herbal medicine makes delivery easy (35.4%), and seeking permission from partner (14.1%).

Considering cultural beliefs encouraging ANC utilisation in this study, most of the respondents (96%) stated that there were no cultural beliefs that encouraged them to use ANC services, whilst 17(4%) attested that there were cultural beliefs that encouraged them. All the 17 respondents (100%) who had cultural beliefs that encouraged them stated the belief as the hospital being a place for healing.

4.3.1.2 Religious beliefs

A majority (83.1%) of the respondents stated that they had no religious beliefs that prevented them from patronizing ANC services whilst 16.9% had some form of beliefs that prevented them from accessing ANC services during their last pregnancy. Respondents who had religious beliefs that prevented them from making ANC visits stated them as: God is the one who heals (72.2%), one will be operated during delivery (23.6%), and belief against blood transfusion (4.2%). Most of the respondents (96.4%) also had no religious beliefs that encouraged the use of ANC whilst 3.6% had some form of beliefs. The beliefs that encouraged them were stated as: one must seek for good health (73.3%), and the hospital is a place for healing (26.7%).

4.3.2 Enabling factors

4.3.2.1 Partner/family support

A majority (85.5%) of the study participants received support for ANC services, whilst 14.5% received no form of support. Regarding partner/family accompaniment, 16.8% of respondents had their partners accompanying them and 2.6% had family members also accompanying them for ANC services. Additionally, 25.6% of respondents had their partners who reminded them of their ANC schedules, whilst 12.1% also had other

members of the family reminding them of their ANC schedule during their last pregnancy.

4.3.2.2 Attitude of staff

Most of the respondents (94.5%) said they felt welcome whilst 15.5% said they did not feel welcome. The reasons given for feeling welcome by respondents were: staff were approachable (22.5%), staff smiled to me (17.0%), offered me a comfortable seat (28.5%) and staff talked to me politely (31.7%). A majority (76.3%) said they did not feel unwelcome and the remaining 23.7% said they felt unwelcome when they attended ANC clinics. The reasons for feeling unwelcome were given by respondents as: staff shouted at me (75.0%), there were not enough seats (12.0%) and staff showed no concern to me (10.0%). Most of the respondents (88.8%) attested that they received education on the danger signs to look out for during pregnancy whilst 1.2% said they received no such education. Almost all the respondents (99.3%) took scan during their last pregnancy. About more than 50% took their scan during the second trimester, 31.4% took their scan in the first trimester of pregnancy whilst 9.2% took their scan during the third trimester.

More than 50% of the respondents indicated that they were treated with dignity and mentioned the reasons for being treated with dignity as: being provided with privacy (70.2%), health providers discussed my progress with me (16.0%), addressed me with a title (12.0%) and gave you direction (1.8%). Some of the respondents (13.5%) indicated that they felt not being treated with dignity. The reasons given were: a man took the scan (22.8%), staff did not show concern (35.1%), indirect insults from staff (35.1%) and 7.0% had no reason. A majority (74.6%) of the respondents rated staff

attitude good, 25.4% as very good, whilst no one rated staff attitude as poor towards pregnant women.

4.3.2.3 Health insurance status, cost and distance travelled

All the 422 (100%) respondents had national health insurance. Some of the respondents (about 25.1%) indicated that they were prevented from meeting the recommended ANC visits by cost, 26.1% by distance travelled. About half (51.9%) of the respondents travelled a distance of 0.5 km to 1.5 km to access ANC services, 24.4% 2 km to 4 km, 22.0% 5 km to 7 km and 1.7% travelled 8 km or more for ANC services.

4.3.2.4 Waiting time

Most of the respondents (61.8%) stated that waiting time did not prevent them from accessing ANC services, whilst 38.2% of the respondents stated that waiting time prevented them from achieving the required number of ANC visits during their last pregnancy. The majority (63.7%) of the respondents in the study indicated that the average longest waiting before seeing a doctor was between 2 to 4 hours, 34.4% between 1 to 3 hours and the remaining 1.9% between 7 or more hours. Most of the respondents (96.9%) indicated that the shortest average waiting time before seeing a doctor was between half an hour to 2 hours whilst 1.3% indicated that it was between 3 to 5 hours. With regards to staff attitude, 14.9% said they were prevented from making the required number of ANC by staff attitude. Other factors that prevented the patronage of the required number of ANC were: buy some drugs from outside (3.1%), pay top-up for scan (16.6%), and 3.8% do not get all drugs.

4.3.3 Need factors

4.3.3.1 Knowledge of ANC services

Respondents who heard of ANC services from their friends, were 54.5%, those who heard from healthcare providers were 92.4%, those who also heard from relatives were 82.2%, those who heard from radio/television were 74.6% and those who heard from social media were 35.8%. Other sources were: self (23.5%), pastor's wife (9.3%) and clergy (4.0%). Majority (75.9%) stated that the appropriate time to start ANC is between 4 to 12 weeks, 23.9% said between 13 to 25 weeks and 0.2% said more than 25 weeks. More than half (66.5%) indicated that the required number of ANC visits during pregnancy is between 3 to 6 times, 30.0% said between 7 to 9 times whilst 2.9% said 10 times or more. Almost all the respondents (98.8%) knew that ANC can help detect complications during pregnancy.

Majority (95.0%) of the respondents knew of the iron/folic supplementation during pregnancy. Of these, about half (51.6%) knew that it was to prevent anaemia in pregnancy. Most of the respondents (91.7%) knew of the tetanus immunisation given during pregnancy. Approximately 57.6% stated that the immunisation prevents baby from tetanus, 3.4% said it prevents mothers from tetanus during delivery, 8.7% said it prevents both mother and baby from tetanus whilst the remaining respondents had no idea of the benefits of the tetanus immunisation or could not remember. A majority (91.8%) knew of the anti-malaria drug given to pregnant women and out of these, only 21.1% knew the name of the drug given. Most of the respondents (80.0%) were aware of the syphilis screening during pregnancy. About 51.5% stated that the screening was to help prevent deformities to the babies.

Table 4.3: Factors Influencing ANC Utilisation

Variable (predisposing factors)	Frequency	Percentage (%)
Cultural beliefs preventing ANC utilisation (n=422)		
Yes	99	23.5
No	323	76.5
List of Cultural beliefs preventing ANC utilisation (n=99)		
Pregnancy is not disease	28	28.3
Must not be seen in early stages of pregnancy	22	22.2
Herbal medicine makes delivery easy	35	35.4
Permission from partner	14	14.1
Cultural beliefs encouraging ANC utilisation		
Yes	17	4.0
No	405	96.0
List of Cultural beliefs encouraging ANC utilisation (n=17) The hospital is a place for healing	17	100.0
Religious beliefs preventing ANC utilisation (n=422)		
Yes	72	16.9
No	350	83.1
List of religious belief (n=72)		
God is the one who heals	53	73.6
One will be operated during delivery	16	22.2
Against blood transfusion	3	4.2
Religious beliefs encouraging ANC utilisation (n=422)		
Yes	15	3.6
No	407	96.4
List of religious beliefs encouraging ANC (n=15)		
One must seek for good health	11	73.3
The hospital is a place for healing	4	26.7
Variable (enabling factors)		
Partner accompanying (n=422)		
Yes	71	16.8
No	351	83.2
Number of times partner accompanied (n=71)		
1-2	42	59.2
3-4	29	40.8
Any family member accompanying (n=422) Yes	26	6.2
No	396	93.8
Number of times family member accompanied (n=26)		
1-2	18	69.2
3-4	8	30.8
Receives support from anyone (n=422)		
Yes	361	85.5
No	61	14.5

Type of support		
Financial support	343	
Transport support	104	
Other support	26	
<i>cooking support</i>	<i>11</i>	
<i>take care of the children</i>	<i>15</i>	
Remind of ANC schedule by partner (n=422)		
Yes	108	25.6
No	314	74.4
Remind of ANC schedule by any family member (n=420)		
Yes	52	12.6
No	369	87.4
Felt welcome (n=422)		
Yes	399	94.5
No	23	5.5
Reason for feeling welcome (n=399)		
None	1	0.3
Staff were approachable	90	22.5
Staff smiled to me	68	17.0
Offered me a comfortable seat	114	28.5
Staff talked to me politely	124	31.7
Felt unwelcome (n=422)		
Yes	99	23.5
No	323	76.5
Reasons for feeling unwelcome (n=99)		
None	3	3.0
Staff Shouted at me	75	75.0
Not enough seats	12	12.0
Staff showed no concern to me	10	10.0
Received education on danger signs of pregnancy		
Yes	373	88.8
No	47	11.2
Scan done during last pregnancy (n=422)		
Yes	421	99.8
No	1	0.2
Duration of pregnancy at first scan (in weeks) n=421		
1-6	8	1.9
7-12	120	28.5
13-19	55	13.1
20-26	199	47.3
26+	39	9.2
Felt treated with dignity (n=422)		
Yes	331	78.4
No	91	21.6
Reasons for feeling being treated with dignity (n=331)		
Provided with privacy	233	70.2
Discuss progress with me	53	16.0
Address me with title	40	12.0
Gives you direction	6	1.8

Felt treated with no dignity (n=422)		
Yes	57	13.5
No	365	86.5
Reasons for feeling being treated with no dignity (n=57)		
None	4	7.0
Scan done by men	13	22.8 35.1
Staff not showing concern	20	35.1
Indirect insults from staff	20	
Rating attitude of staff towards pregnant women (n=422)		
Good	315	74.6
Very good	107	25.4
Member of NHIS (n=422)		
Yes	422	100.0
No	-	-
ANC utilisation prevented by cost (n=422) Yes		
No	106	25.1
Prevented by distance covered to receive ANC (n=422) Yes	316	78.9
No		
Distance covered for ANC services (in km) n=422		
0.5-1.9	110	26.1
2-4	312	73.9
5-7		
8+	219	51.9 24.4
Prevented by waiting time (n=422)	103	22.0 1.7
Yes	93	
No	7	38.2
Average longest waiting time before seeing a doctor in hours (422)		61.8
1-3	161	
4-6	261	34.4
7+		63.7
Average Shortest waiting time before seeing a doctor in hours (n=422)	145	1.9
0.5-2	269	
3-5	8	96.9 3.1
Prevented by attitude of staff (n=422)		
Yes	409	14.9
No	13	85.1
Prevented by other factors (n=422)		
None	63	71.3 3.1
Buy some drugs from outside	359	16.6
Pay top up for scan		9.0
Do not get all the drugs	301	
	13	
	70	
	38	
Variable (need factors)		

Awareness of ANC services through friends (n=422)		
Yes	230	54.5
No	192	45.5
Awareness of ANC services through Healthcare providers (n=422) Yes		
No	390	92.4
Awareness of ANC services through Relatives (n=422)		
Yes	32	7.6
No		
Awareness of ANC services through Radio/Television (n=422) Yes		
No	347	82.2
Awareness of ANC services through social media (n=422) Yes	75	17.8
No		
Awareness of ANC services through other means (n=422) None	316	74.9
Self	106	25.1
	152	36.0
	270	64.0
	268	63.5
Clergy	98	23.2
Pastor's wife	17	4.0
	39	9.3
Appropriate time to start ANC services n=414 4-12		
13-24	314	75.9
25+	99	23.9
	1	0.2
Number of times a pregnant woman should access ANC n=415		
3-6	276	66.5
7-9	127	30.6
10+	12	2.9
ANC helps in determining complications during pregnancy (n=422) Yes		
No	417	98.8
	5	1.2
Knowledge of Iron Folic Supplementation (n=422)		
Yes	400	94.8
No	22	5.2
Knowledge on function of Iron Folic Supplementation (n=400) No		
idea	33	8.3
Cannot remember	4	1.0
Gives you appetite	4	32.0
Prevents anaemia	128	52.5
Makes baby strong	210	4.2
Prevents diseases	17	2.0
	8	

Knowledge of tetanus immunization (n=422)		
Yes	387	91.7
No	35	8.3
Benefit of tetanus immunization (n=387)		
No idea	48	12.4
Cannot remember	15	3.9
Prevents infection	53	13.7
Prevents baby from tetanus	53	57.9
Prevent mother from tetanus during delivery	224	3.3
Prevents mother and baby from tetanus	13	8.8
	34	
Aware of malaria drug given to pregnant women (n=422) Yes		
No	387	91.7
Name of malaria drug given known to respondents (n=387)	35	8.3
No idea	188	48.6
Cannot remember	81	20.9
SP	118	30.5
Awareness of syphilis screening during pregnancy (n=422) Yes		
No	338	80.1
Purpose of syphilis screening during pregnancy (n=338) No	84	19.9
idea		
Cannot remember	109	32.2
Prevent baby from syphilis	23	6.8
Prevent baby from deformity	22	6.5
Makes baby healthy	174	51.5
	10	3.0

Source: Field data, 2018

4.4 Pregnancy Outcomes

From Table 6, the majority (96.7%) of the respondents had their last delivery at a health facility whilst 3.3% had their deliveries at home. A majority (82.9%) of the respondent who delivered in a health facility delivered at St. Elizabeth Hospital, 4.5% at Dadiesoaba Rural Clinic, another 4.5% at Blessed Family Maternity Home, 3.1% at Acherensua Health Centre and 1.7% at Nkasiem Health Centre. Most of the respondents (86%) delivered at 38+ weeks of gestation, 13.8% delivered between 33 to 37 weeks of gestation, whilst the remaining 0.2% delivered between 27 to 32 weeks of gestation.

The majority (80.3%) of the respondents in this study had babies with birth weight of 2.5+kg, whilst the minority (19.7%) had babies with birth weight of <2.5kg. Almost all the respondents (98.1%) delivered a live baby whilst, 1.9% had a stillbirth. The majority

(85.7%) of the respondents had babies at birth with no abnormalities, 6.4% had babies with jaundice, 4.5% had babies with asphyxia, 1% had babies with tongue tie, another 1% had eye problem, 0.7% had babies with hydrocephaly, 0.5% had babies with anencephaly and 0.2% had babies with spinal bifidae.

Table 4.4: Pregnancy Outcomes

Variable	Frequency	Percentage (%)
Place of delivery (n=422)		
Home	14	3.3
St. Elizabeth	350	82.9
Blessed family	19	4.5
Acherensua HC	13	3.1
Nkasiem HC	7	1.7
Dadiesoaba rural clinic	19	4.5
Duration of pregnancy at birth (in weeks) n=422		
27-32	1	0.2
33-37	59	13.8
38+	362	86.0
Mean \pmSD 1.9 (\pm) 0.4		
Weight of baby at birth (in kg)		
>2.5	79	19.7
2.5+	322	80.3
Mean \pmSD 0.8 (\pm) 0.4		
State of baby at birth (n=422)		
Alive	414	98.1
Stillbirth	8	1.9
Abnormalities at birth (n=422)		
Anencephaly	2	0.5
Asphyxia	19	4.5
Eye problem	4	1
Hydrocephaly	3	0.7
Jaundice	27	6.4
Spinal bifidae	1	0.2
Tongue tie	1	0.2
None	362	85.7

Source: Field data, 2018

4.5 Regression Analysis of Factors Influencing ANC Utilisation among Respondents and pregnancy outcomes

The study conducted a logistic regression analysis to determine the factors influencing ANC utilization. The regression analysis involved unadjusted and adjusted. In the

unadjusted all the variables under study were regressed whereas in the adjusted only variables that were significant in the unadjusted were used. Table: 7 shows results of the regression analysis of socio demographic characteristics, need and enabling factors influencing ANC utilisation among respondents in this study and ANC utilisation and pregnancy outcomes.

The study found no significant association between age, parity, education, community of residence, religious affiliation, occupation, and ethnicity of respondents and the utilisation of eight or more ANC services during pregnancy in this study (see table 7). However, marital status of respondents in this study influenced the utilization of ANC services during pregnancy. Respondents who were married had 5.846 likelihood of making eight or more ANC visits than their counterparts who were singled (AOR=5.846, 95% CI=1.701-20.085).

Again, Partner and family accompaniments were highly significant in this study. Respondents who had their partners accompanying them for ANC services had significantly higher odds of making eight or more ANC visits during pregnancy than their colleagues who did not have their partners accompanying them for ANC services (AOR=2.624, 95% CI=1.316-5.231). Additionally, respondents who had any family member accompanying them for ANC services during pregnancy also had significantly higher odds of making eight or more ANC visits than their colleagues who did not have any family member accompanying them for ANC services during pregnancy (AOR=2.98, 95% CI=1.049-8.464).

The study found a strong association between knowledge on the required number of ANC visits during pregnancy and the utilisation of ANC services. Respondents who knew that a pregnant woman should make ten or more ANC visits during pregnancy had significantly increased odds of making eight or more ANC visits during pregnancy

as compared to their counterparts who knew the required number of visits to be between three and six (AOR=18.85, 95% CI=4.529-78.457). Additionally, utilisation of ANC services during pregnancy influenced the weight of the baby at birth in this study. Birth weight of 2.5+kg had strong association with eight or more ANC visits during pregnancy in this study (AOR=3.623, 95% CI=1.274-10.301).

Table 4.5: Regression Analysis of Factors Influencing ANC Utilisation among Respondents

Predisposing factors	Unadjusted			Adjusted		
	Odds Ratio (OR)	Pvalue	95% CL	Odds Ratio (AOR)	P-value	95% CI
Age (ref= 15-19)						
20-24	3.765	0.087	0.826-17.166	1.873 2.260	0.488	0.318-11.036
25-29	6.599*	0.012	1.512-28.809	3.419	0.388	0.355-14.386
30-34	7.667*	0.008	1.712-34.335	1.424	0.220	0.479-24.406
35+	1.356	0.732	0.237-7.758		0.757	0.152-13.361
Parity (ref=3-4)						
1-2	0.065	0.116	0.382-1.112	0.393	0.012	0.189-0.815
5+	0.076	0.012	0.010-0.564	0.086	0.031	0.009-0.795
Ethnicity (ref=Akan)						
Ewe	0.493	0.130	0.198-1.229	0.496	0.178	0.179-1.376
Ga	...	...	...	1	....	....
North	0.499	0.018	0.282-0.886	0.736	0.389	0.368-1.475
Community (ref=Acherensua)						
Dadiesoaba	1.019	0.983	0.175-5.937	1.308 4.339	0.783	0.194-8.832
Nkasiem	2.826	0.240	0.499-15.991	2.26	0.138	0.624-30.156
Hwidiem	3.569	0.088	0.826-15.423		0.184	0.599-14.294
Marital status (ref=single)						
Married	4.313*	0.003	1.667-11.159	5.846*	0.005	1.701-20.085
Separated	3.3	0.324	0.308-35.386	8.681	0.126	0.545-138.16
Widow	...	...	...	...	...	...
Co-habited	1.115	0.862	0.325-3.829	1.403	0.632	0.351-5.615
Edu. Level (ref=basic)						
None	0.601	0.314	0.224-1.618	0.969 1.214	0.959	0.297-3.163
Secondary	2.361*	0.008	1.252-4.451	1.003	0.604	0.584-2.524
Tertiary	4.057*	0.000	2.093-7.865		0.995	0.320-3.148
Religion (ref=traditional religion)						
None						
Christian	0.500	0.653	0.024-10.251	+	+	+
Moslem	0.952	0.965	0.105-8.649			
	0.667	0.733	0.647-6.871			

Occupation (ref=trading)						
Farming	0.346	0.020	0.141-0.848	0.526 1.837	0.214	0.191-1.448
Teaching	3.463*	0.002	1.559-7.688	2.483	0.304	0.576-5.860
Health worker	3.030*	0.031	1.107-8.292	1.349	0.246	0.534-11.55
Others	0.955	0.886	0.508-1.796		0.426	0.645-2.821

Source: Field data, 2018

loglikelihood=163.9prob>chi<0.001

NB: (* = significant difference)

(... = not applicable)

(+ = not used in adjusted)

Table 4.6: Regression Analysis of Factors Influencing ANC Utilisation among Respondents

Enabling and Need factors	Unadjusted			Adjusted		
	Odds Ratio (OR)	Pvalue	95% CL	Odds Ratio (AOR)	Pvalue	95% CI
Cultural beliefs preventing (ref=no)						
Yes	0.103	0.000	0.032-0.336	+	+	+
Cultural beliefs encouraging (ref=no)						
Yes	1.376	0.586	0.436-4.364	+	+	+
Religious beliefs preventing (ref=no)						
Yes	0.517	0.098	0.237-1.129	+	+	+
Religious beliefs encouraging (ref=no)						
Yes	2.288	0.141	0.752-6.893	+	+	+
Partner accompanying (ref=no)						
Yes	4.256*	0.000	2.428-7.459	2.624*	0.006	1.316-5.231
Family mem accompanying (ref=no)						
Yes	3.015*	0.009	1.312-6.928	2.98*	0.040	1.049-8.464
Received support (ref=no)						
Yes	2.284	0.066	0.946-5.513	+	+	+
Felt welcome (ref=no)						
Yes	2.471	0.228	0.567-10.764	+	+	+
Felt unwelcome (ref=no)						
Yes	1.339	0.301	0.769-2.331	+	+	+
Education given (ref=no)						
Yes	1.126	0.772	0.504-2.516	+	+	+
Felt treated with dignity (ref=no)						
Yes	1.276	0.450	0.678-2.402	+	+	+
Felt Treated with no dignity (ref=no) Yes						
	0.929	0.844	0.447-1.931	+	+	+
Rating staff attitude (ref=good) Very good						
	1.018	0.949	0.579-1.789	+	+	+
Cost as barrier (ref=no)						
Yes	0.165	0.000	0.0614-0.419	0.277	0.033	0.085-0.901

Distance as a barrier (ref=no) Yes	0.624	0.130	0.338-1.149	+	+	+
Waiting time as a barrier (ref=no) Yes	0.458	0.006	0.262-0.802	0.421	0.014	0.211-0.840
Staff attitude as a barrier (ref=no) Yes	1.045	0.900	0.528-2.068	+	+	+
Awareness through friends (ref=no) Yes	1.741*	0.034	1.043-2.906	1.052	0.887	0.519-2.134
Awareness through health staff (ref=no) Yes	0.656	0.326	0.283-1.521	+	+	+
Awareness through relatives (ref=no) Yes	1.099	0.777	0.571-2.12	+	+	+
Awareness thru. TV/radio (ref=no) Yes	2.632*	0.007	1.301-5.323	1.229	0.666	0.482-3.129
Awareness thru. Social media (ref=no) Yes	2.828*	0.000	1.711-4.672	1.479	0.267	0.741-2.954
Know. of appropriate time for ANC (ref=4-12) 13-24 25+	0.314 ...	0.001 ...	0.004-0.229 ...	0.088 ...	0.032 ...	0.009-0.808 ...
Know. Of number of times (ref=3-6) 7-9 10+	12.02* 32.50*	0.000 0.000	6.497-22.241 8.839-119.50	8.576* 18.85*	0.000 0.000	4.280-17.184 4.529-78.457
ANC helps to detect complications (ref=no) Yes	0.906	0.930	0.099-8.218	+	+	+
Know of Iron/ folic supp. (ref=no) Yes	1.299	0.682	0.371-4.548	+	+	+
Know of TT immunization (ref=no) Yes	0.829	0.674	0.346-1.986	+	+	+
Know of malaria drug (ref=no) Yes	1.663*	0.045	1.012-2.732	1.085	0.817	0.544-2.161
Know of syphilis screening (ref=no) Yes	0.723	0.277	0.404 1.296	+	+	+

Source: Field data, 2018

loglikelihood=141.6 prob>chi2 <0.001

NB: (* = significant difference)

(... = not applicable)

(+ = not used in adjusted)

Table 4.7: Regression Analysis of ANC Utilisation and Pregnancy Outcomes among Respondents

Birth outcomes	Unadjusted			Adjusted		
	Odds Ratio (OR)	Pvalue	95% CL	Odds Ratio (AOR)	Pvalue	95% CI

Place of delivery (ref=Hwidiem)						
Acherensua HC	...	...	...
Blessed family	...	...	...	+	+	+
Dadiesoaba	0.699	0.578	0.198-2.464			
Home	...	...	...
Nkasiem	0.621	0.662	0.074 -5.244			
Weeks of pregnancy at delivery (ref=38+)						
27-32	...	0.039	...	...	0.502	...
33-37	0.366		0.142-0.949	0.692		0.236-2.024
Birth weight (ref= <2.5kg)						
2.5kg+	4.339*	0.002	1.691-11.135	3.623*	0.016	1.274-10.301
Birth status (ref-alive)						
Still birth	...	...	...	+	+	+
Abnormalities (ref=Anacephaly)						
Asphyxia	2.716	0.044	1.029-7.168			
Eye problem	...	...	...
Hydrocephaly	...	...	...	+	+	+
Jaundice	1.629	0.289	0.661-4.017			
Spinal bifidae	...	...	...
Tongue tie	...	...	...
None	...	...	...

Source: Field data, 2018

loglikelihood=-185.0 prob>chi<0.001

NB: (* = significant difference)

(... = not applicable)

(+ = not used in adjusted)

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter presents the discussion of the study with reference to the literature review and the findings. The discussion is systematized under the specific objectives of the study.

5.1 Pattern of ANC Utilisation

Antenatal care utilisation was found to be high in this study as all the respondents (100.0%) used antenatal care services during their last pregnancy. The finding is consistent with Abimbola *et al.* (2016) who found a high percentage (89.4%) of their respondents patronizing ANC services during pregnancy. This study is again consistent with other studies that have reported a high percentage of their respondents utilising ANC services during pregnancy. These include a study by Sharon *et al.* (2015) who found 89.6% patronage, Villadsen *et al.* (2014) who recorded 86% patronage and Bhimani *et al.* (2016) who found 88.7% patronage. The result is also similar to a study in Nigeria by Dairo and Owoyokum (2010) which showed that majority (76.8%) of the respondents attended antenatal care services at least once during their last pregnancy. This could be as results of the great awareness of ANC services in the district in recent times and also the coverage of all pregnant women under the NHIS.

The results on the timing of ANC registration revealed that greater percentage (48.6%) of the respondents registered for ANC services during the second trimester, followed by 45.7% during the first trimester and the least (5.7%) registering during the third trimester. This is consistent with the results of Bhimani *et al.* (2016) where a majority (54.25%) of the respondents registered for ANC services during the second trimester, 24.38% during the first trimester and 10.14% during the third trimester. This result is also similar to the findings Roberts *et al.* (2015), which showed a majority (75%) of the respondents registering for their first antenatal visit in the second trimester of pregnancy. The results are, however, in contrast to Shora's (2015) results where 64.5% had registered for antenatal care services during the first trimester, 15.2% during the second trimester and 9.9% during the third trimester. The study result could be due to

the fact that most women get to know they are pregnant only when they start feeling unwell and visit the health facility, where tests might reveal pregnancy.

With regard to number of ANC visits, most of the respondents (81.5%) in this study made less than ANC visits during their last pregnancy, while the minority (18.5%) made eight or more ANC visits during their last pregnancy. These results indicate a shortfall in adherence to the current number of ANC visits recommended by the WHO. This negative finding is consistent with the result of a study carried out in Kumasi where 10% had 1 to 3 visits, 45.9% had 4 to 7 visits and 42.5% had 8 to 13 visits (Asundep *et al.*, 2013). The awareness of the current eight or more ANC visits recommended by the WHO in 2016 seems not to be very well communicated to women in the district, and even the few that made the recommended visits were as a result of health problems they were facing during pregnancy.

Regarding the reasons for choice of facility for ANC services, 100% of respondents from both Blessed Family and Dadiesoaba, 86.2% and 84% from Nkasiem and Acherensua Health Centres respectively and 62.9% from St. Elizabeth Hospital stated that their choice of facility for ANC services was by reason of proximity. Other reasons for patronizing ANC services at St. Elizabeth were given as: because it is a hospital (17.1%), provision of quality care (13.6%), good staff attitude (3.2%), and referral for further management in pregnancy (3%). This is similar to the results in a study by Berhe *et al.* (2014) where the results indicated that the majority 192 (62.1%) of the respondents who utilised antenatal care services during pregnancy 192 (62.1%) gave their reasons for the choice of the health facility as it being close, 44(19.6%) time of services being convenient, 32 (14.3%) as the good behavior of the staff, 27 (12.1%) as the high quality of services rendered by the facility and 24 (10.7%) as low or no cost for antenatal services charged whilst 5 (2.2%) gave other reasons.

5.2 Factors Influencing ANC Utilisation

5.2.1 Predisposing factors

The study results revealed that respondents with tertiary education have greater percentage of making eight or more ANC visits than those with secondary, basic or no level of education. This finding is congruent with the results of a study which indicated that 96% of women with post-secondary education, 69% with secondary education and 46% with primary education utilised ANC whilst only 23% of women with no formal education utilised antenatal care services during pregnancy (Awusi *et al.*, 2009). However, in the regression analysis, there was no significant association between educational level of respondents and making of eight or more ANC visits during pregnancy among respondents in this study. In contrast is a study that found women with secondary or higher education with 2.56 odds higher of utilising antenatal care services during pregnancy than women with no education (KaluleSabit *et al.*, 2013). The findings of this study indicate that women who are uneducated have access to similar information on ANC services as their counterparts who are educated in the study area.

Age was found to have no association with utilization of ANC services among respondents in this study. Similar to this finding is a study in North-Central Nigeria by Abimbola *et al.* (2016) which found age to be insignificantly a barrier to a woman's utilisation of antenatal care services during pregnancy. In contrast, a study in Ethiopia found that women who are 25 years or less are two times more likely to access antenatal care services during pregnancy than women who are more than 25 years old (Gudayu *et al.* 2014). In contrast is also a study in central Nepal that found women in the younger age group to be more likely to utilise antenatal care services four times more than

women in the older age group (Pandey & Karki, 2014). The finding from this study could mean that there is no stigma attached to the use of ANC services by the very young and the very old in the study area.

Again, marital status in this study was found to be significantly associated with eight or more ANC visits as women who were married had significantly higher odds (AOR 5.846, CI=1701-20.085) of making eight or more ANC visits than their counterparts who were singled. This finding is in agreement with a study that found single women, divorced and widowed women as less likely to utilise antenatal care services as compared to their counterparts who were married or co-habiting (Sakeah *et al.*, 2017). This indicates that as married women get support and encouragement during pregnancy and feel comfortable to access ANC services and the unmarried may feel stigmatised in accessing ANC services in the study area.

This study also found no association between a woman's parity and her utilization of ANC services during pregnancy. Similar to the finding is the study in Nigeria that found no association between a woman's parity and her utilisation of ANC services during pregnancy, with a P-value of $>0.05\%$ (Onasoga Afolayan *et al.*, 2012). In contrast is a study in Zambia which found high parity as a barrier to ANC utilisation during pregnancy (Chama-Chiliba & Koch, 2015). On the contrary, another study found that women with four or more children utilise ANC services more than those with less than four children (Abimbola *et al.*, 2016). Again, on the contrary, a study also found that the higher a woman's parity, the better her utilisation of ANC services during pregnancy as only 3.5% respondents with four or more children did not utilise ANC services. The difference that was observed was statistically significant with a P-value of 0.027 (Abimbola *et al.*, 2016). The finding from this study could mean that women with less

parity are well informed about pregnancy and its related issues much as those with high parity and those with high parity are not stigmatised.

5.2.2 Enabling factors

This study found no association between occupation and the utilisation of eight or more ANC services during pregnancy among respondents. There was no significant association between respondents who were teachers, health workers, or doing other jobs in the utilization of eight or more ANC visits, as compared to those who had no employment. This is in agreement with a study in Southern Ethiopia which found no statistical association between employment status and ANC utilisation among women during pregnancy (Dulla *et al.*, 2017). In contrast is a study that found women belonging to certain category of professionals like lawyers, teachers, health workers to be more likely to patronize ANC services and make the required number of visits than their counterparts who are unemployed (Umar & Bawa, 2015).

Again, cultural beliefs preventing them from accessing ANC services during pregnancy was not significant in this study among respondents. In contrast to this finding is a study that found women who have faith in traditional healers to be less likely to utilise ANC services during pregnancy as compared to the women who do have no such beliefs (Deo *et al.*, 2015). Additionally, partner and family member accompaniment were highly associated with making of eight or more ANC visits during pregnancy among respondents in this study. The finding is consistent with a study that found that women who had no family, friends' and husband support had poor utilisation of ANC services as compared to their counterparts who had such support with OR of 1.71 (Rurangirwa *et al.*, 2017b).

The study had 100% of its participants to be insured under the NHIS and this finding is in contrasts with a study in Indonesia which found only 13.1% of its respondents as having health insurance during pregnancy whilst the majority (86.9%) did not have health insurance and so paid for their services by themselves (Agus *et al.*, 2012). However, participants in this study were challenged with paying extra money for scan and buying of drugs from outside the facilities.

Additionally, most of the respondents (61.8%) stated that waiting time did not prevent them from accessing ANC services, whilst 38.2% of the respondents stated that waiting time prevented them from achieving the required number of ANC visits during their last pregnancy. This finding is however, in agreement with a study which revealed that the majority of the respondents (71.3%) did not have to wait for long to receive ANC services when they visited the antenatal clinic whilst the minority of respondents (28.7%) reported that they had to wait for long hours before receiving ANC services at the clinic (Ye *et al.* (2010). This means that pregnant women are attended to quickly when they visit facilities for ANC services. Again, this study found no significant association between waiting time and ANC utilization among respondents.

Respondents of this study who indicated that waiting was a challenge in accessing ANC services did not make eight or more visits during pregnancy than those who had no problem with waiting time. This is in contrast to a study which found long waiting time of 2 hours or more as significant to utilisation of ANC services among pregnant women (Chorongo *et al.*, 2016). The findings from this study could suggest that health care providers educate and explain to client the need to sometimes wait for certain services.

5.2.3 Need factors

The majority of respondents in this study stated their main reason for initiating ANC services as for check-ups. This is contrary to the findings in other studies where majority of respondents stated their main reason for initiating ANC services as due to a health problem or for treatment and the lesser percentage indicating their reason as for check-ups (Berhe *et al.*, 2014; Wolderufael, 2018). The study results revealed that awareness of ANC services through friends, relatives television/radio sources and social media had no association with eight or more ANC visits. This results is in contrast to a study that found a strong association between ANC utilisation and women who watch TV (Kabir & Khan, 2013). This means that even though the media has become a very useful source of information in recent times, there are other means of getting information about ANC services in the study area.

A majority of the respondents in this study knew the right time to begin ANC services to be in the first trimester and this is contrary to the result of Gudayu *et al.* (2014) who found the majority of their respondents knowing the right timing for ANC services to be in the second trimester.

This study further found that respondents who knew the number of ANC visits to be made had significantly higher odds of making eight or more visits than their counterparts who did not know the required number of visits to be made during pregnancy (AOR=11.769, 95% CI=5.459-25.370). The result is similar to a finding by Wilunda *et al.* (2015), which indicated that women who had knowledge on the number of antenatal care visits to be made during pregnancy had higher chances of utilising antenatal care services more than women who had no knowledge on the required number of antenatal care visits during pregnancy, with OR=2.75, CI 1.894.01. The

finding could mean that pregnant women see the need and their responsibility in making eight or more ANC services during pregnancy. Additionally, majority of the respondents knew that ANC visits can help determine complications during pregnancy and this is similar to a study that found majority of the respondents indicating that ANC services were good for both the mother and the unborn child during pregnancy (Edie *et al.*, 2015).

5.3 Relationship between Antenatal Care Utilisation and Pregnancy Outcomes

The results from this study revealed that a majority (96.7%) of the respondents had their last delivery at a health facility whilst 3.3% had their deliveries at home. This finding is similar to the results of Shora *et al.* (2015), who found a majority (79.1%) of the respondents delivering at the health facility whilst the minority (20.9%) delivered at home, but contradicts the results in the study of Assfaw and Sebastian (2010) which revealed that a majority of the respondents (95.9%) delivered at home whilst 4.1 % delivered at various health facilities.

The study again revealed that a majority (82.9%) of the respondent who delivered in a health facility delivered at St. Elizabeth Hospital, 4.5% at Dadiesoaba Rural Clinic and Blessed Family respectively, 3.1% at Acherensua Health Centre and 1.7% at Nkasiem Health Centre. Similar to this finding is the results by Wilunda *et al.* (2015), who, in their study, revealed that 69.4% of respondents who delivered at the health facility delivered at the hospital, 27.1% delivered at the health centres and 3.5% delivered at other facilities. This finding could be as a result of the increased number of ANC visits and increased number of contacts with health care providers during pregnancy in the recent ANC model by WHO.

The study further found a strong association between eight or more ANC visits during pregnancy and the weight of the baby at birth. The respondents who made eight or more ANC visit had significantly higher odds of having babies with birth weight of 2.5+kg at birth than their counterparts who made less than eight visits (OR=4.339, 95% CI= 1.691-11.135). This finding is similar to a study that found poor pregnancy outcomes such as still births, low birth weight and preterm birth to be associated with poor antenatal care utilisation of less than four visits during pregnancy than more than four antenatal visits during pregnancy with OR=14.76, CI=0.98-223.17 (Chorongo *et al.*, 2016).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the conclusion of the study with regard to the findings and discussions and makes recommendations to improve utilisation of ANC services among women in the district. The results revealed poor utilisation of ANC services in the Asutifi South District of the Brong-Ahafo Region as only 18.5% made the recommended eight or more ANC visits during pregnancy.

6.1 Conclusion

6.1.1 Pattern of ANC Utilisation

It can be concluded from the findings and discussions of this study that utilisation of

the current ANC model proposed by WHO in 2016 was low with 81.5% of respondents making less than eight visits although all the respondents had registered for ANC services during their last pregnancy. Most of the respondents did not register for ANC services at the early stages of their pregnancy. Some respondents stated their reasons for accessing ANC services as for regular check-ups, to have safe delivery and to be educated on pregnancy-related issues. However, the study also revealed some gap in respondents' reasons for using ANC services during pregnancy as some stated their reasons as because of illness or health-related problems.

6.1.2 Factors influencing ANC Utilisation

The study further concluded that marital status, partner and family member accompaniment, knowledge of the required number times a pregnant woman should have ANC services during pregnancy had significant influence on eight or more ANC visits among respondents in the study area. However, this study showed no association between age, occupation, religion, parity, educational level, religious affiliation, ethnicity, community of residence, distance travelled for ANC services, cost, waiting time, cultural and religious beliefs, staff attitude, knowledge on the right time to begin ANC services, knowledge on tetanus immunization, knowledge of the malaria drug given to pregnant women and syphilis screening during pregnancy and ANC utilization.

6.1.3 ANC Utilisation and Pregnancy Outcomes

Finally, the study revealed that respondents who made eight or more ANC visits had significantly higher odds of having babies with birth weight of 2.5+ kg. Again, respondents who made eight or more ANC visits had significantly higher odds of delivering their babies at the hospital. The study, however, showed no association

between eight or more ANC visits and the duration of pregnancy at delivery, the birth status of the baby (alive or still birth) and the baby having birth abnormalities.

6.2 Recommendations

6.2.1 Ministry of Health/Government of Ghana

- The Ministry of Health, in collaboration with the media, should allocate time to educate the general public on the current ANC model to increase the awareness.
- The Ministry should maintain the current intervention for maternal health care and make activities such as pregnancy school and mobile ANC a priority in the health care delivery and allocate funds for it.

6.2.2 Health Facility level

- The study revealed that knowledge of the required number of ANC visits during pregnancy had a significant influence on the number of visits. Therefore, health facilities should improve their educational programmes by educating women on the required number of ANC visits a pregnant woman should make during pregnancy.
- Health facilities should also organize pregnancy schools for the communities they serve and make mobile ANC clinic a priority.

6.2.3 Community/Household level

- Community members should be educated and encouraged to support pregnant women in their communities and households.

- The study also found marital status as highly significant in this study, therefore family members should encourage their young girls to get married before getting pregnant.

6.3 Further Studies

- Completion of eight or more ANC visits and the benefits to the mother and baby in Ghana
- How effective is the delivery of ANC services in health facilities in Ghana?
- Health care providers involvement in the completion of eight or more ANC visits in Ghana

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APPENDICE

APPENDIX A-QUESTIONNAIRE

KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

UTILISATION OF ANTENATAL CARE SERVICE AMONG WOMEN IN THE ASUTIFI SOUTH DISTRICT

This questionnaire is to help gather information on utilisation of antenatal care services among women in the Asutifi South District. You happen to be one of the sampled respondents in the district to help carry a successful study. Your views will be of very much importance to the study and I would be grateful if you could give a few minutes of your time to answer these questions. Thank you for your assistance.

Facility Hospital=01| Private maternity home=02| Health Centre I=03| Health Centre II=04 Health facility III=05

Code |...|...|...|...|...| **DD MM YY** |...|...|...|...|...|...| **Section**

1: Socio-demographic characteristics.

1. Age of respondent in completed years.....					2. Parity.....	
3. Ethnicity.....			4. Community.....			
5. Marital status	0 Single	1 Married	2 Separated	3 Widow	4 Co-habiting	
6. Educational level	0 None		1 Basic	2 Secondary	3 Tertiary	
7. Religion	0 None	1 Christian	2 Muslim	3 Traditional Rel	4 Other	
8. Occupation	0 Trading	1 Farming	2 Teaching	3 Health worker	4 Others	

Section 2: Pattern of ANC utilisation

9. Did you use ANC services during your last pregnancy? If no move to question 15	0 No	1 Yes
10. At what time in pregnancy did you attend your first ANC (in weeks)?		
11. What was your main reason for starting ANC?.....		
12. How many ANC visits did you make during your last pregnancy?.....		
13. Did you ever go the following health facilities for ANC services during your last pregnancy?		

a St. Elizabeth hospital	0 No	1 Yes
b Blessed family maternity home	0 No	1 Yes
c Acherensua Health Centre	0 No	1 Yes
d Nkasiem Health Centre	0 No	1 Yes
e Dadiesoaba Rural Clinic	0 No	1 Yes
14. What influenced the choice of each facility you attended a <i>St. Elizabeth</i> b <i>Blessed family maternity home</i> c <i>Acherensua</i> <i>Nkasiem</i> e <i>Dadiesoaba</i>		

If yes,
how.....

Section 3: Factors influencing ANC Utilisation

15. Was there any cultural beliefs that prevented you from utilising ANC services during your last pregnancy?
If yes, name them.....

16. Did any of your cultural beliefs encourage you to utilise ANC Services during your last pregnancy? If yes, list them.....,	0 No	1 Yes
17. Did any of your religious beliefs prevent you from utilising ANC Services during your last pregnancy? If yes, list them.....	0 No	1 Yes
18. Did any of your religious beliefs encourage you to utilise ANC Services during your last pregnancy? If yes, list them.....	0 No	1 Yes
19. Did your partner accompany you for ANC services? If yes how often.....	0 No	1 Yes
20. Did any family member accompany for ANC services? If yes, how often.....	0 No	1 Yes
21. Did you receive any support from anyone for ANC services during your last pregnancy? If yes, indicate the type of support a <i>financial</i> b <i>Transport</i> c <i>Others, specify</i>	0 No	1 Yes
22. Did your partner remind you of any of the ANC schedules?		
23. Did anybody in the family remind you of the ANC schedule?	0 No	1 Yes
24. Did any of the health workers make you feel welcome when you attended ANC clinic? If yes, how.....	0 No	1 Yes
25. Did any of the health workers make you feel unwelcome when you attended ANC clinic? If yes, how.....	0 No	1 Yes
26. Did you receive education on danger signs to look out for during pregnancy?		
27. Did you take scan during your last pregnancy? If yes, where did you have the scan done?..... How many weeks pregnant were you when you had your first scan done?.....	0 No	1 Yes
28. Did you feel at any point that the health providers treated you with dignity?	0 No	1 Yes

0 No 1 Yes

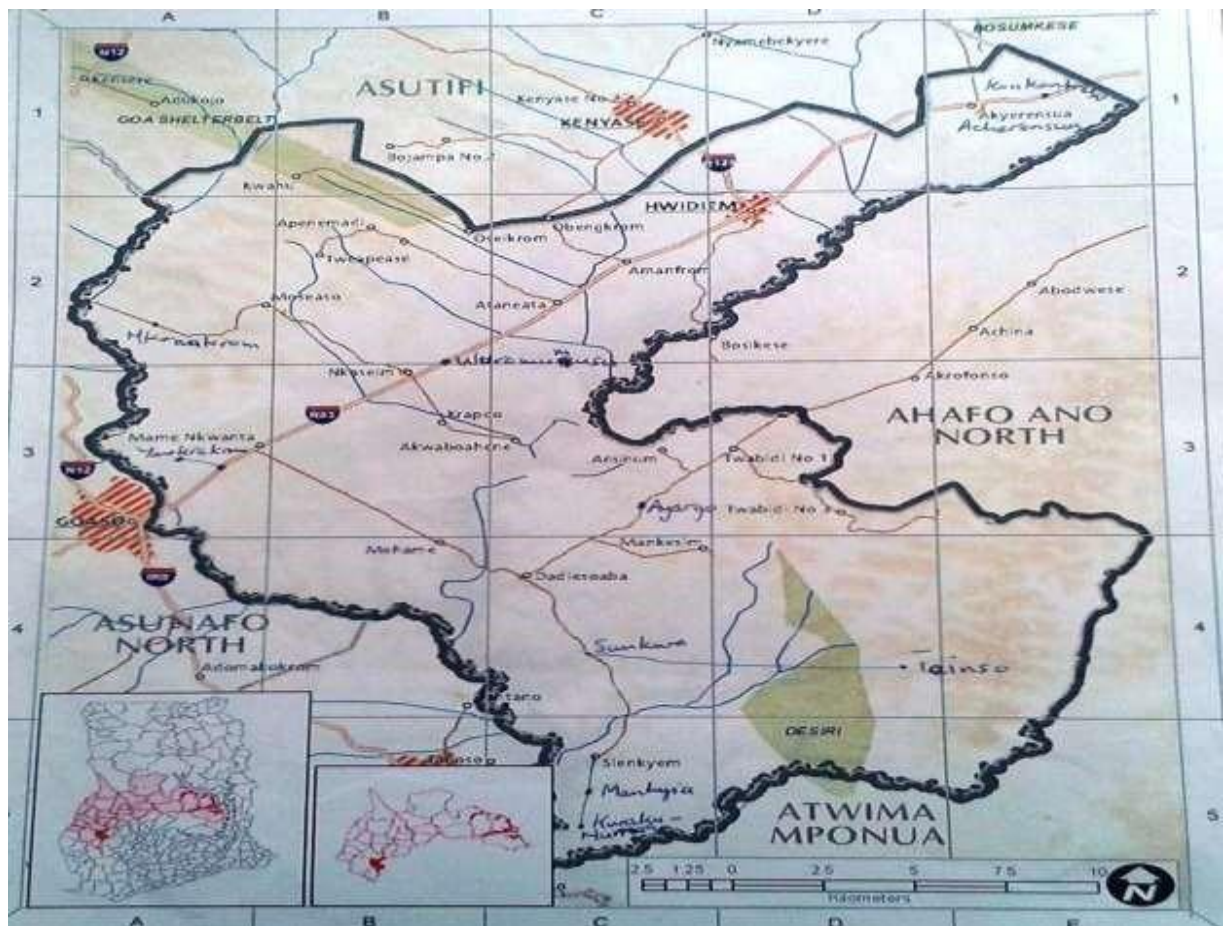
29. Did you feel at any point that the health providers treated with no dignity?	0 No	1 Yes
30. Based on your experience, how will you rate the attitude of staff towards pregnant women in the facility <i>0=Poor 1=Good 2=Very good</i>		
31. Did you have health insurance during your last pregnancy?	0 No	1 Yes
If no, give reasons.....		
32. Did any of the following prevent you from using ANC services during your last pregnancy		
a Cost (Financial access)	0 No	1 Yes
b Distance (Geographical access)	0 No	1 Yes
bi What was the distance travelled (in kilometres)	?	
c Waiting time	0 No	1 Yes
ci What was the H the average longest time you waited before being seen by the doctor when you arrived at the facility? (in hours)	cii What was the average shortest time you waited before being seen by the doctor when you arrived at the facility? (in hours)	
d Staff attitude	0 No	1 Yes
f State any other reasons.....		
33. How did you get to hear of ANC services? Through		
a Friends	0 No	1 Yes
b Health care providers	0 No	1 Yes
c Relatives	0 No	1 Yes
d Radio/television	0 No	1 Yes
e Social media	0 No	1 Yes
f Others (specify).....		
34. When is the appropriate time to start ANC services when pregnant (in weeks)?... 35. How often should a pregnant woman access ANC services during pregnancy?.....		
36. Can ANC services help detect complications during pregnancy?		
0 No 1 Yes		
37. Do you know of iron/folate supplementation during pregnancy?		
0 No 1 Yes		
If yes what is the function.....		
38. Do you know of tetanus immunization given to pregnant women?		
0 No 1 Yes		
If yes, what benefit does it have.....		
39. Do you know of the malaria drug given to women from time to time 0 No 1 Yes during pregnancy?		
If yes, what is the name of this drug?.....		
40. Have you ever heard of syphilis screening during pregnancy? 0 No 1 Yes		
If yes, what is this supposed to achieve?.....		

Section 4: Relationship between ANC utilisation and pregnancy outcomes (Checklist)

41. Where did you deliver your last baby.....
42. How many weeks were you pregnant when you delivered?
43. What was the weight of your baby.....
44. Was baby was born alive or not.....
45. Did the baby have any abnormality.....

APPENDIX B- DISTRICT MAP

MAP OF ASUTIFI SOUTH DISTRICT



APPENDIX C- ETHICAL APPROVAL



KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS



Ref: CHRPE/AP/496/18

23rd August, 2018.

Miss Anastasia Okyere
Department Health Policy,
Management & Economics
School of Public Health
KNUST – KUMASI.

Dear Madam,

LETTER OF APPROVAL

Protocol Title: *"Utilization of Antenatal Care Service among women in the Asutifi South district of the Brong Ahafo Region."*

Proposed Site: *Asutifi South District (St. Elizabeth Hospital, Blessed Family Hospital Maternity Home, acherensua Health Centre, Nkasiem Health Centre and Dadiesoaba Rural Clinic).*

Sponsor: *Principal Investigator.*

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A notification letter of 16th March, 2018 from the Asutifi South District health Directorate (study site) indicating approval for the conduct of the study in the District.
- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 23rd August, 2018 to 22nd August, 2019 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Yours faithfully,

Osomfo Prof. Sir J. W. Acheampong MD, FWACP
Chairman

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