**SCHOOL OF PUBLIC HEALTH**

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# FACTORS ASSOCIATED WITH THE UPTAKE OF ANTENATAL CARE SERVICES AMONG WOMEN OF SEFWI AKONTOMBRA DISTRICT IN THE WESTERN NORTH REGION OF GHANA

**BY**

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## DECLARATION

I hereby declare that apart from the references to other people's work which have been duly acknowledged, this work on factors associated with uptake of antenatal care services among women of Sefwi Akontombra district is my work and has not been presented elsewhere for the award of any degree in any institution. This work was written under the supervision of Dr. Deda Ogum Alangea.

21/12/2021

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## DEDICATION

This research work is dedicated to the Almighty God for his care and love.

**ACKNOWLEDGEMENT**

I wish to express my sincere thanks and gratitude to the Almighty God for His love and protection upon my life most especially towards the successful completion of this research work. I also want to acknowledge the support and encouragement of my wife Ms. Magdalene Obinnim Mensah.

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I am also indebted to the authors of works I have cited in this research work.

## LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| ANC | - | Antenatal care |
| CWC | - | Child Welfare Clinic |
| CHPS | - | Community Health Bases Planning and Services |
| DHMT | - | District Health Management Team |
| GDHS | - | Ghana Demographic Health Survey |
| GSS | - | Ghana Statistical Service |
| HIV | - | Human Immuno-Deficiency Virus |
| IPTp | - | Intermittent prevention of malaria in pregnancy |
| LMIC | - | Low and middle-income countries |
| MDG | - | Millennium Development Goal |
| NHIA | - | National Health Insurance Authority |
| NHIS | - | National Health Insurance Scheme |
| PHC | - | Population and Housing Census |
| STI | - | Sexually Transmitted Infection |
| TBA | - | Traditional birth attendant |
| UNDP | - | United Nation Developmental Programm |
| UNICEF | - | United Nation International and Children Fund |
| WHO | - | World health organization |
| WIFA | - | Women in Fertile Age |

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## DEFINITION OF TERMS

**Antenatal care** - Antenatal care (ANC) is seen as an umbrella term that is used to describe health care procedures and care administered during pregnancy.

**Knowledge** - Respondent Information and understanding of ANC

**Satisfaction** - Respondent Contentment with ANC services

**Utilization** - This is the ability to attend ANC eight or more times and receiving all the services required by a pregnant woman at the ANC such as immunization, screening, etc.

## ABSTRACT

This study aimed at ascertaining the factors associated with the uptake of antenatal care services in the Sefwi Akontombra District of the Western North Region of Ghana. It was necessary to carry out this study because there is low attendance of antenatal care (54.1%) albeit the district's target of 80% based on the minimum attendance of 4 visits. The existing report showed that only 30.7% of the women who registered for antenatal care services (ANC) fully met the criterion of 4 ANC visits (Sefwi Akontombra health directorate annual report, 2016).

This study used a quantitative facility-based descriptive cross-sectional design. Four hundred and twenty (420) women in fertile age (WIFA), 15-49 years who have given birth within the past two years and were attending child welfare clinic (CWC) during the data collection period were involved. A systematic sampling method was used to select eligible women at each child welfare clinic after estimating the sample size for each sub – district and facility using a sample proportional to the population. Structured questionnaires were interviewer-administered to respondents and data were entered into statistical software Stata version 15 for analysis. Descriptive statistics such as frequencies and percentages were determined for respondents' characteristics and presented in tables and graphs. Also, logistics regression analysis reporting odds ratios was performed to determine factors that influence the uptake of antenatal services among respondents. A p-value of $< 0.05$ was considered statistically significant.

Results from the study show that uptake of ANC services in Sefwi Akontombra District is low with only (20.7%) of respondents meeting the recommended ANC visits of at least 8. About 3-in-4 of the women had average knowledge about ANC services.

The intensity of ANC utilization increases with age. Women aged 35 and above had six times the odds (AOR: 6.33, 95% CI: 1.98-20.31; p=0.002) of making a minimum of 8 visits compared to women in lower age groups. The uptake of ANC services was negatively associated with education and trimester of first ANC visit. Women with no formal education had five times the odds of utilizing ANC services compared to those with tertiary education (AOR: 5.32, 95% CI: 1.06-26.58; p=0.042). Similarly, women who had their first ANC visit in their third trimester had four times the odds (AOR: 4.49, 95% CI: 1.07-18.83; p=0.040) of utilizing ANC services compared to their counterparts who had their first ANC visit in their first trimester. Also, women who perceive the overall ANC service charges to be affordable and free had increased odds of utilizing the services (AOR: 1.93, 95% CI:1.02 – 3.67; p=0.044) and ( AOR: 2.69, 95% CI: 1.21 – 5.94; p=0.015) respectively.

Despite the high investment in maternal health, inadequate uptake of ANC services remains a problem in the Sefwi Akontombra district. This may be attributed to the perceived high cost of indirect service charges, the strong desire of some women to deliver outside the health facilities, and the unattractiveness of ANC services to most adolescents due to stigmatization and ridicule at service centers.

More innovative ways of providing health education may be needed to improve women's knowledge of the importance of ANC services. The free maternal health policy should be reviewed and enforced to cover all services offered at antenatal care. Finally, there is a need to introduce adolescent-friendly maternal services to make the utilization of ANC services attractive to adolescents and younger adults who are pregnant.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background

Good antenatal care services for women and adolescents during pregnancy is one of the most important health inputs in preventing maternal morbidity and mortality. Appropriate use of recommended antenatal care services promotes safe motherhood and delivery with improved maternal and child health outcomes. Antenatal care services also offer expectant mothers the opportunity to receive several interventions from midwives and other health care providers that may be relevant to their health and well-being and that of their infant (Lincetto et al., 2013). These interventions allow them to guard against conditions such as anaemia, malaria and tetanus. The ability to detect these condition on-time offer women an opportunity to safeguard against conditions that would have impacted on their health, the growth of the foetus and its wellbeing. The pregnant woman is privileged to counselling on a range of issues including early antenatal care, nutrition, family planning for optimal birth spacing, breastfeeding, birth preparedness and complication readiness is also made available for pregnant women(Ghana Health Service, 2014; Lincetto et al., 2013).

In 2001, the World Health Organisation (WHO), introduced the concept of Focus Antenatal Care (FANC) to reduce waiting time during antenatal visits and increase the number of direct contacts to share information on pregnancy-related issues (Victora et al., 2006). This concept was adopted by the Government of Ghana in the year 2002 as part of its commitment to address maternal and child health challenges such as inadequate access to care, poor quality of ANC services and disrupted continuum of care confronting expectant mothers in the country (Asah-Opoku et al., 2019; Baffour-awuah et al., 2015). Currently, a newly predominant antenatal delivery model used in developed countries has been adopted by most

developing countries including Ghana. This model requires pregnant women to make a minimum of 8 antenatal contacts compared to the focus antenatal model which required minimum contact of 4 (Islam & Masud, 2018; Ntui et al., 2016; WHO, 2016).

It has been widely reported in the literature that maternal health service utilization which includes ANC has a direct correlation with safe delivery, mothers health and infants survival (Inam & Sciences, n.d.; Lincetto et al., 2013; Oyerinde, 2013; Simkhada et al., 2008). Despite the uncertainty on the link between inadequate antenatal care and maternal health, it is still an accepted fact that these visits avail the woman to be monitored for any potential complication which poses a risk to her life and that of the unborn child. It presents the providers with an opportunity to screen and assess the health of the woman and her pregnancy against potential dangerous conditions such as malnutrition, STIs, anaemia, malaria, tuberculosis and other infections (WHO & WORLDBANK, 2012; Yego et al., 2014).

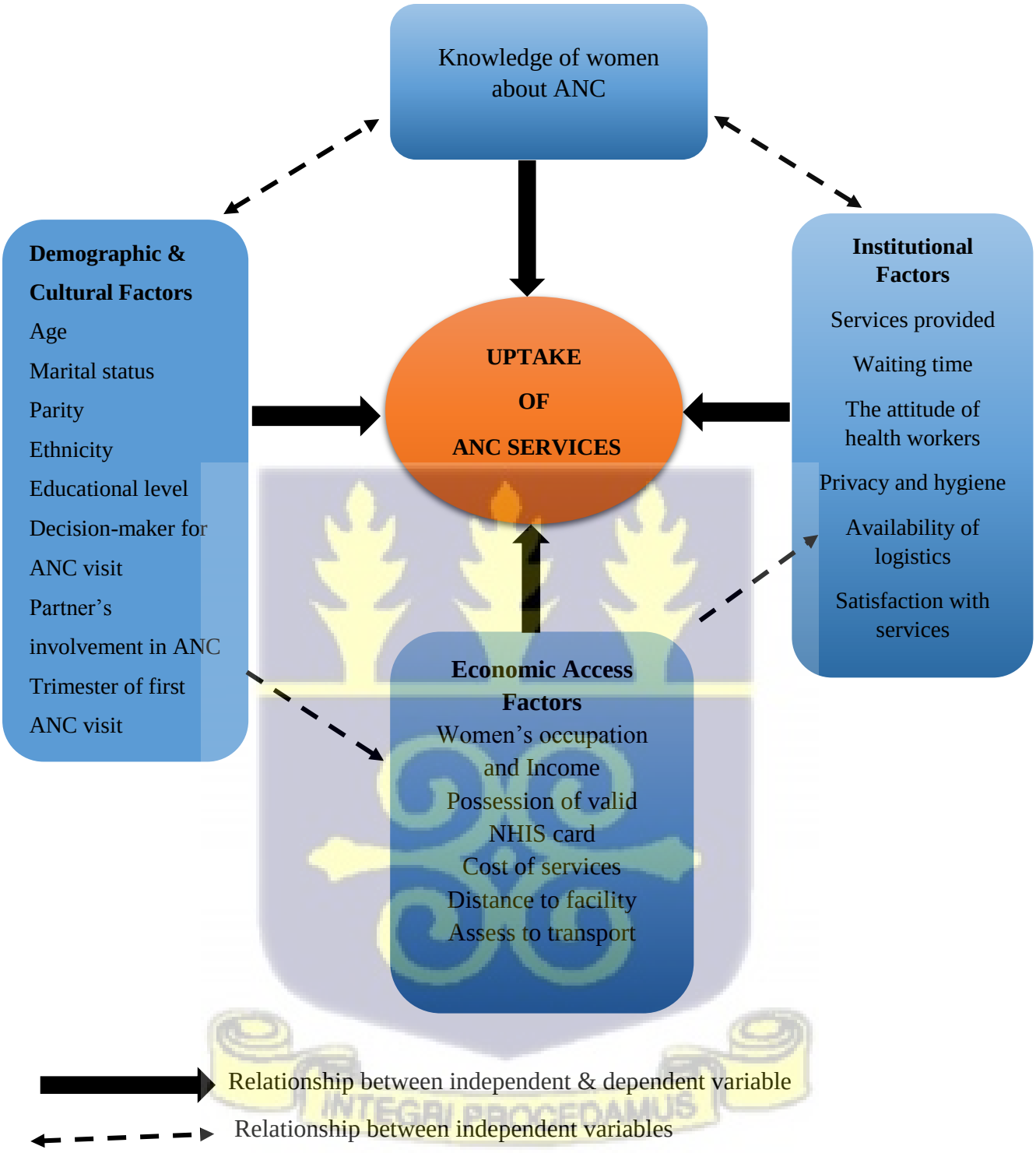
Truly, underutilization of maternal services which includes antenatal care has been mentioned in several studies as one of the major contributory factors of maternal mortality rates in developing countries (Nafiu et al., 2016; Yego et al., 2014). The maternal mortality rate in developing countries is estimated at 240 per 100,000 live birth (World Health Organization, 2014), while half a million in the world die each year from complications relating to pregnancy and childbirth (Simkhada et al., 2008). In Ghana, the maternal mortality ratio is estimated at 310 per 100,000 live births (Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2018).

The increasing global maternal mortality rate has been largely attributed to inadequate access to quality and timely healthcare during pregnancy (Lincetto et al., 2013; World Health Organization, 2014). These facts rightly explain the higher rate of maternal-related mortalities in Africa, because it is one of the continents plagued with problems of

accessibility to modern health care and poor quality of care among others (Onasoga et al., 2014; World Health Organization, 2014; Yego et al., 2014). Most health challenges and complications faced by pregnant women are easy to prevent once they are detected early by trained health professionals, a reason why early ANC visits are widely promoted among stakeholders. Therefore, it has become necessary to ensure that all expectant mothers utilize the provided services during antenatal visits to promote the wellbeing of the mother and child during pregnancy.

Although Ghana has attained 97% ANC coverage (Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2018), the Sefwi Akontombra district located in the Western North Region of Ghana still has a lower uptake ( 30.7 %) of ANC services. This figure does not only fall below the district's and national targets but was the least among other districts within its enclave like Sefwi Wiawso (78.5%), Bodi (71.6%), Juaboso 69.7%, Awowin (65%) and Bia west (54.6%) (Western Regional Health Directorate Annual report, 2016). A study conducted in Amenfi West district in the Western region of Ghana has also indicated that almost all the adolescent women recruited into the study were found to have received at least one antenatal care service however, about 54% of the respondents fully met the recommended visits (Kparu, 2016). These figures show that uptake of ANC services in most districts in the western region appears to be better compared to Sefwi Akontombra district. It is against this background that this study seeks to explore the factors associated with this low uptake and suggest pragmatic interventions or measures that could be used to curb this problem in the district.

### 1.2 Conceptual framework




The conceptual framework adopted from (Edgard-Marius et al., 2015)

**Figure 1: Conceptual framework**

The adopted conceptual framework above (Edgard-Marius et al., 2015), describes the factors associated with the uptake of ANC services. The outcome of interest is the uptake of ANC services while the explanatory factors are knowledge about ANC, demographic and cultural factors, economic access factors and institutional factors. The explanatory factors are believed to mostly have a direct influence on the outcome. However, the interaction between some explanatory factors is not always direct, they first affect each other and their impact influences the outcome. For instance, knowledge of mothers on ANC services as a factor directly influences ANC services uptake (Andrew et al., 2014; Patel et al., 2016). However, some factors such as the age of women, parity, religion, and level of education can affect the knowledge levels of mothers which in effect determine their behavior towards ANC services utilization and vice versa. Knowledge of these expectant mothers on antenatal services can influence the partner's involvement, women's autonomy in ANC decision making and some cultural/religious practices that affect the uptake of ANC services.

The Knowledge level of women on ANC services can also determine their satisfaction with the services they receive at the health facilities. Thus, if a client has enough information on services provided at the facility, her expectations and demand for services will be different compared to the one with limited knowledge. Also, exposure to the type of services provided and the availability of logistics can influence the knowledge of the expectant mothers and can ultimately predict a complete or partial ANC services uptake and vice versa.

The age, parity and educational level of mothers can influence some economic access factors such as occupation and income which will indirectly determine mothers' ability to use ANC services or otherwise. Other Economic access factors like possession of valid NHIS card, cost of services, distance to facility and access to transport are known to directly influence the uptake of

ANC services (Gitonga, 2017; Nachinab et al., 2019; Wilunda et al., 2017) Privacy and hygiene of health facilities, availability of logistics and the attitude of health workers are some of the institutional factors that can affect the uptake of ANC services (Adhikary et al., 2018; Nabbuye-Sekandi et al., 2011; Nwaeze et al., 2013).

This study seeks to explore the relationship between the above - mentioned explanatory factors and uptake of antenatal services among women of Sefwi Akontombra District.

### 1.3 Problem Statement

It is highly recommended globally that pregnant women should visit ANC in their first trimester and utilize its content by attending ANC for a minimum of eight for uncomplicated pregnancies(WHO, 2016; USAID, 2018). As a result of this, several developing countries including Ghana have adopted the WHO proposed antenatal service delivery model for limited-resource settings. The model recommends that pregnant women should make at least a monthly visit during their first two trimesters and then change to twice a month for the preceding two months and then to a weekly visit until they deliver (Antenatal, Gdg, Anc, & Gdg, 2018; Ntui et al., 2016; WHO, 2016).

However, many pregnant women persistently miss the opportunities that come with antenatal care, even though over half of them receive at least one prenatal visit (Lincetto et al., 2013). In 2014, it was established that 6-in-10 expectant mothers make a minimum of four ANC visits worldwide (World Health Organization, 2016). These figures of at least four ANC visits are inconsistent across Sub-Sahara Africa. For instance, Ethiopia records 12% of her pregnant women population, 35%, 47%, 62%, and 87% for Rwanda, Kenya and Cameroon and Ghana respectively (Ghana Statistical Service; 2014 World Health Organization, 2016). According to the 2014 Ghana Demographic Health Survey, 97% of women who gave birth five years before

the survey received antenatal care from a skilled provider at least once for their last birth (Ghana Statistical Service, 2014).

Despite Ghana's ANC coverage being above the global rate of 64% in Ghana (Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2018; Ghana Statistical Service, 2014; World Health Organization, 2016), there still exist gaps between rural-urban and regional coverage as far as uptake is concerned (Abekah-nkrumah et al., 2011; Ghana Statistical Service, 2014). In addition to this, evidence from earlier studies conducted in Ghana suggests that most expectant mothers do not utilize the antenatal care package from skilled care providers (Aryeetey et al., 2015; Atunah-Jay et al., 2013).

A true reflection of the low coverage of ANC services is recorded in the Sefwi Akontombra district which stands at 54.1%. The 2016 annual report for the district also suggests that only 30.7% of the registrants attained the recommended 4 or more ANC contacts which are far below the district's target of 80% in 2016 (Akontombra District Health Directorate Annual Report, 2016). This clearly shows that most women who got pregnant in the district did not attend ANC while the majority of those who attended did not meet the recommended number of ANC visits in the year 2016. This situation has led to a reduction in supervised delivery to as low as 20.7% of the district's target of 80%, 7 stillbirths, and 78 referred women in labor to nearby district hospitals in the year 2016 (Sefwi Akontombra health directorate annual report 2016).

If appropriate interventions are not implemented to solve this situation, the low uptake of antenatal care services can lead to insufficient care and information for women reporting for ANC thus leading to poor maternal outcomes**.** Pregnant women may also have an increased risk of maternal deaths due to causes such as hypertension (pre-eclampsia and eclampsia) and

antepartum haemorrhage which are directly related to inadequate care during pregnancy (Lincetto et al., 2013; Raatikainen et al., 2007).

In a way to avert this situation, there is the need to identify the issues associated with the low uptake of ANC services in the district to improve maternal and infant outcomes.

### 1.4 Justification of the study

In Ghana, it was estimated that 85% of pregnant women should be supervised by skilled attendants during pregnancy in 2016 (Sory, 2009). However, in the Sefwi Akontombra district, only 54.1% of expectant mothers were reported registrants at the health facilities with only 30.7 % making 4 or more visits (Akontombra District Health Directorate Annual Report, 2016). The choice of Sefwi Akontombra district for this study is based on the fact that ANC service utilization is low compared to the district's targets of 80% and national utilization coverage of 97% (GSS; GHS; ICF International, 2015).

Most research done on antenatal services used a minimum of 4 visits as their benchmark for measuring the utilization of ANC services. However, this study sought to identify the factors that are associated with Antenatal service uptake and to generate evidence that can inform efforts at improving ANC services in the district regarding the recommended minimum of 8 contacts.

### 1.5 Research Questions

1. What is the knowledge level of women about antenatal care services in Sefwi Akontombra District?
2. What demographic and cultural factors are associated with the uptake of antenatal care services among women of Sefwi Akontombra District?

3. What economic access factors are associated with the uptake of antenatal care services among women of Sefwi Akontombra District?
4. What institutional factors influence the uptake of antennal care services at Sefwi Akontombra District?

### 1.6 General objective

To determine the factors associated with the uptake of antenatal care services among women of Sefwi Akontombra District.

#### 1.6.1 Specific Objectives

1. To assess the knowledge level of women about antenatal care services at Sefwi Akontombra District.
2. To determine demographic and cultural factors associated with the uptake of antenatal care services among women of Sefwi Akontombra District.
3. To assess economic access factors associated with the uptake of antenatal care services among women of Sefwi Akontombra District.
4. To determine institutional factors that influence the uptake of antenatal care services among women of Sefwi Akontombra District.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter reviews existing literature on the problem under study. It identifies gaps in existing research and situates the current research in the light of the evidence. It comprises evidence of studies done in Ghana as well as other countries. Works on knowledge, demographic and cultural factors, economic access factors, and institutional factors associated with antenatal care services uptake were reviewed.

## 2.1 Knowledge on Antenatal Care

ANC services enable women to plan for their births and make adequate preparation for their parenting after delivery (Bahilu et al., 2009; Titaley, Dibley, et al., 2010). It also enables expectant mothers to receive iron, folic acid, calcium, vitamin A and zinc supplements as well as family planning services (Lincetto et al., 2013). Other services include preventive measures such as malaria prevention (intermittent preventive treatment in pregnancy), Pre-exposure prophylaxis (PrEP) for HIV prevention, tetanus vaccination, preventive anthelminthic treatment, antenatal anti D immunoglobulin, antibiotics prophylaxis to prevent recurrent urinary tract infections (Lincetto et al., 2013; Organization, 2016).

A study in three African countries reported that the description of ANC service components by expectant mothers varies across board such that most of these women could not precisely report whether the services they received were in conformance with the WHO standards or not (Pell et al., 2013). Most women were able to describe their experiences with all the procedures they went through at the facilities but were unable to explain the purpose of such procedures. Kenyan

women, for instance, emphasized receiving folic acid, injections, and palpation, with limited knowledge on receiving intermittent prevention of malaria in pregnancy (IPTp). Ghanaian and Malawian women emphasized being weighed and also commonly recalled checking the position of the baby, and the provision of medicines and injections. However, it was realized at all the study sites that pregnant women were of the view that they attended ANC to monitor the progress of their pregnancy or to check the position of the unborn child (Pell et al., 2013).

A similar report by Patel et al., (2016), indicated that a greater number of women in Pune, India (42%) had limited knowledge about the various services available at their respective antenatal clinics and about one - third of their study participants have poorly practiced it. They also reported that women's knowledge on some aspects of antenatal care services was still poor especially with regards to the importance of early antenatal care, health screening, and complications related to diabetes and hypertension in pregnancy.

According to Andrew et al., (2014), the level of understanding of ANC interventions among mothers determine the importance they place on attendance. In their study, women in Madang, Papua New Guinea saw ANC as essential in diagnosing diseases and not necessarily its prevention. Some women reportedly attended ANC services intending to ensure that they would be allowed to deliver at the facility without been rebuked for not attending ANC. On the other hand, women who planned to deliver at home reported to the ANC clinic at the later stage of their pregnancy only to check the position of their baby to avoid pregnancy complications. However, women need to know that ANC and facility delivery are important to ensure a smooth delivery.

Utilization of ANC services has been found to improve the knowledge of expectant mothers with higher frequency ANC visits. A study of pregnant women's knowledge about ANC in the urban squatter settlement of Karachi - India showed that women who attended ANC services were knowledgeable on pregnancy-related danger signs compared to pregnant women who do not receive this service (Nisar, 2008). In contrast to this, evidence in Uganda that concluded that a greater percentage (54.5%) of pregnant women who had utilized ANC service were not adequately informed about the services, especially the recommended visits they are required to make in a pregnancy (Kawungezi et al., 2015).

Evidence in Ghana on the knowledge of expectant mothers on ANC services shows that women in different regions have different reasons for utilizing ANC services (Pell et al., 2013). It was realized that while some expectant mothers believe ANC visit was required to identify pregnancy-related complications in the Upper East Region, their counterparts in Ashanti Region are also of the view that ANC visits are required to get access to essential medication for the fetus and themselves. These women in Ashanti Region further view ANC as a routine pregnancy exercise, whereas to their counterparts in the Upper East Region, ANC was often considered compulsory: a result of the authority of health staff or the vague idea of it being the 'law'.

Regarding the recommended timing for first ANC attendance in Ghana, evidence suggests three – fourth of respondents knew that the first ANC visit should occur before 16 weeks of gestational age (Asah-Opoku et al., 2019). However, it was realized that less than half of the respondents with this knowledge reported at their first ANC visit before 16 weeks. Similarly, a study in Uganda also reported that many pregnant women (72.1%) did not know the recommended time of gestation at which they are expected to make an initial visit to the ANC to be seen by a

professional, a situation which is believed to be a major contributory factor for women reporting late for first ANC visits (Kisuule et al., 2013).

### 2.2 Utilization of Antenatal Care

Antenatal care coverage is an indicator of access and utilization of care during pregnancy.

The World Health Organisation (WHO) in 2001, recommended that an expectant mother should make at least four ANC visits during each pregnancy (Victora et al., 2006). However, global estimates between the years 2005 and 2010 suggest that about fifty percent of the expectant mother's population make it to this required number of visits. In low-income countries, only three out of ten pregnant women were able to meet this target (Finlayson & Downe, 2013) whereas in Ghana seven out of ten expectant mothers made a minimum of four antenatal visits within the same period (Ghana Statistical Service (GSS) et al., 2007) The global situation, however, saw some level of improvement as the figure rose to 60% of women making at least four ANC visit in the lifetime of their pregnancies (World Health Organization, 2016).

In 2016, the WHO recommended a new ANC model to replace the previous FANC model which required pregnant women to make at least eight contacts with skilled health providers. This newly recommended ANC model further requires expectant mothers to use the essential services available in the FANC model to reduce maternal morbidity, mortality and enhance women's healthcare experiences (Islam & Masud, 2018; Ntui et al., 2016; WHO, 2016; USAID, 2018). Assessing the extent of compliance with the WHO recommendations on antenatal care services in Bangladesh revealed that only 6% of women with a birth in three years preceding the survey in 2012 to 2014, attained the recommended eight or more visits with 22% of the mothers receiving all the approved basic content of ANC services. About 21 % of the women were

reported to have not attended ANC nor received items from ANC services. However, nearly eighty percent (78.6%) of the mothers received at least one ANC visit (Islam & Masud, 2018). This report clearly shows insufficient compliance with WHO recommendations, as a huge number (93%) of the pregnant women did not attain at least 8 ANC contact, with 69% of women failing to attain the formerly recommended minimum of 4 visits.

Descriptive data from the 2007 Indonesia Demographic and Health Survey has also shown similar trends in the utilization of ANC services as in other developing countries. Approximately 95% of pregnant women in Indonesia attended at least one antenatal care visit; however only 66% of women fully achieved the recommended antenatal visits, which is lower than the national target of 90% of women having at least four antenatal care visits (Nafiu et al., 2016; Survey, 2007; Titaley, Dibley, et al., 2010; Yego et al., 2014),

Considering the individual components of ANC, a study in Uganda showed that, on average, 77% of women were weighed, 53% had blood pressure measured, 12% had a urine sample taken, 28% had a blood sample taken, 63% were given or bought iron tablets or syrup, 27% were given intestinal drugs, 50% received at least two tetanus injections, and 89% sought professional care (Bbaale, 2011).

In Ghana, the majority of ANC services are provided by nurses and the proportion of women who received ANC has improved from 55% in 1988 to 89.5% in 2014 (Dickson et al., 2017). This according to them has led to the decline in ANC provided by traditional bed attendants (TBA's) but women in rural areas are more likely to use ANC services provided by TBA's as compared to those in urban areas.

A study on the adherence to the recommended timing of FANC has also revealed that even though the majority of women had a minimum of four antenatal visits, very few adhered to all the four recommended schedules of focused antenatal care with an average of 17 weeks gestational age at booking. This means that the effectiveness of the various interventions provided during ANC visits will be affected since these interventions are attached to the gestational age of women (Asah-Opoku et al., 2019).

In Ghana, a review of the overall ANC utilization in 2016 revealed a consistent increase from 75.3% in 2015 to 75.9% in 2016 (Ghana Health Service, 2016). This suggests that a higher proportion of pregnant women utilized the basic interventions of ANC such as intermittent preventive care for malaria, prevention of mother to child transmission of HIV among others. However, data also shows that most women continue to report late in pregnancy (Ghana Health Service, 2016). Pregnant women are expected to register for antenatal care within the first trimester to benefit from comprehensive and effective care. Nevertheless, over the past 5 years, first attendance at ANC within the first trimester has stagnated around 45% with the remaining 55% receiving ANC after the first trimester (Ghana Health Service, 2016).

Regional performance of ANC coverage in Ghana in 2016 shows that the Western region is among five regions (Brong Ahafo, Volta, Eastern, Upper West) that have observed marginal declines in ANC uptake for the past three years. In western region, coverage of ANC services over the past three years indicated 94.3% in 2014, 95.5% in 2015 and 85.4% in 2016 (Ghana Health Service, 2016). Report from the Western Regional Health Directorate identified insufficient human resource and logistics, poor data management, inadequate monitoring and supervision of services provided at the sub-district levels and weak community engagement as

key contributory factors to the downward trends (Western Regional Health Directorate Report annual 2016).

In Amenfi West district in the Western region of Ghana, a study has shown that almost all the adolescent women recruited into the study were found to have received at least one antenatal care service but with varied number of attendants. More than half (53.9%) of the respondents fully met the recommended visits with the remaining 46.1% making less than four ANC visits (Kparu, 2016). A recent study on the Determinants of uptake of intermittent preventive treatment for malaria with sulfadoxine pyrimethamine has revealed a 96.35 % uptake of ANC services among pregnant women in the Sekondi-Takoradi Metropolis of Ghana. This shows that there seem to be some disparities between urban citizens and rural folks in terms of ANC uptake in the Western region of Ghana(Anto et al., 2021).

Going by the minimum of 8 ANC contacts recommended by the WHO which has been adopted by most developing countries including Ghana, a study in Ghana has shown that less than half (45%) of women attending ANC services achieve the recommended contacts of at least 8 (Ntui et al., 2016b). Despite this low uptake, it was observed that 61% percent of the participants commenced ANC during their first trimester and 32.9% initiated ANC during their second trimester, while 5.9% enrolled in ANC during their third trimester (Ntui et al., 2016b). The evidence so far suggests that most pregnant women in Ghana and some parts of the world are unable to comply with the newly recommended ANC model with at least 8 contacts as compared to the FANC with four visits.



**2.3 Factors Affecting Uptake of Antenatal Care**

The utilization of the content of ANC services has been found by many studies to be significantly associated with demographic, cultural, economic, access, and institutional factors.

(Asah-Opoku et al., 2019; Bbaale, 2011; Nachinab et al., 2019; Nketiah- Amponsah et al., 2013; Simkhada et al., 2008; Vermaak, 2015; Wablembo & Doctor, 2013).

### 2.3.1 Demographic Factors Associated with the Uptake of Antenatal Care Services

#### 2.3.1.1 Maternal age

The relationship between age and utilization of ANC services is statistically significant. Pell et al., (2013) claimed that adolescence and young adults are at risk of delaying antenatal visits because most adolescents encounter various forms of stigma due to the social implication of pregnancy at adolescent age. Similarly, Abekah-nkrumah et al., (2011) and Nketiah- Amponsah et al.,( 2013) in separate studies reported that the intensity of antenatal care visits increases with age; with women in their late reproductive ages intensifying utilization. The authors explained that older women are more likely to develop complications at birth due to their deteriorating health conditions with age and tend to compensate for this increased risk of birth complications by demanding more visits.

However, findings from other studies have shown that women in lower age groups are more likely to attend antenatal care for more than four times compared to women of higher age groups (Chandhiok et al., 2006; Pandey & Karki, 2014; Wablembo & Doctor, 2013).

#### 2.3.1.2 Marital status of women

Whether an individual is married, single, divorced, separated, or widowed may influence the uptake of antenatal services. Studies by Gitonga (2017) in Kenya and Simkhada et al., (2008) in developing countries have revealed that married women have been found to attend the antenatal clinic, and earlier than the unmarried. They attributed this partially to the support from their partners who seem to encourage their attendance. Adolescents and unmarried young women

often hid their pregnancy to avoid social embarrassment and this delays their initiation of antenatal visits (Pell et al., 2013).

In Ghana, the story is not different., Sakeah, Okawa, Oduro, Shibanuma, Ansah, Kikuchi, Gyapong, Owusu-agyei, et al., (2017), reported that single, divorced, or widowed women were less likely to have attended the recommended ANC compared to married women. However, Ogundairo & Jegede, (2016), claimed that most pregnant women among the Fulani's in Nigeria though married hardly visit the antenatal clinic because their partners make the final decision as to whether their wives should utilize antenatal services or not.

#### 2.3.1.3 Parity

The number of pregnancies and births a woman has had have a significant impact on her decision to visit and utilize antenatal care services. A study by Pandey & Karki ( 2014), showed that women with lower parity are more likely to receive antenatal care services in contrast with women with higher parity in central Nepal. A recent study conducted in Kenya has also confirmed this finding as women with five or more pregnancies and birth recorded lower ANC uptake (Gitonga, 2017). A related study in Ghana reported a decline in antenatal care services utilization among women with an increasing number of living children (Arthur, 2012). In essence, an increase in parity reduces the likelihood of mothers meeting the recommended number of ANC visits as well as having a supervised delivery.

#### 2.3.1.4 Educational level

Educational attainment is one of the major determinant factors influencing ANC uptake. Both spouses' educational attainment is reported to have some degree of impact on service utilization among pregnant women (Sakeah, Okawa, Oduro, Shibanuma, Ansah, Kikuchi, Gyapong,

Owusu-agyei, et al., 2017). However, direct education on the women themselves is believed to yield a stronger influence on their health care decisions (Bbaale, 2011; Gabrysch & Campbell, 2009).

Dickson et al., (2017), revealed that women with higher educational attainments are more likely to use most of the ANC components during their pregnancy periods compared to those with limited or no education. A similar trend was confirmed from a study in Uganda where ANC services patronage among women with higher educations was profound compared to those with no education at all (Bbaale, 2011).

In Ghana, the evidence suggests that expectant mothers who have attained up to secondary or higher levels of education are more likely to use adequate ANC services compared to those without education (Arthur, 2012; Asah-Opoku et al., 2019; Dickson et al., 2017). Thus, improving the education of women in Ghana, will contribute greatly to the use of maternal and ANC services by women and thus helping in reducing maternal and child mortality. Specifically, females should be encouraged to pursue education beyond the primary level as studies have found that women with higher levels of education tend to make adequate use of ANC (Arthur, 2012; Asah-Opoku et al., 2019; Bbaale, 2011; Dickson et al., 2017).

#### 2.3.1.5 Ethnicity and religion

Ethnicity and religion are considered indicators of cultural background and are assumed to influence beliefs, norms, and values about antenatal care services utilization. Abekah-nkrumah et al., (2011), highlighted the influence of ethnicity in antenatal care utilization in Ghana. Their study revealed that Akan women are more likely to use maternal care services than women from other ethnic groups. Religious affiliation and beliefs are associated with the utilization of antenatal services. Findings from a study by Ganle, (2015), suggest that although Muslim women

in Northern Ghana are willing to receive skilled care in a health facility, they often experience difficulties with accessing and using such services. These difficulties are often conditioned by a religious obligation to maintain bodily sanctity through modest dressing and the avoidance of unlawful bodily exposure or contact with certain people including male or alien caregivers. Other related uptake barriers include lack of privacy, healthcare providers' insensitivity and lack of knowledge about Muslim women's religious and cultural practices, and health information that lacked the cultural and religious specificity to meet Muslim women's maternity care needs. While Muslim women have difficulties seeking antenatal care on religious grounds, some studies have proven that there is high uptake of antenatal care services among Christians as compared to Muslims (Abekah-nkrumah et al., 2011; Ganle, 2015).

#### 2.3.1.6 Women's autonomy in decision making

Women's autonomy in decision making concerning issues of their health may impact the use of health facilities as well as antenatal care uptake. Ogundairo & Jegede (2016), have confirmed that in some patriarchal societies in Nigeria, women cannot decide on their own to seek healthcare, but have to seek permission from their husbands or mothers-in-law. There are instances where women have to give reasons and plead with their husbands before they are allowed to go for antenatal care services and as a result, most pregnant women give birth without visiting an antenatal clinic because their husbands are against it.

In Northern Ghana, Ganle (2015), observed in a focus group discussion that most Muslims underutilize maternal services because they are powerless and depend on their husband to make decisions. Women's role is to nurture their pregnancies and give birth while the power to make decisions as to where, when, and how to seek pregnancy care lies with their husbands and in-laws.

Titaley et al. (2010), indicated that women who were not involved in the final decision making about their healthcare were more likely to underutilize antenatal care services while an increased likelihood of ANC utilization was observed among women who were the final decision-makers. In Ghana, it has also been argued that autonomy in health decision-making does not only affect the uptake of ANC services but also the utilization of health facilities for delivery (Ameyaw et al., 2016). It was also revealed in their study that Women with independent health decision-making power are more likely to have skilled delivery as compared to those without. Thus empowerment and autonomy of women with regards to health are significant in enhancing ANC utilization and skilled birth attendance (Ameyaw et al., 2016).

On the contrary, results from Bangladesh Demographic and Health Survey shows that women in urban areas who decide jointly with their husbands or partners have been found to have a higher likelihood of using all forms of maternal health services including ANC as compared with women who decided on their health-care alone (Ghose et al., 2017).

#### 2.3.1.7 Partner's involvement in ANC

Many studies have suggested that a partner's involvement in maternal health has positive results on both the pregnant woman and the unborn baby (Ganle & Dery, 2015; Yargawa & Leonardi-Bee, 2015; Yende et al., 2017). However, some cultures especially in Africa, regard pregnancy and delivery as a female affair (Mullick et al., 2005). Hence, men are often not expected to accompany their wives to ANC clinic or be present during delivery. Studies from Ghana and Kenya have found that although most men are positive in their views about the importance of skilled delivery and childbirth, and the benefit of male involvement, very few practiced it until complication set in during pregnancy or labor (Ganle & Dery, 2015; Kwambai, 2013).

According to Ganle & Dery (2015), less than 25% of husbands or male partners in their study had ever accompanied their wives for antenatal care or postnatal care in a health facility. The study unearthed the misconception that men who accompany their wives to ANC are those dominated by their wives or partners.

### 2.3.2 Economic Access Factors Associated with the Uptake of Antenatal Services

#### 2.3.2.1 Occupation of mother

Gitonga ( 2017), observed in Kenya that the type of employment of women as a factor associated with the uptake of antenatal care services. His study revealed that women with formal employment were likely to attend the specified antenatal visits compared to women in non-formal employment. Research findings on ANC uptake in rural farming communities in Ghana have shown that pregnant women gave much more priority to economic activities than ANC services. Among these were farming activities, house chores, and attending funerals. In situations where women in farming areas understood the benefits of ANC, utilization of ANC was still affected due to the potential loss of farming resources (Finlayson & Downe, 2013; Nachinab et al., 2019).

However, evidence from some studies in Kenya and Ghana have shown that employment status had non - significant association with the uptake of antenatal care services (Arthur, 2012; Asweto et al., 2014).

#### 2.3.2.2 Mother's income

Despite the universal adoption of the provision of ANC services to pregnant women at no cost, women's income or wealth continues to influence utilization. A report from a study in Kenya shows that women from households with higher income had higher uptake of ANC than those

from low-income households (Gitonga, 2017). Similarly, studies from South Sudan and Ghana also reported that wealth index is significantly associated with non-use of ANC services. Thus women from top household wealth quintiles are more likely to make more ANC visits than women in the lowest wealth quintile (Arthur, 2012; Mugo et al., 2015; Wablembo & Doctor, 2013). In support of this claim is a multivariate analysis of the family income levels of women and the utilization of ANC services in central Ethiopia. Results from the analysis showed that participants who had an average monthly family income of fewer than 23 USD were unlikely to attend ANC as compared to their compatriots with an average monthly family income of 57 USD (Birmeta et al., 2013).

A study in Bangladesh has also shown that the wealth of mothers has a significant association with the uptake of ANC services. Mothers who were rich compared to those in the poorest group were 1.5 times (OR = 1.513; 95% CI: 1.299–1.763) more likely to receive items of ANC content (Islam & Masud, 2018). Similarly, Abekah-nkrumah et al ( 2011) reported a negative association between poverty and maternal health care in Ghana. The results showed that women in the richest wealth quintile are more likely to use all ANC services and deliver in a health facility.

#### 2.3.2.3 Possession of valid NHIS card

In Ghana, the National Health Insurance Scheme has been the only means of providing free maternal care services for women especially those in rural areas since 2004 (Odeyemi & Nixon, 2013). Health insurance status of expectant mothers play a crucial role in the utilization of maternal health services and has also been found by several studies to be associated with the utilization of ANC services (Nachinab et al., 2019; Sakeah, Okawa, Oduro, Shibanuma, Ansah, Kikuchi, Gyapong, Owusu-Agyei, et al., 2017; Yaya et al., 2019). Browne et al., ( 2016) observed better uptake of antenatal care, skilled delivery, and postnatal care among women with

valid insurance cards than those who were not insured irrespective of disparities in socioeconomic, demographic, and obstetric characteristics. A similar study on factors associated with the utilization of skilled service delivery among women in Northern Ghana also revealed that possession of valid national health insurance cards increased the likelihood of expectant mothers to receive antenatal care services (Gudu & Addo, 2017).

Pell et al. (2013), reported that even though there is free health insurance for pregnant women in the Ashanti region of Ghana, it had no positive impact on the uptake of antenatal services due to incidences of charges imposed on some antenatal care services such as antenatal care card and laboratory tests. It has been argued that although health insurance schemes are intended to meet the needs of the poor, their coverage has been skewed towards the rich in Ghana and Rwanda and this has the potential of affecting the uptake of ANC services among expectant mothers below the poverty line. However, it was evident in the study that there was a positive impact on ANC utilization and early timing of first ANC visit among the insured compared to the uninsured in Ghana, Rwanda, and Indonesia (Wang et al., 2017).

In Contrast to the above study results, Boerleider, Wiegers, Manniën, Francke, & Devillé, (2013), reported a non-significant association between universal health insurance coverage and utilization of antenatal care among non - western women in most industrialized western countries.

**2.3.2.4 Cost of services**

Some direct and indirect costs also affect the uptake of antenatal care to some extent. Pell et al., (2013) in a qualitative study in Ghana, Malawi, and Kenya observed that in Kenya, it was

apparent that charges for ANC varied across health facilities and amongst respondents. Small charges were levied for the ANC card and also, where available, laboratory tests. In Ghana incidences for charging for ANC services were reported in the Ashanti region with unclear pricing resulting in women's complaints (Pell et al., 2013).

Although ANC services are free in Ghana and other developing countries, associated indirect cost such as transportation, clinic fee, cost of buying food for either themselves or accompanying children while waiting to be attended to and saloon cost in their bid to look presentable at the clinic was reported to be significant enough to deter women from ANC (Andrew et al., 2014; Haruna et al., 2019; Pell et al., 2013; Wilunda et al., 2017). The high cost of antenatal care services has been generally mentioned as one of the prohibiting factors to the use of ANC services in developing countries (Gitonga, 2017; Simkhada et al., 2008; Titaley, Dibley, et al., 2010).

Similar studies have submitted that although health insurance provides the opportunity for expectant mothers to access ANC services for free, there are ancillary costs that hinder utilization (Fagbamigbe & Idemudia, 2015b; Haruna et al., 2019). This finding is not far from cases reported in South Sudan. Focus Group Discussions among women revealed that, although ANC services were officially free in some areas in South Sudan, women did not utilize ANC services because some of the health care workers demanded money for services provided. These unofficial payments were found to hinder skilled delivery (Wilunda et al., 2017).

**2.3.2.5 Distance to facility and access to transport**

Long-distance to health facilities is a major factor discouraging pregnant women from seeking antenatal care services (Simkhada et al., 2008; Titaley, Dibley, et al., 2010; Ye et al., 2010). This

assertion was confirmed by Wilunda et al. (2017), as most women felt that if health facilities were near they would attend antenatal care and return home quickly without having to worry about the insecurity of their children, husbands, and cattle. Similarly, Asweto et al., ( 2014), reported the average time taken to reach an antenatal care facility as one of the factors affecting the use of antenatal care services. In their study, women who took a shorter time to reach the health facility were more likely to use antenatal care services compared to women who stayed further away. A strong association between distance and ANC utilization was also observed among pregnant women in Moba Lga of Ekiti State, Nigeria (Ali et al., 2016).

Distance to health facilities has also been found to be a major factor influencing the use and non-use of ANC services by pregnant women in urban and rural areas of Nepal and Nigeria (Fagbamigbe & Idemudia, 2015a; Joshi et al., 2014). Islam & Masud (2018), indicated in their study findings that women in rural areas were likely to receive less number of ANC visits and contents as compared to their counterparts in the cities. They also attributed the fewer uptakes of ANC services among rural women to lower socio-economic conditions, limited health care services, and inadequate access to health care facilities as a result of poor or no transportation facility in Bangladesh. A qualitative study in Mandang, Papua New Guinea indicated that there is no association between long-distance and lower ANC attendance. It was detected that most of the pregnant women who could walk to access health facilities within 5 to 10 minutes did not attend ANC. Meanwhile, pregnant women who traveled by foot for over an hour tend to utilize ANC services (Andrew et al., 2014).

Access to transport is another economic access factor influencing antenatal care utilization. Results from a study in Zimbabwe exposed the lack and high cost of transport as two of the major factors that deter pregnant women from accessing antenatal care services. The study further revealed that most women faced difficulty to pay for their transport because they were unemployed (Nyathi et al., 2017). Wilunda et al. (2017), observed in their study findings that poor roads especially flooding and mud during wet seasons prevented most pregnant women from accessing antenatal care services in health facilities in South Sudan. Poor and inaccessible nature of roads coupled with lack of access to transport has been mentioned as two of the reasons why most expectant mothers in African countries especially those in rural areas do not utilize ANC services (Haruna et al., 2019; Nyathi et al., 2017; Oppong, 2008).

Evidence from a study in Nigeria suggests that almost half (48%) of non-users did not go for ANC services because the providers were far from them. The results showed a gap in non-attendance between urban areas (33.7%) and rural areas (52.0%) among non-users. A critical analysis of the multiple responses of non-users in the study showed that 55.7% had problems getting money for transport to the health facilities, 48.2% had problems with the distance while 43.6% reported the lack of means of transport to health facilities (Fagbamigbe & Idemudia, 2015).

A Meta-Synthesis of qualitative studies on why women do not use ANC services in Low and Middle-Income countries by Finlayson & Downe ( 2013), has also revealed that, even in situations where women are prepared to make long distances for at least three hours by either foot or bicycle, there are other associated risks such as attacks by wild animals and thieves. These discouraged them from embarking on such journeys in search of ANC services. This

shows that barriers to ANC extend far beyond long-distance, inaccessible roads, expensive, and lack of transport to the fear of physical harm (Finlayson & Downe, 2013).

### 2.3.3 Institutional Factors Associated with the Uptake of Antenatal Services

Good quality care at the antenatal clinic is very crucial in the improvement of service utilization and has attracted a lot of attention from researchers. The quality of care rendered to expectant mothers at the antenatal clinic is known to improve antenatal services (Nyathi et al., 2017).

The negative or poor attitude of health workers at the ANC facilities has been identified by several studies as a common challenge that impacts ANC service utilization within Africa and Asia. Results from these studies highlighted the insensitivity, humiliation, rudeness, emotional abuse, and physical violence by health care staff as a major factor that deter expectant mothers from utilizing ANC services (Andrew et al., 2014; Choudhury & Ahmed, 2011; Finlayson & Downe, 2013; Ganle, 2015; Gross et al., 2012; Mubyazi et al., 2010; Ogundairo & Jegede, 2016; Titaley, Hunter, et al., 2010).

Expectant mothers with a previous bad experience with healthcare may not continue with such services (Kruk et al., 2009; Magoma et al., 2010). Being disrespected, humiliated, privacy not respected, hostile behavior meted on them and the feeling that they have been neglected are most reasons explaining discontinuity of maternal healthcare among most women while the opposite of these behaviors is reported to increase their satisfaction, confidence and chances of delivering at a facility with adequate supervision (Edgard-Marius et al., 2015; Kruk et al., 2009).

According to Hsu, Chen, Hu, Yip, & Shu (2006), issues of confidentiality, dignity, respect, attention are important factors that stimulate most pregnant women's response to healthcare. Thus, providing care to expectant mothers requires special adherence to loads of issues including

sensitivity to culture, respect for their dignity, and friendliness at the treatment centers. Without the provider's commitment to these indicators, continuity of care for these pregnant women becomes difficult or practically impossible while observing them makes all pregnant women feel welcome at their service delivery points. (Victora et al., 2006). In contrast to this assertion, Asweto et al. (2014), found in their study that women's perception of the quality of health has no statistical significance in antenatal care utilization in Siaya county of Kenya.

#### 2.3.3.1 Services provided

The various interventions packaged in the antenatal services are aimed at identifying potential risk, initiating appropriate preventive measures against these risks, and also to educate the population who stand the chances of having these risks ( WHO, 2016). The WHO and other stakeholders in their efforts to achieve positive maternal and childbirth outcomes recommended improved ANC as one of their major strategies. They increased the number of interventions from 3 (World Health Organization, 2009) to 5 spans (WHO, 2016). The five recommended interventions categories include:

1. Routine antenatal nutrition supplementation by way of improving dietary intake of foods and medication rich in vitamins and minerals such as Calcium, Iron, Zinc, vitamins A, B (B6), C, D, and E and other micronutrients and restriction of intake of Caffeinated foods.
2. Maternal and fetal assessment includes Anaemia, Asymptomatic bacteriuria (ASB), Gestational diabetes mellitus (GDM), Human immunodeficiency virus (HIV) and syphilis and Tuberculosis. Other routine examinations such as ultrasound scans to monitor fetal movement were also recommended.
3. Preventive measures against a condition that endangers the life of the fetus and the mother was also recommended. These include treatment of malaria in pregnancy,

administration of HIV prophylaxis interventions, tetanus vaccinations preventive anthelminthic treatment, antenatal anti D immunoglobulin, antibiotics prophylaxis to prevent recurrent urinary tract infections.

4. Interventions for the management of common physiologic symptoms in pregnancy such as nausea and vomiting, Heartburn Leg cramps, Low back, and pelvic pain, Constipation, Varicose veins, and edema

5. Other health systems interventions aimed at improving service quality and uptake were recommended.

Innovative ways such as focus antenatal care, woman-held case notes, improve provider-patient communication and support, Recruitment, and retention of rural- resident health professionals, and antenatal care contact schedules (WHO, 2016).

Even though the implementation of these strategies may vary across nations, certain essential components such blood pressure and weight monitoring, certain laboratory investigation (urine testing proteins), administration of vaccines (Tetanus), dietary interventions, vitamins, and mineral supplementation counseling, and education on pregnancy-related danger signs, intervention for minor disorders in pregnancy, ultrasound, Human immunodeficiency virus (HIV) among others are highly recommended (WHO, 2016).

According to Donnell (2007), quality antenatal care is highly dependent on logistics such as medication and other medical supplies, availability of appropriate equipment and technology, and expertise to handle potential complications. However, studies by Chorongo et al., (2016) in Kenya and Nyathi et al., (2017) in Zimbabwe have indicated that the unavailability of some of these services such as laboratory, drugs, and supplies during ANC visits are major causes of

dissatisfaction with health facility services. Their studies also found women not receiving enough information on drugs given to them, birth preparedness, breastfeeding, and pregnancy complications signs during antenatal visits at the health centers.

An analysis from a survey in Bangladesh revealed that only 22% of mothers who gave birth in 3 years before the survey received all the selected ANC services. The survey established that the commonest components of ANC offered in Bangladesh were measurement of blood pressure 69%, checking of weight 66%, and blood test was least with 43% as reported by mothers (Islam & Masud, 2018).

A study in Ghana has shown that some of the services women received during ANC visits include anemia screening, investigations for STIs, intestinal helminths, administration of malaria prophylaxis, vaccination against Tetanus, and nutritional supplementation. Despite receiving these services by mothers, the study reported that investigations for STIs were generally low except for HIV. Other infections such as syphilis, gonorrhea, and chlamydia were tested on 27%, 21%, and 0.9% of the respondents respectively (Ntui et al., 2016b).

#### 2.3.3.2 Waiting time

The number of hours women wait or spend at ANC facilities after long and difficult journeys to seek ANC has been observed in several studies Waiting time is widely reported to be an important determinant of health-seeking behaviour among hospital clients including expectant mothers seeking ANC services in Africa (Andrew et al., 2014; Chorongo et al., 2016; Mubyazi et al., 2010). Roberts et al. (2015), reported that waiting time for women seeking care at the ANC significantly affects their decision to continue with subsequent antenatal care. Their study revealed that most women often waited unnecessarily for service because workers reported to

work late, worked slowly, and took an extended lunch. Delays or long waiting time to receive antenatal care has also been reported to affect the patronage on antenatal services among pregnant women studied in Zimbabwe (Nyathi et al., 2017). A focused group discussion of mothers in South West of Ethiopia showed that health workers do not observe time punctuality for work. For this reason, mothers experience long waiting hours beyond their expectations while some decide to visit facilities based on providers working hours (Lakew et al., 2018).

An exploration into the perception of midwives about time spent at the ANC facility in Ghana has shown that health workers perceive clients to be satisfied with the waiting time due to the way focus antenatal care is organized (Baffour-awuah et al., 2015). A similar situation has been indicated in a study that assessed mothers' utilization and satisfaction of ANC services in Southern Ethiopia. It was reported that the majority of the respondents expressed their satisfaction with the waiting time to see a health worker (Yohannes et al., 2013).

#### 2.3.3.3 Level of satisfaction

The health-seeking behaviors of clients are usually shaped by their level of satisfaction with the service available to them for consumption. It has been reported that services provision that is consistent with expectant mother's expectation are likely to end up in their utilization of such services and vice versa (Yohannes et al., 2013). This claim is supported by evidence from Northern Ghana which identified satisfaction with antenatal care services to be significantly associated with the frequency of antenatal care visits (Gudu & Addo, 2017). Tunçalp, Hindin, Adu-Bonsaffoh, & Adanu, ( 2012), observed from the accounts of women in their study that, good interpersonal and communication skills are key determinants' of client satisfaction. In addition to this, mothers in Ghana are found to attach much importance to privacy and

confidentiality during and after consultations as indicators of satisfaction and quality of antenatal care (A. Atinga & A. Baku, 2013). It has also been mentioned in several studies that unavailability of services such as laboratory, drugs, essential medical supplies, and inappropriate structures are strongly associated with client dissatisfaction with antenatal care service (A. Atinga & A. Baku, 2013; Chorongo et al., 2016). Since antenatal services in Ghana is free for pregnant women with active NHIS card, they prefer that drugs and other supplies should be available at the ANC upon their visits**.** In effect, an adequate supply of drugs and equipment is likely to meet women's expectations while stock out affects their satisfaction level (A. Atinga & A. Baku, 2013).

A study on the satisfaction level of mothers on ANC services in Wolaita – Ethiopia indicated that mothers were satisfied with 75% of the indicator items in some areas of care provided. Among these indicators were courtesy and respect, waiting time, adequate health education, completeness of information, availability of drugs, level of privacy during examination, cost of service among others. On the other hand, maternal dissatisfaction was associated with distance to the health facility, access, and cleanliness of the toilet, and overall cleanliness of the facility (Yohannes et al., 2013). In a similar study report, 32% of the mothers' reported having no satisfaction with skilled ANC services in health facilities within the district (Arba Minch Zuria) of the study. Dissatisfaction towards skilled ANC services was largely attributed in proportions to unavailability of sonar test (27%), lack of gynecologist (25%), and long waiting time (20.3%). Other perceived causes of dissatisfaction with lower proportions mentioned by respondents include; lack of good laboratory services, overcrowding, poor education session, shortage of some medical instruments, and referral to a distantly located hospital. These factors were mentioned by some mothers for not going to ANC (Lakew et al., 2018).

# CHAPTER THREE

# METHODS

## 3.0 Introduction

This chapter provides details on how the research was conducted to achieve its objectives. It covers the study design, study area, study variables, study population, sampling, sample size estimation, data collection techniques, quality control, data processing and analysis, statistical methods, and ethical consideration.

## 3.1 Study Design

This study was conducted using a facility-based exploratory descriptive cross-sectional design. It is quantitative in nature.

## 3.2 Study Area

The Sefwi Akontombra district is located in the northern part of the Western North Region of Ghana. The district shares borders on the north with the mother district Sefwi Wiawso, on the south with Aowin Suaman district, on the east with Wassa Amenfi west, and the west with the Bodi district.

### 3.2.1 Population distribution

The Sefwi - Akontombra district recorded a total population of 82,467 comprising 43,603 (52.9%) males and 38,864 (47.1%) females in the 2010 population and housing census. The population is predominantly rural with a rural population representing 91.2 percent (Ghana Statistical Service, 2012). For health care delivery, the district is sub-divided into five sub-districts namely; Akontombra, Nsawora, Kramokrom, Asantekrom, and Bawakrom. These sub-

districts were named after their capitals which are the major communities or human settlements in the district.

### 3.2.2 Households

Households are typically male-headed. There are 17,592 households in the district with an average population of 4.7 persons according to the 2010 population and housing census. Immigration accounts for 60% of the district's population. Immigration is mainly from the Northern regions, Brong Ahafo, Ashanti, and Eastern regions (Ghana Statistical Service, 2012).

### 3.2.3 Economic activities

The major economic activity in the district is farming which employs 91% of the active population. Other economic activities that serve as a source of employment include petty trading, logging, and lumbering, public and civil service, dressmaking, and hairdressing (Ghana Statistical Service, 2012).

### 3.2.4 Road network

Apart from the 10 km tarred road linking Akontombra to Esaase on the Akontombra –Wiawso main road, all the roads in the district are not tarred and almost all the roads are in bad condition and mostly pass through the forest zones. It is very difficult to access most of the remote areas during the rainy and dry seasons.

### 3.2.5 Health

The district is divided into five sub-districts for efficient health service delivery. These are Akontombra, Nsawora, Kramaokrom, Asantekrom, and Bawakrom. There are two health centres in the district sited in Akontombra and Nsawora and a clinic at Kramaokrom. The district has 24 Community Health Based Planning and Services (CHPS). The district has neither a district

hospital nor a doctor in charge of the health facilities. It has a nurse to patient ratio of 1: 321 and has two Physician Assistants one in Akontombra health center and the other in Nsawora health centre.

### 3.3 Study variables

The outcome variable for the study is the uptake of antenatal services: defined as utilisation of ANC services for a minimum of 8 during pregnancy.

The independent variables are:

Knowledge: Respondents' information and understanding of ANC - Total based on a set of 19 questions answered by respondents. Respondents were classified as having high, average, and low knowledge based on the total number of correct responses. Respondents with high knowledge are those with a total score of 16 - 19, average knowledge with a total score of 11 - 15, and low knowledge with a total score less than or equal to 10.

Maternal age: defined as the number of completed years of age at last birthday

Marital status: Categorized as single, divorced, separated, or widowed

Parity: Number of births a woman has had whether dead or alive expressed as none, 1, 2, 3, 4, and more than 5.

Ethnicity: Tribal affiliation of the respondent, expressed as Akan, Northerner, Ewe, and others.

Religion: The religious group professed by the respondent was categorized as 'Christian', 'Muslim', 'Traditionalist', and 'others' (to be specified by the respondent).

Educational level: Highest grades attained were expressed as primary, JHS, SHS/ vocational, and tertiary.

Trimester of first ANC visit: The number of the month(s) of respondent's first ANC visit during her last pregnancy were categorized as first trimester (1- 3 months), second trimester (4 - 6 months), and third trimester (7 - 9 months).

Person making decisions relating to ANC visits: Expressed as self, mother, husband, friends, in-laws, other relatives.

Religious beliefs: Contradiction of ANC services with religious dogma were expressed as 'Yes' and 'No'.

Cultural beliefs: Contradiction of ANC services with cultural provisions of respondents were expressed as 'Yes' and 'No'.

Partner's involvement: The partner's support to the respondent for ANC based on the provision of money, a reminder for ANC services, accompanying respondent for ANC, and participation in ANC were expressed as high, moderate, and low. Respondents whose partners have high involvement are those with all 4 YES responses, moderate involvement is those with 2-3 YES responses and low involvement are those with 0 and 1 YES responses.

Women's occupation: What respondent does for a living expressed as unemployed, farming, petty trader, civil servant, others specify to be specified by the respondent.

Possession of valid NHIS card: Respondents status with NHIS (whether insured or not insured).

Cost of ANC services: Perceived charges on services provided at the ANC were expressed as very expensive, expensive, free, affordable, and very affordable, and respondents' ability to afford expressed as YES and NO

Distance: Number of kilometers from respondent's residence to health facility expressed as very near <1 km, near >1 - 2 km, reasonable >2-3, far >3 - <5 and very far ≥5 km.

Transport: Availability of transport to ANC clinic - expressed as very easy, easy, average difficult, and very difficult.

Road network: The state of road linking respondent residence and health facility expressed as very good, good, satisfactory, poor, and very poor.

Waiting time -: The number of minutes/hours respondents spend at the facility for ANC expressed as ≤ 1 hour – Very Short, 1 – 2 hours - Short, >2 - <4 hours – Long, ≥ 4 hours -Very long.

The attitude of health workers: Interpersonal relationship of staff towards respondents. Expressed as very good, good, fair, poor, very poor.

Privacy: Seclusion from the presence or view of others during interaction with providers and physical examination were expressed as YES and NO.

Hygiene: Sanitation at the health facility - expressed as very good, good, fair, poor, very poor

Availability of logistics: Access to each of the following: drugs /medical supplies, laboratory and ultrasound scan at the facility - expressed as Yes, No or can't tell.

Satisfaction: Contentment with ANC services - expressed as very good, good, fair, poor, very poor.

### 3.4 The Study Population

The study population comprised of all women in fertility age (WIFA), (15- 49 years) who have given birth within the past two years in the district and are attending Child Welfare Clinic (CWC) in the selected facilities.

### 3.5 Sampling

The sample size for each sub-district and their outreach clinics were estimated using a sample proportional to the population size of sub-districts. The inclusion criteria consisted of all women in their fertile age (WIFA), (15- 49 years) who had given birth within the past two years and are attending child welfare clinic within the data collection period (27th September 2018 – 25th October 2018).

Data on antenatal attendance for each sub-district were obtained at the District Health Directorate and an appropriate sample for each facility/outreach was estimated using a sample proportional to size. All the 24 health facilities comprising of 2 health centres, 20 CHPS, and 2 outreach clinics that organize Child Welfare Clinics were visited. The sampling frame consisted of all women in their fertile age (WIFA), (15- 49 years) who had given birth within the past two years and were attending child welfare clinic at the various health facilities in the district within the data collection period (27th September 2018 – 25th October 2018). Participants were located at Child Welfare Clinics during research team visits.

The systematic sampling method was used to select participants until the required sample size for that facility was obtained and interviews were done at the child welfare clinic. The number of participants selected at each facility were based on sample proportional to the population size of each health facility or outreach clinic. At each facility, the number of prospective CWC attendance was estimated using an average of three months' attendance preceding the month of data collection. Based on the desired sample size and the average CWC attendance at the respective facility, a sampling interval was deduced per each facility by dividing the estimated population by the sample size for each facility. The sampling interval for each facility was used to recruit women who consented for the interview till the desired sample size or number was

obtained for the facility within one month of data collection. Women who consented after the recruitment were interviewed.

### 3.6 Sample and Sample Size

Sample size for this study is based on the formula:

$$n = \frac{z^2pq}{d^2}$$ (Cochran, 1977).

Where:

n = the sample size

z = standard normal deviation for 95% confidence (1.96)

p = proportion using antenatal care 54.1% (Akontombra District Health Directorate Annual Report, 2016).

q = proportion not using Antenatal care (100%-54.1%) = 45.9%

d = degree of freedom

$$n = \frac{1.96^2 * (0.541 * 0.459)}{(0.05)^2} = 382$$

Assuming a 10% non-response rate

$$Non - response\ rate = 382 * 0.10 = 38$$

$$n = 382 + 38 = 420$$

Thus, the minimum sample size required for this study is 420

### 3.7 Data Collection, Tools and Technique

Structured questionnaires (appendix II) were interviewer-administered by trained research assistants. Questionnaires were administered in the Akan language (Twi). The questions were both closed and open-ended.

Health facilities in all the five sub-districts and their outreaches where C.W.C is organized were visited by the principal investigator and ten (10) trained research assistants to administer the questionnaire to respondents. Two research assistants were assigned to each sub-district and their catchment areas to administer the questionnaire while service providers (midwives and nurses) organize their clinics.

### 3.8 Quality Control

Research assistants were trained on the study objectives and questionnaire administration using the local dialect. The study instrument (questionnaire) was pre-tested on individuals sampled from both Sefwi Ahibenso and Kojobikrom which are nearby communities outside the study area (Bodi district) but have similar characteristics with the study area. After the pre-testing, problems such as ambiguity associated with specific questions and responses or the questionnaire design were addressed.

### 3.9 Data Processing and Analysis

Data collected from the semi-structured questionnaire, on the uptake of ANC were coded and entered into the statistical software (Stata version 15).

The results of the study were generated through descriptive and inferential statistics to describe relationships between the study variables. The results for the descriptive statistics were summarised as means, frequencies, and percentages and were presented in tables and graphs.

Also, Pearson Chi-square and logistics regression analysis reporting odds ratio were employed to establish the associations among factors that influence the uptake of antenatal services among respondents. Both bivariate and multivariate analyses were employed to identify the true determinants of the study outcome. Covariates (facility type, maternal age, highest education, number of pregnancies, parity, number of still births, trimester of first ANC visit, partner's participation in ANC, employment status of mother, number of years of employment, possession of valid NHIS card and the overall ANC charges were controlled using lasso with logistics regressions model.

### 3.10 Ethical Consideration

Ethical clearance for the study was obtained from the Ethics Review Committee of Ghana Health Service (GHS – ERC032/03/18) (appendix III). Permission letters in addition to ethical clearance were sent to the Western Regional Health Directorate for approval (appendix IV). All approvals were submitted to the Director of health services and all appropriate sub-offices within the district of Sefwi Akontombra for final approval. Participants were required to provide written consent after objectives, procedures, voluntary participation, risk, benefits, and confidentiality have been explained to them.

All completed questionnaires from the study field were assigned unique identity numbers. Respondents were not required to write their names on the questionnaire to ensure the anonymity of respondents. Also, codes were given to various health facilities known only by the Principal investigator. Data were arranged according to the codes or numbers and kept in sequence in which they were coded or numbered. Data were checked for completeness and kept in a safe place.

# CHAPTER FOUR

# RESULTS

## 4.0 Introduction

This chapter presents the results of the study comprising socio-demographic, cultural, economic, and institutional factors that influence the uptake of ANC services. The results are presented in tables, charts, and graphs. This section also reports on multivariate logistic regression analysis of the factors that influence the uptake of ANC services among respondents. The study achieved a 99.9% response rate.

## 4.1 Demographic characteristics of study respondents

A total of 420 mothers who had given birth within the past two years were interviewed in the survey. About a third (28.1%) were interviewed at the CHPS compound and the remaining at health centers. The mean age of the mothers was 26.3 (±6.1) years with over a quarter of them aged each from 20 to 24 years (27.4%) and 25 to 29 years (28.3%). The majority (73.3%) of the women were married and a half (49.5%) have had 2 or 3 births. Most (45.0%) of the women had a junior high level of education with 12.9% not having any formal level of education. Table 4.1 shows further detail on the socio-demographic characteristics of women interviewed in the study.

**Table 4.1: Demographic characteristics of study respondents**

| Characteristics | Frequency (N=420) | Percentage |
|---|---|---|
| **Facility type** | | |
| CHPs compound | 118 | 28.1 |
| Health center | 302 | 71.9 |
| **Mean age ( years )** | 26.26 ± 6.07 | |
| **Age groups ( years )**** | | |
| <20 | 56 | 13.33 |
| 20-24 | 115 | 27.38 |
| 25-29 | 119 | 28.33 |
| 30-34 | 87 | 20.71 |
| 35-39 | 26 | 6.19 |
| 40-45 | 12 | 2.86 |
| | | |
| **Marital status*** | 65 | 15.48 |
| Single | 308 | 73.33 |
| Married | 22 | 5.24 |
| Cohabiting | 24 | 5.71 |
| Divorced/separated/widowed | | |
| **Number of births** | 143 | 34.05 |
| <2 births | 208 | 49.52 |
| 2-3 births | 69 | 16.43 |
| >3 births | | |
| **Highest education*** | 54 | 12.86 |
| No formal education | 56 | 13.33 |
| Primary | 189 | 45.00 |
| JHS | 87 | 20.71 |
| SHS | 33 | 7.86 |
| Tertiary | | |
| **Ethnicity** | 290 | 69.05 |
| Akan | 78 | 18.57 |
| Northerner | 52 | 12.38 |
| Others | | |
| **Religion** | 349 | 83.1 |
| Christians | 54 | 12.86 |
| Muslims | 17 | 4.05 |
| Traditional/others | | |

* One respondent was missing in this information

** Five respondents were missing in the information

### 4.2 Knowledge of women on ANC

The women in the study were asked a set of 19 questions to determine their level of knowledge on ANC services. Table 4.2 shows the frequency and percentage of those that responded correctly to each of the 19 knowledge questions. A high majority of the women knew that ANC is a routine medical or nursing care recommended for pregnant women (93.6%), that ANC treats and prevents potential health problems during pregnancy (97.4%,) and that ANC helps in promoting lifestyles that benefit both mother and child. Less than a fifth (13.6%) of the women knew that it is appropriate for a woman to attend ANC when pregnancy is confirmed within 1 to 3 months. The most known danger signs of pregnancy among the women were vaginal bleeding or discharge (64.5%) and excessive vomiting (64.1%) whilst the least known danger sign of pregnancy was visual disturbance (27.9%).

Based on the 19 - knowledge question asked, a composite score was computed for each of the women interviewed in the study with a score of 1 for each question answered correctly and a score of 0 for each question answered incorrectly. The composite scores were converted to the percentage scale by multiplying the composite score by 100% and dividing by 19. Thus:

$$Composite\ percentage\ score\ = \frac{composite\ score\ from\ the\ scale\ of\ 0\ to\ 19}{19} * 100\%$$

A mean score of 69.4 (±13.2) was estimated among all the 420 women in the study. The level of knowledge was categorized into three groups those with poor knowledge level (percentage score of 50% or below), average knowledge level (percentage score from 51% to 75%), and those with high knowledge (percentage score of 76% to 100%). Fig. 1 below shows the distribution of the level of knowledge among the women with less than a tenth (7%) having a poor level of ANC

knowledge, 76% having an average level of ANC knowledge, and 17% having high knowledge about ANC.

**Table 4.2: Knowledge of Women towards ANC**

| Knowledge | n (%) |
|---|---|
| ANC is a routine medical/nursing care recommended for pregnant women | 393 (93.57) |
| ANC treats and prevents potential health problems during pregnancy | 409 (97.38) |
| ANC helps in promoting the lifestyles that benefit both mother and child | 409 (97.38) |
| ANC helps detect the condition of the baby and health of the mother | 403 (95.95) |
| ANC provides the opportunity to detect and manage complications | 402 (95.71) |
| ANC provides a learning opportunity for pregnant mothers | 403 (95.95) |
| ANC empowers pregnant women to be able to identify danger signs | 412 (98.10) |
| ANC is necessary for safe delivery | 405 (96.43) |
| It's appropriate for a woman to attend ANC when pregnancy is confirmed within 1-3 months | 57 (13.57) |
| A pregnant woman should attend ANC 8 or more times during pregnancy | 86 (20.48) |
| **Danger signs of pregnancy:** | |
| Excessive vomiting | 269 (64.05) |
| Persistent swelling of limbs | 198 (47.14) |
| Vaginal bleeding/discharge | 271 (64.52) |
| Convulsion | 149 (35.48) |
| Weak or no movement of the baby | 210 (50.00) |
| Visual disturbance | 117 (27.86) |
| Abdominal pain | 167 (39.76) |
| Report to health center/hospital in case of danger signs of pregnancy | 403 (95.95) |
| Pregnant women should deliver at the health care facility | 401 (95.48) |

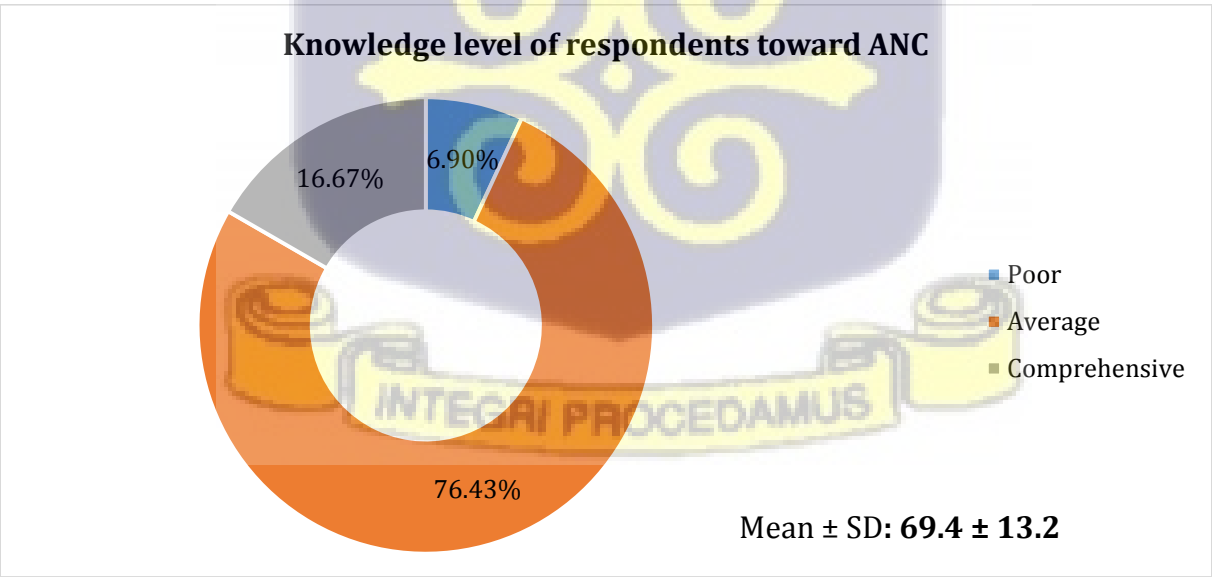



**Figure 2: knowledge of women on ANC**

### 4.3: Knowledge level of women on ANC by demographic characteristics

Table 4.3 shows the association between reproductive characteristics and respondents knowledge level on ANC services using Pearson's chi-square test. Among the demographic factors, age was the only factor that was significantly associated with the knowledge level of women on ANC ($\chi^2$= (5) = 27.38, p=0.002). Other background characteristics such as facility type, marital status of respondents, number of births, educational level and religion were not significantly associated with the knowledge level of respondents on ANC.

**Table 4.3: Distribution of the knowledge level by the demographic characteristics of study participants**

| | | Knowledge level | | | | |
|---|---|---|---|---|---|---|
| **Characteristics** | **Total** | **Poor n (%)** | **Average n (%)** | **Comprehensive n (%)** | **$\chi^2$-value** | **P-value** |
| **Facility type (N=420)** | | | | | 4.83 | 0.089 |
| CHPs compound | 118 | 4 (3.39) | 98 (83.05) | 16 (13.56) | | |
| Health facility | 302 | 25 (8.28) | 223 (73.84) | 54 (17.88) | | |
| **Age group (N=415)** | | | | | 27.38 | 0.002 |
| <20 | 56 | 9 (16.07) | 46 (82.14) | 1 (1.79) | | |
| 20-24 | 115 | 6 (5.22) | 92 (80.00) | 17 (14.78) | | |
| 25-29 | 119 | 7 (5.88) | 90 (75.63) | 22 (18.49) | | |
| 30-34 | 87 | 5 (5.75) | 68 (78.16) | 14 (16.09) | | |
| 35-39 | 26 | 0 (0.00) | 18 (69.23) | 8 (30.77) | | |
| 40-45 | 12 | 1 (8.33) | 6 (50.00) | 5 (41.67) | | |
| **Marital status (N=419)** | | | | | 9.84 | 0.131 |
| Single | 65 | 8 (12.31) | 46 (70.77) | 11 (16.92) | | |
| Married | 308 | 18 (5.84) | 234 (75.97) | 56 (18.18) | | |
| Cohabiting | 22 | 2 (9.09) | 19 (86.36) | 1 (4.55) | | |
| Divorced/separated/widowed | 24 | 0 (0.00) | 22 (91.67) | 2 (8.33) | | |
| **Number of births (N=420)** | | | | | 4.38 | 0.357 |
| <2 births | 143 | 8 (5.59) | 106 (74.13) | 29 (20.28) | | |
| 2-3 births | 208 | 16 (7.69) | 165 (79.33) | 27 (12.98) | | |
| >3 births | 69 | 5 (7.25) | 50 (72.46) | 14 (20.29) | | |
| **Highest education (N=419)** | | | | | 7.51 | 0.111 |
| No formal education | 54 | 2 (3.70) | 43 (79.63) | 9 (16.67) | | |
| Primary | 56 | 10 (17.86) | 40 (71.43) | 6 (10.71) | | |
| JHS | 189 | 9 (4.76) | 154 (81.48) | 26 (13.76) | | |
| SHS | 87 | 7 (8.05) | 62 (71.26) | 18 (20.69) | | |
| Tertiary | 33 | 1 (3.03) | 22 (66.67) | 10 (30.30) | | |
| **Ethnicity (N=420)** | | | | | 1.53 | 0.465 |
| Akan | 290 | 19 (6.55) | 227 (78.28) | 44 (15.17) | | |
| Northerner | 78 | 4 (5.13) | 62 (79.49) | 12 (15.38) | | |
| Others | 52 | 6 (11.54) | 32 (61.54) | 14 (26.92) | | |
| **Religion (N=420)** | | | | | 6.98 | 0.137 |
| Christians | 349 | 25 (7.16) | 267 (76.50) | 57 (16.33) | | |
| Muslims | 54 | 2 (3.70) | 45 (83.33) | 7 (12.96) | | |
| Traditional/others | 17 | 2 (11.76) | 9 (52.94) | 6 (35.29) | | |

### 4.4 Reproductive characteristics of study respondents

Table 4.4 reports on the reproductive and delivery characteristics of women interviewed in the study. A quarter (27.6%) of the women have had one pregnancy, another quarter (27.4%) having 2 pregnancies and 45.0% have had 3 or more pregnancies. One out of every eight women (13.6%) have ever had a stillbirth and 18.6% had ever had a miscarriage. Less than a tenth (7.6%) have never had a live birth, with 29.8% have had one live birth, 29.1% having two live births, and a third (33.6%) of them having three or more live births.

The prevalence of non - facility delivery among the women was 11.7% whilst 25.5% have ever had home delivery, 11.4% have ever been delivered by TBAs and 3.3% have ever delivered at church. A few (3.3%) of the women did not attend ANC during their recent pregnancy. Three out of ten (30.7%) of the women first attended ANC in their last pregnancy during the first trimester, 62.1% first attended during the second trimester and 3.1% first attended ANC during their third trimester. About sixty - three percent (63%) of the respondents' first ANC attendance was due to illness and fear of complications and 11% due to other reasons that respondents specified.

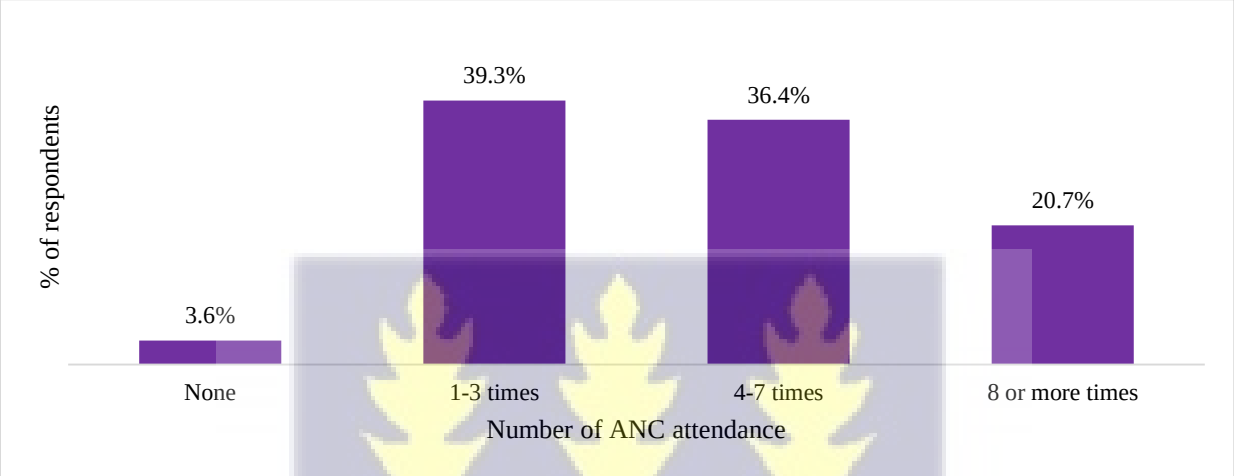
**Table 4. 4: Reproductive characteristics and Uptake of ANC services among women**

| Characteristics | Frequency | Percentage |
|---|---|---|
| **Number of pregnancies** | | |
| One | 116 | 27.6 |
| Two | 115 | 27.4 |
| >Two | 189 | 45 |
| **Ever had stillbirth** | | |
| No | 363 | 86.4 |
| Yes | 57 | 13.6 |
| **Ever had miscarriage** | | |
| No | 342 | 81.4 |
| Yes | 78 | 18.6 |
| **Number of live births** | | |
| None | 32 | 7.6 |
| One | 125 | 29.8 |
| Two | 122 | 29.1 |
| >Two | 141 | 33.6 |
| **Number of facility deliveries** | | |
| None | 49 | 11.7 |
| One | 151 | 36.0 |
| Two | 128 | 30.5 |
| >Two | 92 | 21.9 |
| **Ever delivered at home** | | |
| No | 313 | 74.5 |
| Yes | 107 | 25.5 |
| **Ever been delivered by a TBA** | | |
| No | 372 | 88.6 |
| Yes | 48 | 11.4 |
| **Ever delivered at church** | | |
| No | 406 | 96.7 |
| Yes | 14 | 3.3 |
| **Attended ANC during a recent pregnancy** | | |
| Yes | 406 | 96.7 |
| No | 14 | 3.3 |
| **First ANC attendance*** | | |
| No attendance | 14 | 3.3 |
| 1st trimester | 129 | 30.7 |
| 2nd trimester | 261 | 62.1 |
| 3rd trimester | 13 | 3.1 |
| **Reasons for first ANC attendance** | | |
| No sickness/reason | 21 | 5.0 |
| Illness | 146 | 34.8 |
| Severe vomiting | 45 | 10.7 |
| Swollen feet | 28 | 6.7 |
| Fear of complications | 120 | 28.6 |
| Others** | 46 | 11.0 |
| Did not attend ANC | 14 | 3.3 |

* Three respondents were missing in the information ** other reasons include: unaware of pregnancy: was not having money: was not having a problem: time to start ANC.

### 4.5 Utilization of ANC services

During the last pregnancy of respondents, 20.7% attended ANC for the recommended 8 or more times, 36.4% attended ANC 4-7 times while 3.6% of the respondents did not attend ANC at all. Hence, the percentage of women fully utilizing ANC services is estimated at 20.7% (95% confidence interval estimate of 16.9% to 24.9%). (Fig. 3)




**Percentage utilizing ANC service (95% CI): 20.7% (16.9 - 24.9)**

**Figure 3: Utilization of ANC service among women**

#### 4.5.1 Services utilized during ANC visits.

Fig. 3 shows the percentage distribution of some of the main services offered at ANC visits. Over 70% of the study respondents utilized each of the 12 main ANC services. The most utilized services during ANC visits among the 420 study women interviewed in the study was uptake of IPT for malaria control (95.7%), uptake of folic acid (95.5%), ultrasound scan (92.6%), and uptake of iron tablets (91.0%). The least services utilized among the women during their ANC visits were uptake of calcium tablets (76.4%) and laboratory and screening tests (70.7%).

On average, the number of different ANC services utilized per woman was 10.5 (±2.3) with 3.3% accessing 4 or less different ANC services, 12.4% accessing 5 to 8 different services and 84.3% accessing 9 to 12 different ANC services during their visits.

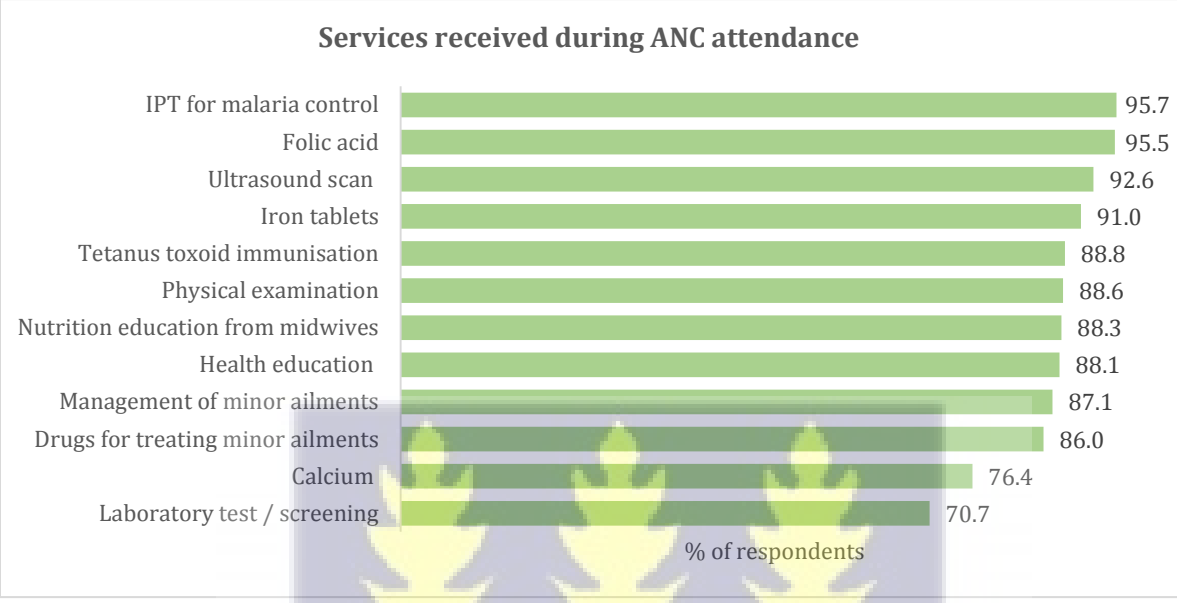



**Figure 4: Services received during ANC visits among women**

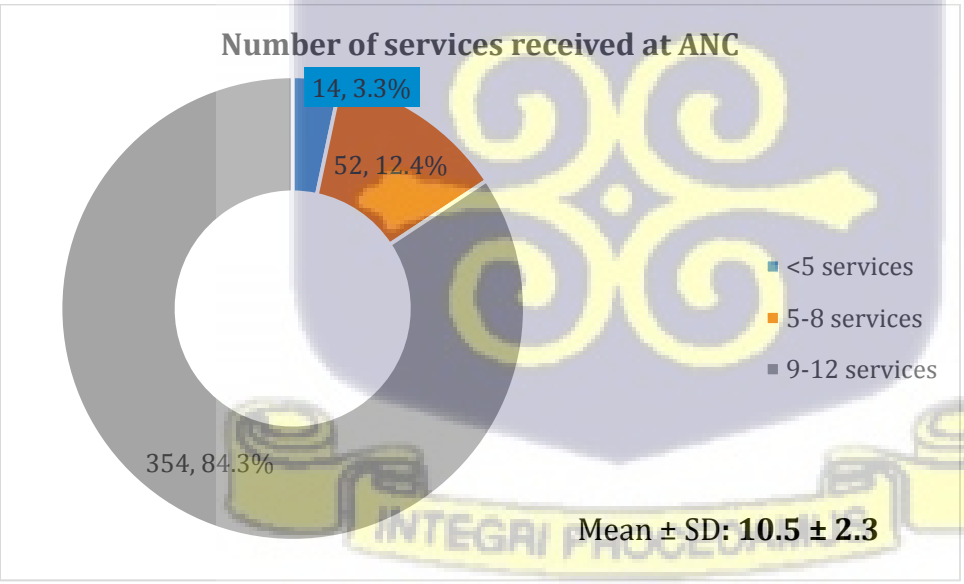



**Figure 5: Number of different ANC services received by women**

### 4.5.2 Satisfaction with ANC services among women

The women were mostly satisfied with the Information and education received during the visits with 67.1% being satisfied and 30.2% being very satisfied. The majority of the women (71.2%) were satisfied with the completeness of the information received at ANC while the other 24.1% were very satisfied. Two-thirds (68.1%) of the women were satisfied while a quarter (26.4%) were very satisfied with confidentiality and trust in providers. (Fig. 5)

More than half (55.2%) of the women were not satisfied with the waiting time to see the health worker. About, 45% were not satisfied with the courtesy and respect received, and over a third (36%) of the women were not satisfied with the level of privacy during ANC examination. Also, 41.7% of the women expressed their dissatisfaction with the distance to the health facility for ANC service. The satisfaction with the services received during ANC visits are shown in Fig. 5

A composite score of the level of satisfaction was computed for each respondent with a score of 2 for each item answered "very satisfied", a score of 1 for each item answered "satisfied" and a score of 0 for each item answered not satisfied. The mean satisfaction score was 12.6 (±4.6) among the women with a possible maximum score of 26 and a minimum score of 0. Fourteen percent of the women were poorly satisfied (score of 10 or below), 33.6% were moderately satisfied (a score of 11 to 18) whilst 52.1% had a good level of satisfaction (A score of 19 to 26) with the ANC services they received.

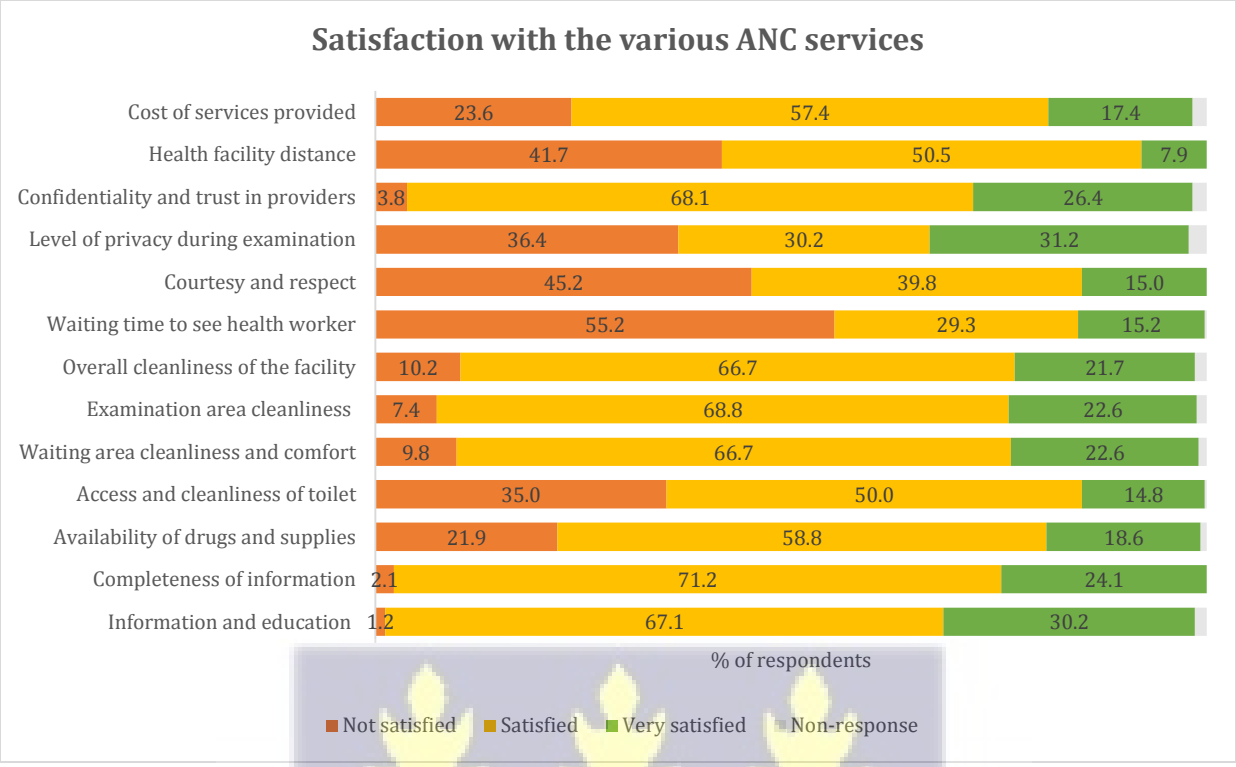



**Figure 6: Satisfaction with the various services received during ANC visits**

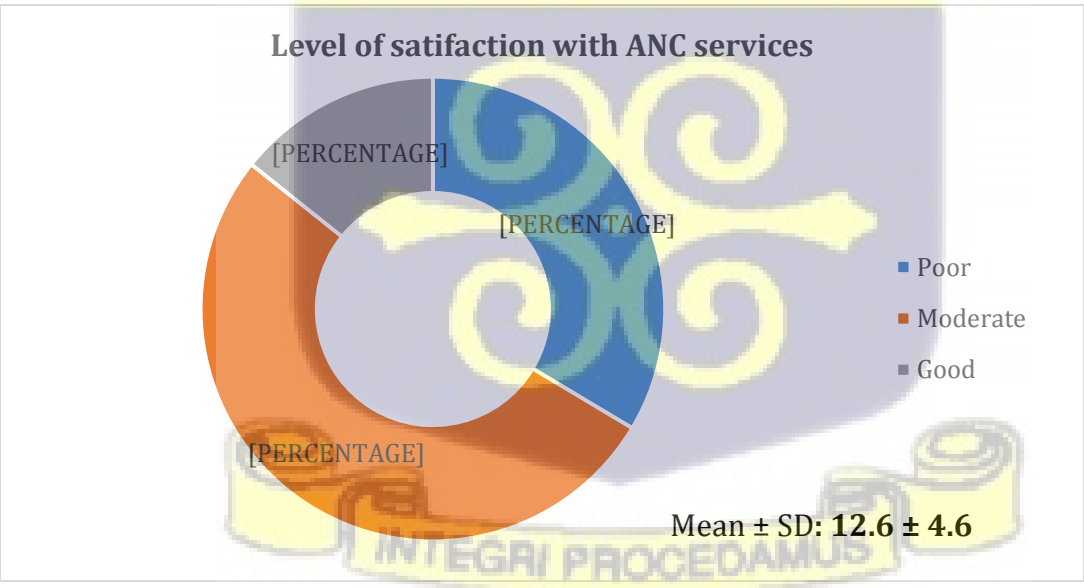



**Figure 7: Level of satisfaction with ANC services among women**

### 4.6 Cultural and ANC related factors

With regards to cultural and related characteristics among the women interviewed in the study, 2.6% of the women indicated that some ANC services contradicted with either their religious or cultural beliefs. Most (85.5%) of the women received money from their husbands or partners for ANC services, 46.0% of them are reminded by the partners for ANC services, 19.5% are accompanied by their partners to ANC and 21.9% had their male partners participating in ANC activities with them. Over a third (71.7%) of the women were the main decision-makers for attending ANC services, 20.0% indicated their husband as being the main decision-makers and 8.3% of the women indicated others as their main decision-makers for attending ANC services.

### 4.7 Association between socio-demographic characteristics and uptake of ANC services

Pearson's chi-square test of association was used to assess the association between socio-demographic characteristics. Table 4.5 shows the details of the association between socio-demographic characteristics and uptake of ANC services among women. Utilization of ANC services was significantly higher among women visiting health centers compared to those visiting CHPs compounds (23.3% versus 14.4%, $\chi^2$ (1) = 3.98, p= 0.046)

Also, the utilization of ANC services was significantly higher among women aged between 35 – 39 years (42.3%; $\chi^2$ (5) =16.45, p=0.006) compared to those below.

**Table 4.5: Association between Socio-demographic characteristics and uptake of ANC services**

| | | ANC services | | | |
|---|---|---|---|---|---|
| **Characteristics** | **Total** | **Non-utilization n (%)** | **Utilization n (%)** | **$\chi^2$-value** | **P-value** |
| **Facility type (N=420)** | | | | 3.98 | 0.046 * |
| CHPs compound | 118 | 101 (85.59) | 17 (14.41) | | |
| Health center | 302 | 232 (76.82) | 70 (23.18) | | |
| **Age group (N=415)** | | | | 16.45 | 0.006 ** |
| <20 | 56 | 45 (80.36) | 11 (19.64) | | |
| 20-24 | 115 | 91 (79.13) | 24 (20.87) | | |
| 25-29 | 119 | 92 (77.31) | 27 (22.69) | | |
| 30-34 | 87 | 78 (89.66) | 9 (10.34) | | |
| 35-39 | 26 | 15 (57.69) | 11 (42.31) | | |
| 40-45 | 12 | 7 (58.33) | 5 (41.67) | | |
| **Marital status (N=419)** | | | | 1.23 | 0.745 |
| Single | 65 | 53 (81.54) | 12 (18.46) | | |
| Married | 308 | 242 (78.57) | 66 (21.43) | | |
| Cohabiting | 22 | 19 (86.36) | 3 (13.64) | | |
| Divorced/separated/widowed | 24 | 18 (75.00) | 6 (25.00) | | |
| **Number of births (N=420)** | | | | 2.96 | 0.227 |
| <2 births | 143 | 120 (83.92) | 23 (16.08) | | |
| 2-3 births | 208 | 161 (77.40) | 47 (22.60) | | |
| >3 births | 69 | 52 (75.36) | 17 (24.64) | | |
| **Highest education (N=419)** | | | | 7.14 | 0.129 |
| No formal education | 54 | 37 (68.52) | 17 (31.48) | | |
| Primary | 56 | 44 (78.57) | 12 (21.43) | | |
| JHS | 189 | 156 (82.54) | 33 (17.46) | | |
| SHS | 87 | 66 (75.86) | 21 (24.14) | | |
| Tertiary | 33 | 29 (87.88) | 4 (12.12) | | |
| **Ethnicity (N=420)** | | | | 1.53 | 0.465 |
| Akan | 290 | 230 (79.31) | 60 (20.69) | | |
| Northerner | 78 | 59 (75.64) | 19 (24.36) | | |
| Others | 52 | 44 (84.62) | 8 (15.38) | | |
| **Religion (N=420)** | | | | 1.75 | 0.417 |
| Christians | 349 | 278 (79.66) | 71 (20.34) | | |
| Muslims | 54 | 40 (74.07) | 14 (25.93) | | |
| Traditional/others | 17 | 15 (88.24) | 2 (11.76) | | |

## 4.8 Association between reproductive characteristics and ANC service uptake among women

Table 4.6 shows the association between reproductive health characteristics and utilization of ANC services using Pearson's chi-square test. The trimester for which the women first attended

ANC services was the only factor significantly associated with the utilization of ANC services ($\chi^2$= (2) = 9.74, p=0.021). Other reproductive factors such as number of pregnancies, number of live and stillbirths a woman has had, place of delivery, and reasons for first ANC attendance were not significantly associated with utilization of ANC services.

**Table 4.6: Association between reproductive characteristics and ANC service uptake among women**

| Characteristics | Total | ANC services | | $\chi^2$ | P-value |
|---|---|---|---|---|---|
| | | Non-utilization n (%) | Utilization n (%) | | |
| **Number of pregnancies (N=420)** | | | | 3.61 | 0.164 |
| One | 116 | 96 (82.76) | 20 (17.24) | | |
| Two | 115 | 95 (82.61) | 20 (17.39) | | |
| >Two | 189 | 142 (75.13) | 47 (24.87) | | |
| **Ever had a stillbirth (N=420)** | | | | 2.17 | 0.140 |
| No | 363 | 292 (80.44) | 71 (19.56) | | |
| Yes | 57 | 41 (71.93) | 16 (28.07) | | |
| **Ever had a miscarriage (N=420)** | | | | 0.00 | 0.961 |
| No | 342 | 271 (79.24) | 71 (20.76) | | |
| Yes | 78 | 62 (79.49) | 16 (20.51) | | |
| **Number of live births (N=420)** | | | | 0.91 | 0.823 |
| None | 32 | 24 (75.00) | 8 (25.00) | | |
| One | 125 | 102 (81.60) | 23 (18.40) | | |
| Two | 122 | 97 (79.51) | 25 (20.49) | | |
| >Two | 141 | 110 (78.01) | 31 (21.99) | | |
| **Number of facility deliveries (N=420)** | | | | 1.23 | 0.745 |
| None | 49 | 36 (73.47) | 13 (26.53) | | |
| One | 151 | 122 (80.79) | 29 (19.21) | | |
| Two | 128 | 102 (79.69) | 26 (20.31) | | |
| >Two | 92 | 73 (79.35) | 19 (20.65) | | |
| **Ever delivered at home (N=420)** | | | | 2.60 | 0.107 |
| No | 313 | 254 (81.15) | 59 (18.85) | | |
| Yes | 107 | 79 (73.83) | 28 (26.17) | | |
| **Ever been delivered by a TBA (N=420)** | | | | 2.36 | 0.125 |
| No | 372 | 299 (80.38) | 73 (19.62) | | |
| Yes | 48 | 34 (70.83) | 14 (29.17) | | |
| **Ever delivered at church (N=420)** | | | | 1.98 | 0.159 |
| No | 406 | 324 (79.80) | 82 (20.20) | | |
| Yes | 14 | 9 (64.29) | 5 (35.71) | | |
| **First ANC attendance (N=417)** | | | | 9.74 | 0.021 * |
| No attendance | 14 | 14 (100.00) | 0 (0.00) | | |
| 1st trimester | 129 | 106 (82.17) | 23 (17.83) | | |
| 2nd trimester | 261 | 203 (77.78) | 58 (22.22) | | |
| 3rd trimester | 13 | 7 (53.85) | 6 (46.15) | | |
| **Reasons for first ANC attendance (N=406)** | | | | 3.97 | 0.554 |
| No reason | 21 | 14 (66.67) | 7 (33.33) | | |
| Illness | 146 | 118 (80.82) | 28 (19.18) | | |
| Severe vomiting | 45 | 38 (84.44) | 7 (15.56) | | |
| Swelling feet | 28 | 21 (75.00) | 7 (25.00) | | |
| of complications | 120 | 91 (75.83) | 29 (24.17) | | |
| Others | 46 | 37 (80.43) | 9 (19.57) | | |

### 4.9 Association between religious and cultural factors and ANC service uptake

The male partner participating in ANC services with the women was the only cultural factor that was associated with ANC utilization among the women. Utilization of ANC services was significantly higher among women whose male partners participated in ANC services compared to those whose partners did not participate in ANC services (28.3% vs. 18.6%; $\chi^2$ (1) = 4.09, p=0.043). There was no significant association between the utilization of ANC services and other cultural and religious factors such as ANC services contradicting with religious/cultural beliefs, the partner providing money for ANC services, partner serving as a reminder for ANC services among others. Table 4.7 shows more information on the association between cultural and religious factors and utilization of ANC services among women.

**Table 4.7: Association between religious and cultural factors and ANC service uptake**

| Characteristics | Total | ANC services | | $\chi^2$-value | P-value |
|---|---|---|---|---|---|
| | | Non-utilization n (%) | Utilization n (%) | | |
| **Some ANC services contradict Religious/Cultural beliefs (N=420)** | | | | 0.04 | 0.834 |
| No | 409 | 324 (79.22) | 85 (20.78) | | |
| Yes | 11 | 9 (81.82) | 2 (18.18) | | |
| **Partner provides money for ANC services (N=420)** | | | | 0.81 | 0.368 |
| No | 61 | 51 (83.61) | 10 (16.39) | | |
| Yes | 359 | 282 (78.55) | 77 (21.45) | | |
| **Partner serves as a reminder for ANC services (N=420)** | | | | 0.24 | 0.625 |
| No | 227 | 182 (80.18) | 45 (19.82) | | |
| Yes | 193 | 151 (78.24) | 42 (21.76) | | |
| **Partner goes to ANC services (N=420)** | | | | 0.09 | 0.758 |
| No | 338 | 269 (79.59) | 69 (20.41) | | |
| Yes | 82 | 64 (78.05) | 18 (21.95) | | |
| **Partner participates in ANC services (N=420)** | | | | 4.09 | 0.043 * |
| No | 328 | 267 (81.40) | 61 (18.60) | | |
| Yes | 92 | 66 (71.74) | 26 (28.26) | | |
| **Main ANC service decision-maker (N=420)** | | | | 1.12 | 0.572 |
| Self | 301 | 235 (78.07) | 66 (21.93) | | |
| Husband | 84 | 70 (83.33) | 14 (16.67) | | |
| Others | 35 | 28 (80.00) | 7 (20.00) | | |
| **Level of male involvement in ANC services (N=420)** | | | | 2.44 | 0.295 |
| No involvement | 57 | 49 (85.96) | 8 (14.04) | | |
| Moderate involvement | 261 | 207 (79.31) | 54 (20.69) | | |
| High involvement | 102 | 77 (75.49) | 25 (24.51) | | |

### 4.10 Association between Economic factors and ANC service uptake among women

The study revealed a significant association between the utilization of ANC services and women's overall rating of ANC service charges ($\chi^2$ (2) = 8.11, p=0.017. The utilization of ANC services was significantly higher among women who enjoyed free ANC services (29.4% of 68 respondents) compared to women who perceived ANC service charges as expensive (14.4% of 180 respondents) or affordable (23.2% of 164 respondents). This study however showed a non-significant association between ANC utilization and current employment (P=0.176), income earned in the past three months (p=0.326), access to transportation from home to ANC (P=0.334), and distance from home to ANC (P=0.237) among others. Table 4.8 gives detailed information on the association between economic factors and ANC service utilization.

## Table 4.8: Association between Economic factors and ANC service uptake

| Characteristics | Total | ANC services | | $\chi^2$ | P-value |
|---|---|---|---|---|---|
| | | Non-utilization n (%) | Utilization n (%) | | |
| **Current employment (N=420)** | | | | 6.32 | 0.176 |
| Unemployed | 93 | 75 (80.65) | 18 (19.35) | | |
| Farming | 150 | 115 (76.67) | 35 (23.33) | | |
| Petty trader | 117 | 99 (84.62) | 18 (15.38) | | |
| Civil servant | 35 | 28 (80.00) | 7 (20.00) | | |
| Others | 25 | 16 (64.00) | 9 (36.00) | | |
| **Years on current employment (N=420)** | | | | 7.58 | 0.055 |
| Unemployed | 93 | 75 (80.65) | 18 (19.35) | | |
| <2years | 85 | 70 (82.35) | 15 (17.65) | | |
| 2-4years | 139 | 116 (83.45) | 23 (16.55) | | |
| >4years | 103 | 72 (69.90) | 31 (30.10) | | |
| **Earned income in the past 3 months (N=411)** | | | | 0.96 | 0.326 |
| Yes | 253 | 204 (80.63) | 49 (19.37) | | |
| No | 158 | 121 (76.58) | 37 (23.42) | | |
| **Average monthly income (N=384)** | | | | 4.07 | 0.254 |
| None | 74 | 59 (79.73) | 15 (20.27) | | |
| <Ghc100 | 147 | 110 (74.83) | 37 (25.17) | | |
| Ghc100-200 | 105 | 88 (83.81) | 17 (16.19) | | |
| >Ghc200 | 58 | 49 (84.48) | 9 (15.52) | | |
| **Had valid NHIS during last pregnancy (N=420)** | | | | 1.55 | 0.212 |
| Yes | 373 | 299 (80.16) | 74 (19.84) | | |
| No | 47 | 34 (72.34) | 13 (27.66) | | |
| **Overall ANC service charges (N=412)** | | | | 8.11 | 0.017 * |
| Expensive | 180 | 154 (85.56) | 26 (14.44) | | |
| Affordable | 164 | 126 (76.83) | 38 (23.17) | | |
| Free | 68 | 48 (70.59) | 20 (29.41) | | |
| **Able to afford ANC services (N=420)** | | | | 1.08 | 0.584 |
| Every time | 223 | 173 (77.58) | 50 (22.42) | | |
| Sometimes | 165 | 133 (80.61) | 32 (19.39) | | |
| Barely | 32 | 27 (84.38) | 5 (15.63) | | |
| **Nature of road from home to ANC (N=411)** | | | | 0.20 | 0.903 |
| Poor | 122 | 99 (81.15) | 23 (18.85) | | |
| Satisfactory | 64 | 51 (79.69) | 13 (20.31) | | |
| Good | 225 | 178 (79.11) | 47 (20.89) | | |
| **Mode of Transportation from home to ANC (N=411)** | | | | 1.41 | 0.703 |
| Foot | 171 | 132 (77.19) | 39 (22.81) | | |
| Motorcycle | 89 | 71 (79.78) | 18 (20.22) | | |
| Commercial vehicle | 136 | 111 (81.62) | 25 (18.38) | | |
| Private vehicle | 15 | 13 (86.67) | 2 (13.33) | | |
| **Access to Transportation from home to ANC (N=415)** | | | | 2.19 | 0.334 |
| Easy | 188 | 144 (76.60) | 44 (23.40) | | |
| Average | 95 | 79 (83.16) | 16 (16.84) | | |
| Difficult | 132 | 108 (81.82) | 24 (18.18) | | |
| **Distance from home to ANC (N=414)** | | | | 2.88 | 0.237 |
| Near | 202 | 155 (76.73) | 47 (23.27) | | |
| Reasonable | 134 | 113 (84.33) | 21 (15.67) | | |
| Far | 78 | 62 (79.49) | 16 (20.51) | | |

### 4.11 Association between Health service factors and ANC service uptake

None of the health service factors considered in this study showed a significant association with the utilization of ANC services among women. Table 4.9 shows the information on the association between health services access factors and ANC service utilization.

**Table 4.9: Association between Health services access factors and ANC service uptake**

| | | ANC services | | | |
|---|---|---|---|---|---|
| | | Non-utilization | Utilization | | |
| **Characteristics** | **Total** | **n (%)** | **n (%)** | $\chi^2$ | **P-value** |
| **Average clinic waiting hours (N=412)** | | | | 2.21 | 0.331 |
| <1 hour | 151 | 121 (80.13) | 30 (19.87) | | |
| 1-2hours | 180 | 139 (77.22) | 41 (22.78) | | |
| >2hours | 81 | 69 (85.19) | 12 (14.81) | | |
| **The attitude of ANC service providers (N=414)** | | | | 1.75 | 0.416 |
| Good | 336 | 272 (80.95) | 64 (19.05) | | |
| Fair | 52 | 38 (73.08) | 14 (26.92) | | |
| Poor | 26 | 21 (80.77) | 5 (19.23) | | |
| **Place of ANC service (N=414)** | | | | 0.70 | 0.402 |
| A room built for ANC | 396 | 318 (80.30) | 78 (19.70) | | |
| Under tree/ Veranda | 18 | 13 (72.22) | 5 (27.78) | | |
| **Privacy during ANC examination (N=414)** | | | | 0.01 | 0.943 |
| Yes | 370 | 296 (80.00) | 74 (20.00) | | |
| No | 44 | 35 (79.55) | 9 (20.45) | | |
| **Number of ANC services (N=420)** | | | | 0.21 | 0.900 |
| Poor | 14 | 11 (78.57) | 3 (21.43) | | |
| Moderate | 52 | 40 (76.92) | 12 (23.08) | | |
| Good | 354 | 282 (79.66) | 72 (20.34) | | |
| **Level of satisfaction with ANC services (N=420)** | | | | 0.11 | 0.948 |
| <5 services | 141 | 113 (80.14) | 28 (19.86) | | |
| 5-8 services | 219 | 173 (79.00) | 46 (21.00) | | |
| 9-12 services | 60 | 47 (78.33) | 13 (21.67) | | |

### 4.12 Multivariate binary logistic regression model of factors affecting the uptake of ANC services among women.

The binary logistic regression model used to estimate the crude and adjusted odds ratio of factors associated with uptake of ANC services showed that women aged between 20 - 24 years (AOR: 3.25, 95% CI: 1.26-8.37; p=0.014) and 25 - 29 years (AOR: 3.20, 95% CI: 1.31-7.79; p=0.010)

had three times the odds of utilizing ANC services compared to those within the age bracket of 30-34 years. Also, women aged between 35 - 39 years (AOR: 6.33, 95% CI: 1.98-20.31; p=0.002) had six times the odds of utilizing ANC services compared to the reference group (30 – 34 years). With regards to the level of education, women with no formal education (AOR: 5.32, 95% CI: 1.06-26.58; p=0.042) had five times the odds of utilizing ANC services compared to those with tertiary education.

Women who had their first ANC visit in their third trimester (AOR: 4.49, 95% CI: 1.07-18.83; p=0.040) had four times the odds of utilizing ANC services compared to their counterparts who had their first ANC visit in their first trimester. Furthermore, the odds of ANC utilization were 1.93 times and 2.69 times among women who rated ANC services charges as affordable and free compared to women who rated the charges at ANC services as expensive respectively. Table 4.10 gives detailed information on the crude and adjusted odds ratio of factors associated with the utilization of ANC services.

**Table 4.10: Binary logistic regression model of Factors affecting the uptake of ANC services among women**

| | Simple binary logistic | | Multiple binary logistics | |
|---|---|---|---|---|
| **Characteristics** | **UOR [95% CI]** | **P-value** | **AOR [95% CI]** | **P-value** |
| **Facility type** | | | | |
| CHPs compound | 1.00 [reference] | | 1.00 [reference] | |
| Health facility | 1.79 [1.00-3.20] | 0.048 * | 1.40 [0.70-2.80] | 0.344 |
| **Age group** | | | | |
| <20 | 2.12 [0.82-5.50] | 0.123 | 2.77 [0.82-9.35] | 0.100 |
| 20-24 | 2.29 [1.00-5.21] | 0.049 * | 3.25 [1.26-8.37] | 0.014 * |
| 25-29 | 2.54 [1.13-5.73] | 0.024 * | 3.20 [1.31-7.79] | 0.010 * |
| 30-34 | 1.00 [reference] | | 1.00 [reference] | |
| 35-39 | 6.36 [2.25-17.98] | <0.001 *** | 6.33 [1.98-20.31] | 0.002 ** |
| 40-45 | 6.19 [1.62-23.62] | 0.008 ** | 4.01 [0.85-18.97] | 0.080 |
| **Highest education** | | | | |
| No formal education | 3.33 [1.01-10.98] | 0.048 * | 5.32 [1.06-26.58] | 0.042 * |
| Primary | 1.98 [0.58-6.73] | 0.275 | 3.04 [0.58-16.00] | 0.189 |
| JHS | 1.53 [0.51-4.66] | 0.450 | 2.78 [0.60-12.90] | 0.192 |
| SHS | 2.31 [0.73-7.32] | 0.156 | 4.36 [0.97-19.54] | 0.055 |
| Tertiary | 1.00 [reference] | | 1.00 [reference] | |
| **Number of pregnancies** | | | | |
| One | 1.00 [reference] | | 1.00 [reference] | |
| Two | 1.01 [0.51-2.00] | 0.976 | 0.99 [0.44-2.20] | 0.974 |
| >Two | 1.59 [0.89-2.85] | 0.120 | 1.40 [0.62-3.12] | 0.417 |
| **Ever had still birth** | | | | |
| No | 1.00 [reference] | | 1.00 [reference] | |
| Yes | 1.60 [0.85-3.02] | 0.143 | 1.53 [0.72-3.21] | 0.266 |
| **Ever been delivered by TBA** | | | | |
| No | 1.00 [reference] | | 1.00 [reference] | |
| Yes | 1.69 [0.86-3.31] | 0.128 | 1.14 [0.43-3.07] | 0.790 |
| **Ever delivered at church** | | | | |
| No | 1.00 [reference] | | 1.00 [reference] | |
| Yes | 2.20 [0.72-6.73] | 0.169 | 1.83 [0.35-9.60] | 0.476 |
| **Trimester of first ANC attendance** | | | | |
| 1st trimester | 1.00 [reference] | | 1.00 [reference] | |
| 2nd trimester | 1.32 [0.77-2.25] | 0.315 | 1.36 [0.75-2.47] | 0.311 |
| 3rd trimester | 3.95 [1.21-12.86] | 0.022 * | 4.49 [1.07-18.83] | 0.040 * |
| **Partner participates in ANC services** | | | | |
| No | 1.00 [reference] | | 1.00 [reference] | |
| Yes | 1.72 [1.01-2.94] | 0.045 * | 1.71 [0.91-3.23] | 0.095 |
| **Employment status** | | | | |
| Unemployed | 1.00 [reference] | | 1.00 [reference] | |
| Farming | 1.27 [0.67-2.40] | 0.466 | 1.83 [0.73-4.56] | 0.195 |
| Petty trader | 0.76 [0.37-1.55] | 0.449 | 0.85 [0.30-2.39] | 0.757 |
| Civil servant | 1.04 [0.39-2.76] | 0.935 | 1.68 [0.44-6.34] | 0.444 |
| Others | 2.34 [0.89-6.15] | 0.084 | 3.03 [0.90-10.19] | 0.073 |
| **Years on current employment** | | | | |
| Unemployed | 0.56 [0.29-1.08] | 0.085 | 1.00 [0.00-0.00] | |
| <2years | 0.50 [0.25-1.00] | 0.050 | 0.82 [0.35-1.96] | 0.663 |
| 2-4years | 0.46 [0.25-0.85] | 0.013 * | 0.66 [0.31-1.39] | 0.271 |
| >4years | 1.00 [reference] | | 1.00 [reference] | |
| **Have valid NHIS during last pregnancy** | | | | |
| No | 1.00 [reference] | | 1.00 [reference] | |
| Yes | 1.54 [0.78-3.07] | 0.215 | 1.94 [0.78-4.85] | 0.154 |
| **Overall ANC charges** | | | | |
| Expensive | 1.00 [reference] | | 1.00 [reference] | |
| Affordable | 1.79 [1.03-3.10] | 0.039 * | 1.93 [1.02-3.67] | 0.044 * |
| Free | 2.47 [1.27-4.81] | 0.008 ** | 2.69 [1.21-5.94] | 0.015 * |

UOR: unadjusted odds ratio. AOR: adjusted odds ratio. *: p<0.05. **: p<0.01. ***: p<0.001

### 4.13 Summary of key findings

The study revealed the following as its key findings.

**Knowledge level of women about antenatal care services at Sefwi Akontombra District**.

About seventy percent of the study respondents had an average level of knowledge on antenatal care services, while seventeen and seven percent had comprehensive and poor knowledge levels respectively.

**ANC services Utilization among women in the Sefwi Akontombra district**

Twenty percent of the study sample utilized ANC services with a minimum of 8 visits, while 4-7 times utilization was observed among some thirty-six percent of respondents. Also, a little over thirty-nine percent utilized this service between 1-3 times and three percent never utilized the services at all. The majority of these women utilized more than nine services out of the twelve essential services, while a little over twelve and three percent patronized 5-8 services and less than 5 services respectively during their entire pregnancy periods.

**Satisfaction with ANC Service among pregnant women in the Sefwi Akontombra District.**

The overall antenatal care services satisfaction level was moderate among fifty-two percent of the women, good among fourteen percent, while a little over thirty-three percent were poorly satisfied. Waiting time, distance to the facility, courtesy, and respect were the issues women expressed their dissatisfaction among others.

**Demographic and cultural factors associated with the uptake of antenatal care services among women of Sefwi Akontombra District**

The study indicates that the age of women, level of education, and trimester of first ANC attendance had some form of association with ANC service uptake in the district. Among the cultural factors, only the partner's participation in ANC was found to have an association with

service utilization in the unvaried model. However, it lost its association when other factors were adjusted.

**Economic factors influencing ANC service Uptake**

The study found out that the overall perception of the cost of ANC services is the only economic factor that influences ANC service utilization.

# CHAPTER FIVE

# DISCUSSION

## 5.0 Introduction

This chapter presents a detailed discussion of results generated from the field supported by relevant literature as aligned with the study objectives.

## 5.1 Knowledge of women towards ANC services

The general knowledge of women about ANC comes in different levels. While others perceive ANC visits as the means to get them access to facility delivery, others also believe it provides an opportunity to monitor their health and that of the fetus (Andrew et al., 2014; Pell et al., 2013). This study found that women knew at least 13 things they are to expect or to look out for during their ANC visits comparable to reports elsewhere. For instance, Kawungezi et al., (2015) and Patel et al., (2016) in separate studies reported in Uganda and India respectively that only 54% and 45% of the women had good knowledge on the services to expect during ANC visits. Any improvement in the ANC service knowledge level could influence health care utilization as the woman becomes aware of the benefits to gain from patronizing the services (Andrew et al., 2014).

The study also revealed that more than 80% of the women did not know that it is appropriate for a woman to attend ANC when pregnancy is confirmed within the first three months. This finding corroborates with a study by Kisuule et al., (2013) in Uganda, where over 70% of the study population had no idea about the recommended gestational age to start an antenatal clinic. This lack of knowledge on the timing of first ANC attendance could explain the low attendance in the Sefwi Akontombra District compared to reports from a study done in the Accra metropolitan area of Ghana (Asah-Opoku et al., 2019). This situation may require adequate sensitization programs on early initiation to antenatal care.

**5.2 ANC services Uptake among women in the Sefwi Akontombra district**

Global reports suggest a correlation between ANC utilization and pregnancy outcomes, therefore, ensuring the continuum of care assured in optimal use of ANC services is crucial for the success of the pregnancy (Onah et al., 2006; Tunçalp et al., 2012). This study revealed that 20.7% of the women made 8 or more ANC visits as recommended by the WHO. However, about 3.6% of the respondents never made any visit during their previous pregnancy. This 20.7% uptake means that the majority of women in the district are going to miss some of the interventions given during their ANC visits because most of these interventions are dependent on the gestational ages (Asah-Opoku et al., 2019; Ntui et al., 2016a).

The possible explanation for this low visits could be attributed to reasons such as misinformation and lack of education on the need to make these visits, cost of care, and unpleasant staff attitude as reported in some other parts of the country (Ghana Health Service, 2016; Pell et al., 2013).

Nevertheless, the majority of the women who made the ANC visit received at least 9 of the 12 services listed as interventions usually provided and this is a good sign of service availability. However, only a third of this population could access laboratory testing and other screenings. This means that certain essential screenings such as blood typing, sickling, checking for STIs among others could not be carried out during their visits. The reason for this could be the non-availability of laboratories and probably stock out of medical supplies at the facilities they visited. Almost all the operating health facilities in the Sefwi Akontombra are health centers and CHPs. Thus they are unable to offer laboratory services and respondents who reported use might have sourced it from private laboratories.

### 5.3 Satisfaction with ANC Services among pregnant women in the Sefwi Akontombra District.

Service utilization and satisfaction are one of the surest ways through which universal health coverage for maternal and child health can be achieved, as it provides an avenue for assessing the quality of healthcare at some point (Atinga et al., 2011; Jackson et al., 2001). Evidence from experts indicates that clients who are satisfied with the type of health services received are more likely to continue with the care process and vice versa (Nwaeze et al., 2013; Simkhada et al., 2008; Yohannes et al., 2013). This study's finding of more than half of women in the district expressing some form of satisfaction may explain the utilization of ANC services recorded. Relatedly, unsatisfied respondents will not patronize the services. This study confirms waiting time, respect from staff, and distance to the health facility among the main determinants of patient satisfaction in Ghana (Atinga et al., 2011). This finding is also consistent with the results from several studies conducted in other West African countries citing waiting time as one of the major determinants of health care utilization including ANC (Andrew et al., 2014; Ayimbillah Atinga et al., 2011; Chorongo et al., 2016; Kehinde Ige & Nwachukwu, 2009; Lee et al., 2009; Nwaeze et al., 2013). Once a patient waits too much at the facility, they become restless, tired, hungry, angry, and finally become dissatisfied with the overall performance of the provider.

### 5.4 Factors influencing ANC service uptake among women in the Sefwi-Akontombra District

This study found the age of the woman, educational level of women, trimester of first ANC attendance, and charges at the ANC to be significant predictors of ANC service uptake after adjusting for other covariates.

At the univariate level, factors such as facility type, parity, having a stillbirth, previous delivery with a traditional birth attendant, or at the church, employment status appeared to be

significant ones that could influence utilization among the women. However, after subjecting these variables to a more rigorous statistical scrutiny, they were non-significant. The reason for this could be as a result of the existence of some confounding effects between these variables and the study outcome.

The multivariate regression model however revealed that the level of ANC service utilization increases with age, such that as a woman gets older the higher the odds of uptake and vice versa. This study finding corroborates with other research findings that ANC utilization increases with age such that as women get older they are likely to utilize ANC service. While some studies have reported that younger women are more likely to utilize the services (Chandhiok et al., 2006; Pandey & Karki, 2014; Wablembo & Doctor, 2013), this study and others have opposing views that older women are likely to utilize ANC services (Abekah-nkrumah et al., 2011; Nketiah- Amponsah et al., 2013; Pell et al., 2013)

Younger women become more anxious when they are pregnant due to reasons ranging from shyness especially when they are single and the fear of social stigmatization may compel most of them to avoid public gatherings including the ANC (Pell et al., (2013). On the contrary older and matured women become more cautious with the birth-related issue because they might have had an earlier experience which has altered their health-seeking behavior. Also, it is known that older women are at higher risk of developing pregnancy-related complications compared to younger ones and for that matter are likely to report to the maternal clinic more frequently during pregnancy to avoid any problem at birth (Abekah-nkrumah et al., 2011; Islam & Masud, 2018; Nketiah- Amponsah et al., 2013)

Formal education is known to improve access to knowledge, and information on the importance of ANC uptake, dangers of avoiding these services, among others. The women with this knowledge and information are more likely to utilize ANC services compared to

those without it (Bbaale, 2011; Gabrysch & Campbell, 2009). Ironically, this study revealed that women with no formal education were five - folds more likely to use ANC services in the district compared to those with tertiary education. This finding contradicts most of the studies that have been conducted in Ghana and elsewhere (Arthur, 2012; Asah-Opoku et al., 2019; Dickson et al., 2017). For instance, Asah-Opoku et al., (2019) and Dickson et al., (2017) in separate studies conducted in different parts of Ghana reported that women with high school education or higher degrees are more likely to use adequate ANC services compared to those with no education. The discrepancies in our findings and these earlier studies could be attributed to the fact that most people with higher education in the district perceive care at the health center and CHPs as basic with limited facilities and prefer to visit hospitals located in nearby districts for their ANC services. This situation among other things could blur the true picture of events in the district under study.

The trimester at which the first ANC attendance was made was found to significantly influence service utilization such that women in their third trimester had a four - times increased odds of utilizing ANC services compared to those in their first and second trimester. The third trimester is regarded as the final lap in the pregnancy life cycle and for that matter, most women start their arrangement for safe delivery. Therefore, it is obvious that those who may have defaulted in their ANC attendance will begin to show up at the clinics to avoid being chastised for not attending ANCs. For instance, Andrew et al., (2014) reported that most women in limited-resource settings attended ANC to ensure that they would be allowed to deliver at the facility without been rebuked for not attending ANC, and those who intend to deliver at home or use TBA services also report later to check the position of their baby to avoid pregnancy complications.

Also, the cost of care at the antenatal clinic was found to significantly predict service utilization in the district. Those who had free services without incurring any cost were twice likely to use the services again compared to those who incur a cost of what they perceived as expensive. Cost is known to be one of the barriers to health care access and utilization especially in low-income economies (Gitonga, 2017; Simkhada et al., 2008; Titaley, Dibley, et al., 2010). Maternal health services including ANC have been free in Ghana since the introduction of the free maternal health policy in 2008. Therefore, when pregnant women who attend ANC are asked to pay for certain services rendered to them, they become worried and dissatisfied. These additional payments, coupled with other indirect costs such as transportation, food for either themselves or accompanying children while waiting to be attended to, and saloon cost in their bid to look presentable at the clinic are believed to burden the women and been reported to be significant enough to deter women from ANC in several pieces of research (Andrew et al., 2014; Haruna et al., 2019; Pell et al., 2013; Wilunda et al., 2017). The high cost of healthcare including antenatal services has been largely reported to be a prohibiting factor of health service utilization and influence patients decision to choose alternative cheaper means, which can be dangerous to their health especially in developing countries (Amissah et al., 2019; Gitonga, 2017; Simkhada et al., 2008; Titaley, Dibley, et al., 2010). The above reasons possibly explain why women in the district who enjoy free services utilized the ANC service more than those who had to make some form of financial commitment. Other economic factors such as income, occupation, purchasing power among others have been widely reported to influence health utilization (Arthur, 2012; Fagbamigbe & Idemudia, 2015b; Mugo et al., 2015; Wablembo & Doctor, 2013), however, the opposite was recorded in this study.

None of the institutional factors (waiting time, the attitude of service providers, privacy, level of satisfaction, and services provided) assessed by this study was significantly associated with ANC service utilization contrary to reports from earlier publications (Andrew et al., 2014; Choudhury & Ahmed, 2011; Finlayson & Downe, 2013; Ganle, 2015; Gross et al., 2012; Mubyazi et al., 2010; Ogundairo & Jegede, 2016; Titaley, Hunter, et al., 2010).

# CHAPTER SIX

# CONCLUSION AND RECOMMENDATION

## 6.0 Introduction

This chapter of the research presents the conclusions drawn from the findings of the study and appropriate recommendations made to all stakeholders who are interested in improving antenatal care services utilization in the Sefwi Akontombra District.

## 6.1 Conclusion

This study sought to identify the factors associated with the uptake of antenatal care services among women in the Sefwi Akontombra district in the Western North Region of Ghana. The identified factors such as demographic, cultural, socio-economic, institutional, and knowledge level were assessed and analyzed on a multivariate model to ascertain significant association with the uptake of ANC services. At the univariate level, factors such as facility type, parity, having a stillbirth, previous delivery with a traditional birth attendant, employment status appeared to be significant ones that could influence utilization among the women. However, after subjecting these variables to a more rigorous statistical scrutiny, they were non - significant. The study concludes that variables such as the age of the woman**,** educational level of women, trimester of first ANC attendance, and charges at the ANC were the true predictors of ANC service uptake after subjecting all variables to a multivariate logistic regression model. The study also revealed a low uptake of ANC services among women in the district. In addition to this, it was observed that most of the women had average knowledge about ANC services.

Even though there has been high investment in maternal health, inadequate uptake of ANC services remains an issue of much concern in some deprived areas of the country of which Sefwi Akontombra is not an exception. The reason for this low uptake of ANC services may

be attributed to the perceived high cost of direct and indirect service charges, the strong desire of some women to deliver outside the health facilities, and the unattractiveness of ANC uptake by most adolescents due to stigmatization and ridicule at service centers. The ignorance of the benefits of ANC on safe motherhood may also be a contributing factor to the underutilization of ANC services in the district.

### 6.2 Strengths of the study

The participation rate was high; this was reflected in the number of questionnaires collected. Information on Factors Associated with the uptake of ANC services was collected using an interviewer-administered questionnaire.

### 6.3 Limitations of the study

This study was cross-sectional and interviewer-administered and relied on respondent recall of previous events. The findings, therefore, may have been affected by recall bias and misinformation due to social desirability. Nevertheless, the experienced interviewers created excellent rapport during interviews to reduce these threats to validity. Secondly, this study targeted and recruited women attending the Child Welfare Clinic (C.W.C). The findings, therefore, may not apply to women who do not utilize C.W.C or postnatal services. However, the findings are very useful for informing stakeholders considering that there is almost universal coverage of child immunization in Ghana (GHANA, WHO & UNICEF, 2019).

### 6.4 Recommendation

Based on the findings of the study, the following suggestions on the future course of actions to promote antenatal care utilization in the Sefwi Akontombra district are made.

1. The Ghana Health Services and the District Health Management Team should introduce innovative and more intensified health education campaign exercises to

improve the level of knowledge of women on the importance of antenatal care and the essential services available for their utilization.

2. The Ghana Health Services and National Health Insurance Authority should take pragmatic steps to partner with private facilities to provide maternal health services like ultrasound, laboratory among others that are not available in most health facilities in the district for pregnant women.
3. Ghana Health Services and other service providers should introduce and enforce adolescent-friendly maternal health services to make the uptake of ANC services more attractive to adolescents.
4. Facility administrators are encouraged to display at the facility the various ANC services available and also emphasize their importance during ANC health education sections.
5. The Ghana Health Services and the District Health Directorate should organize periodic workshops and seminars for service providers on client's management and satisfaction to address issues of dissatisfaction among them.
6. The DHMT should enhance supervision and monitoring at all levels of health care to ensure improved quality antenatal care services at all delivery points.
7. It is recommended that facility administrators provide avenues to accommodate clients' feedbacks such as organizing post service delivery evaluations and customer satisfaction surveys to address pressing issues.

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# APPENDICES

## APPENDIX I

### PARTICIPANTS INFORMATION SHEET AND CONSENT FORM (ADULTS)

1. **INFORMATION SHEET**

2. **The title of the study: Factors associated with the uptake of Antenatal Care Services among women of Sefwi Akontombra District in the Western region of Ghana.**

3. **Introduction**

My name is Michael Antwi Adjei, a student at the School of Public Health University of Ghana. I work with the Nursing Training College Sefwi – Wiawso in the western region of Ghana. I am here to conduct a research on factors associated with the uptake of antenatal care (ANC) services among women of Sefwi Akontombra District. Antenatal care services improve the health status of women during pregnancy, childbirth, and after childbirth. It also improves the health status of the child during the early stages of life. However, most women do not get the benefits of antenatal care services because they are unable to utilize all the services. The purpose of this study is to find out the reasons why women use or do not use antenatal care services. The information you will give will help policymakers' to plan and improve ANC services in the district and beyond.

4. **Duration/ what is involved:** If you decide to take part in this research, you will be asked some questions about yourself and the reasons why you use or do not use antenatal care services. The interview will last for about 10-15 minutes.

**Potential risk:** The risk of participating in this study may include some possible discomfort in sharing some information about your personal life. If you feel uncomfortable answering some questions, you are free to stop participating in the

study or refuse to answer those questions and this will not affect the care that will be given by the health workers**.**

**Benefits:** There are no direct benefits to you for taking part in this study. However, findings from this study will be used to plan and improve antenatal care services among women in the district**.**

**Costs:** You will not pay any money to take part in this study**.**

**Confidentiality:** Every piece of information you will provide in this study will not be disclosed to anyone. Your name will not be written on the question paper nor be mentioned in the study report. This will make it impossible for anyone to know your responses. Also, the information you will provide will be handled by the research team and kept safely**.**

**Voluntary participation/withdrawal:** You have the right to take part in this study or refuse to take part. You also have the right to stop at any point in the study. You are free to answer questions with much or little details in your comfort. However, the information you share with us can help improve antenatal care services in the district.

**Outcome and feedback:** The results of this study will be used to improve antenatal care services for women in the district. Findings will be sent to you after the study.

**Funding information:** The research is being funded by the principal investigator.

**Do you have any questions for me to answer before we move on with the discussion?**

**Yes** ☐ **No** ☐

Who to contact for clarification: for further information or explanation, you must contact Michael Antwi Adjei (principal investigator) or telephone number 0242285871 or Nana (GHS-ERC) on telephone number 0244712919.

Consent form for Adult's respondents

Your signature shows that you freely agree to take part in this study. Also, the study has been explained to you in the language that you understand, and that all questions have been adequately answered**.**

**PARTICIPANT'S STATEMENT**

I certify that I have agreed to answer the study questions. Also, everything about the study has been explained to me satisfactorily. I understand I am free to withdraw at any time if I so choose.

Name of participant……

Signature or thumbprint……Date ……...

*If respondents are unable to read the form for themselves, a witness must sign here:*

Name of witness……..

Signature or thumbprint……..Date ……...

**RESEARCHER'S STATEMENT**

I certify that the participant has been given ample time to read and understand everything about this study. I also confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Name of Principal investigator…….

Signature or thumbprint……...……..Date ……...

**PARENTAL / GUARDIAN INFORMATION SHEET AND CONSENT FORM**

**1. INFORMATION SHEET**

**2. The title of the study: Factors associated with the uptake of Antenatal Care Services among women of Sefwi Akontombra District in the Western region of Ghana.**

**3. Introduction**

My name is Michael Antwi Adjei, a student at the School of Public Health University of Ghana. I work with the Nursing Training College Sefwi – Wiawso in the Western region of Ghana. I am here to conduct a research on factors associated with the uptake of antenatal care (ANC) services among women of Sefwi Akontombra District. Antenatal care services improve the health status of women during pregnancy, childbirth, and after childbirth. It also improves the health status of the child during the early stages of life. However, most women do not get the benefits of antenatal care services because they are unable to utilize all the services. The purpose of this study is to find out the reasons why women use or do not use antenatal care services. The information your child will give will help policymakers' to plan and improve ANC services in the district and beyond**.**

4. **Duration/ what is involved:** If you agree for your child to take part in this research, she will be asked some questions about herself and the reasons why she uses or does use antenatal care services. The interview will last for about 10-15 minutes.

**Potential risk:** The risks of participating in this study may include some possible discomfort in sharing some information about her personal life. If she feels uncomfortable answering some questions, she is free to stop participating in the study or refuse to answer those questions and this will not affect the care that will be given by the health workers.

**Benefits:** There are no direct benefits as she takes part in this study. However, findings from this study will be used to plan and improve antenatal care services among women in the district.

**Costs:** Your child will not pay any money to take part in this study. Her participation is free.

**Compensation:** Your child will not be paid nor reward as she takes part in this study. However, if she acquires any cost in the course of the study, the principal investigator will refund it back to her.

**Confidentiality**: Every piece of information she will provide in this study will not be disclosed to anyone. Her name will not be written on the question paper nor be mentioned in the study report. This will make it impossible for anyone to know her responses. Also, the information she will provide will be handled by the research team and kept safely**.**

**Voluntary participation/withdrawal:** Your child has the right to take part in this study or refuse to take part. She also has the right to stop at any point in the study. As she takes part in the study in her own free will, she is free to answer questions with much or little details in her comfort. However, her answers can improve antenatal care services in the district.

**Outcome and feedback:** The results of this study will be used to improve antenatal care services for women in the district. Findings will be sent to her after the study.

**Funding information**: The research is being funded by the principal investigator.

**Do you have any questions for me to answer before we move on with the discussion?**

**Yes** ☐ **No** ☐

Who to contact for clarification: for further information or explanation you must contact Michael Antwi Adjei (principal investigator) or telephone number 0242285871 or Nana (GHS-ERC) on telephone number 0244712919

## CONSENT FORM FOR PARENTS / GUARDIAN

Your signature shows that you freely agree for your child to take part in this study. Also, the study has been explained to you in the language that you understand, and that all questions have been adequately answered.

**PARENT/ GUARDIAN STATEMENT**

I certify that I have agreed for my child to answer the study questions. Also, everything about the study has been explained to me and all my questions have been answered satisfactorily. I understand my child is free to stop to take part at any time if she so chooses.

Name of parent / Guardian……

Signature or thumbprint……..Date ……...

*If parent/guardian is unable to read the form for themselves, a witness must sign here:*

I was present when the benefits, risks, and procedures were read and explained to the parent/guardian in the language he/she understands. The parent/guardian was allowed to ask questions. All questions asked were answered and the parent/guardian has agreed for his/ her child to take part in this study.

**Name of witness……..**

**Signature or thumbprint……..Date ……...**

**RESEARCHER'S STATEMENT**

I certify that the child's parent has been given ample time to read and understand everything about this study. I also confirm that the individual has not been coerced into giving consent for his / her child to take part in this study.

Name of Principal investigator…….

Signature or thumbprint……..Date ……....

**PARTICIPANTS INFORMATION SHEET AND ASSENT FORM (ADOLESCENT)**

**1. INFORMATION SHEET**

**2. The title of the study: Factors associated with the uptake of Antenatal Care Services among women of Sefwi Akontombra district in the Western region of Ghana.**

**3. Introduction**

My name is Michael Antwi Adjei, a student at the School of Public Health University of Ghana. I work with the Nursing Training College Sefwi – Wiawso in the Western region of Ghana. I am here to conduct a research on factors associated with the uptake of antenatal care (ANC) services among women of Sefwi Akontombra District. Antenatal care services improve the health status of women during pregnancy, childbirth, and after childbirth. It also improves the health status of the child during the early stages of life. However, most women do not get the benefits of antenatal care services because they are unable to utilize all the services. The purpose of this study is to find out the reasons why women use or do not use antenatal care services. The information you will give will help policymakers' to plan and improve ANC services in the district and beyond.

4. **Duration/ what is involved:** If you decide to take part in this research, you will be asked some questions about yourself and the reasons why you use or do not use antenatal care services. The interview will last for about 10-15 minutes.

**Potential risk:** The risk of participating in this study may include some possible discomfort in sharing some information about your personal life. If you feel uncomfortable answering some questions, you are free to stop participating in the study or refuse to answer those questions and this will not affect the care that will be given by the health workers.

**Benefits:** There are no direct benefits to you for taking part in this study. However, findings from this study will be used to plan and improve antenatal care services among women in the district.

**Costs:** You will not pay any money to take part in this study.

**Confidentiality:** Every piece of information you will provide in this study will not be disclosed to anyone. Your name will not be written on the question paper nor be mentioned in the study report. This will make it impossible for anyone to know your responses. Also, the information you will provide will be handled by the research team and kept safely.

**Voluntary participation/withdrawal:** You have the right to take part in this study or refuse to take part. You also have the right to stop at any point in the study. You are free to answer questions with much or little details in your comfort. However, the information you share with us will help improve antenatal care services in the district.

**Outcome and feedback:** The results of this study will be used to improve antenatal care services for women in the district. Findings will be sent to you after the study.

**Funding information:** The research is being funded by the principal investigator.

**Do you have any questions for me to answer before we move on with the discussion?**

**Yes** ☐ **No** ☐

Who to contact for clarification: for further information or explanation you must contact Michael Antwi Adjei (principal investigator) or telephone number 0242285871 or Nana (GHS-ERC) on telephone number 0244712919

**ASSENT FORM FOR ADOLESCENT RESPONDENTS**

Your signature shows that you freely agree to take part in this study. Also, the study has been explained to you in the language that you understand, and that all questions have been adequately answered**.**

**PARTICIPANT'S STATEMENT**

I certify that I have agreed to answer the study questions. Also, everything about the study has been explained to me satisfactorily. I understand I am free to withdraw at any time if I so choose.

Name of participant……..

Signature or thumbprint……..Date ……...

*If the respondent is unable to read the form for themselves, a witness must sign here:*

Name of witness……..

Signature or thumbprint……..Date ……...

**RESEARCHER'S STATEMENT**

I certify that the participant has been given ample time to read and understand everything about this study. I also confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Name of Principal investigator…….

Signature or thumbprint……..Date ……...

**APPENDIX II**

**UNIVERSITY OF GHANA SCHOOL OF PUBLIC HEALTH**

**DEPARTMENT OF POPULATION, FAMILY AND REPRODUCTIVE HEALTH**

**TITTLE: Factors associated with the uptake of antenatal care services among women of Sefwi Akontombra District of the Western - North Region of Ghana**

**QUESTIONNAIRE**

Questionnaire number……..

Facility/ community number……

Date ……

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. What was your age at your last birthday (years)?.....
2. Marital status
   1. Single [ ]
   2. Married [ ]
   3. Divorced [ ]
   4. Separated [ ]
   5. Cohabitation [ ]
   6. Widowed [ ]

3. How many times have you given birth?
   1. None [ ]
   2. Ones [ ]
   3. Twice [ ]
   4. Thrice [ ]
   5. 4 and more [ ]

4. Highest educational level
   1. None [ ]
   2. Primary [ ]
   3. JHS [ ]
   4. Secondary/ technical/ vocational [ ]
   5. Tertiary [ ]

5. Ethnicity
   1. Akan [ ]
   2. Northerner [ ]
   3. Ewe [ ]
   4. Ga/ Dangme [ ]
   5. Others specify …….
6. Religion
   1. Christian [ ]
   2. Muslim [ ]
   3. Traditional [ ]
   4. Others specify……

**SECTION B- KNOWLEDGE ON ANTENAL CARE**

| Knowledge items | YES 1 | NO 0 | DON'T KNOW 2 |
|---|---|---|---|
| 7. ANC is a routine medical/nursing care recommended for pregnant women | | | |
| 8. ANC treats and prevents potential health problems during the course of pregnancy | | | |
| 9. ANC helps in promoting lifestyles that benefit both mother and child | | | |
| 10. ANC helps detect the condition of the baby and health of the mother | | | |
| 11. ANC provides the opportunity to detect and manage complications | | | |
| 12. ANC provides a learning opportunity for pregnant mothers | | | |
| 13. ANC empowers pregnant women to be able to identify danger signs | | | |
| 14. ANC is necessary for safe delivery | | | |

15. When is it appropriate for a woman to attend ANC when pregnancy is confirmed?
   1. As soon as pregnancy is confirmed [ ]
   2. 1-3 months [ ]
   3. 4- 6 months [ ]
   4. 7-9 months [ ]
   5. When there is a problem with the pregnancy [ ]
   6. Don't know [ ]

16. How many times should a pregnant woman attend ANC clinic during the entire period of pregnancy?
    1. 1-3 [ ]
    2. 4-7 [ ]
    3. 8 and above [ ]
    4. As often as necessary [ ]
    5. Don't know [ ]

17. What are the danger signs of pregnancy? (tick as many as applicable)
    1. Excessive vomiting [ ]
    2. Persistent swelling of limbs [ ]
    3. Vaginal bleeding/discharge [ ]
    4. Convulsion [ ]
    5. Weak or no movement of baby [ ]
    6. Visual disturbance [ ]
    7. Abdominal pain [ ]
    8. Other specify……
    9. Other specify……

18. What should be done in case of any such problem?
    1. Report to health centre/hospital [ ]
    2. Home remedies/self-medication [ ]
    3. Get some rest [ ]
    4. Ignore it [ ]
    5. Seek spiritual help [ ]
    6. Don't know [ ]

22. Where should a pregnant woman deliver her baby?
    1. Health care facility [ ]
    2. Home [ ]
    3. TBA [ ]
    4. Church gardens [ ]
    5. Can't tell [ ]

**SECTION C- UTILISATION OF ANC**

**Tick appropriately the response that answers the question**

| No. | QUESTION | **0** 1 | **1** 2 | **2** 3 | **3** 4 | **4** 5 | **>4** 6 |
|---|---|---|---|---|---|---|---|
| 23 | How many pregnancies have you had? | | | | | | |
| 24 | How many were stillbirth(s)? | | | | | | |
| 25 | How many miscarriages have you had? | | | | | | |
| 26 | How many life birth/s have you had? | | | | | | |
| 27 | How many deliveries have you had in a health facility? | | | | | | |
| 28. | How many deliveries have you had at home? | | | | | | |
| 29. | How many deliveries have you had with TBAs? | | | | | | |
| 30. | How many deliveries have you had at Church gardens? | | | | | | |

1. Did you attend antenatal clinic during your most recent pregnancy?
   1. Yes [ ]
   2. No [ ]
2. How old was the pregnancy when you started ANC?.....month/s.
3. Why did you start your ANC at the time you have stated above?
   1. Illness [ ]
   2. Severe vomiting [ ]
   3. Swelling of feet [ ]
   4. Fear of complications [ ]
   5. Others specify……
4. How many times did you attend antenatal clinic during your last pregnancy?
   1. 0 [ ]
   2. 1-3 [ ]
   3. 4-7 [ ]
   4. 8 and above [ ]

**SECTION D - CULTURAL FACTORS**

5. Does any of the antenatal services contradict your cultural provisions?

1. YES [ ]
2. NO [ ]

6. If YES, state example(s) of such service(s) that contradicts your cultural provision?

……
……

7. Does any antenatal service(s) contradict (s) with your religious beliefs?

1. YES [ ]
2. NO [ ]

8. If YES, state example(s) of such service(s) that contradict(s) with your religious beliefs.

……
……

Does your husband/partner offer you the following support when you intend to seek antenatal care services?

| No. | Kind of support | YES 1 | NO 2 |
|---|---|---|---|
| 9. | Money for ANC services | | |
| 10. | Reminder for ANC services | | |
| 11. | Accompany you for ANC services | | |
| 12. | Participation in ANC services | | |

13. Who mostly decides when and where you go for antenatal services during pregnancy?

1. Self [ ]
2. Husband [ ]
3. Mother [ ]
4. Friends [ ]
5. In-laws [ ]
6. Other relatives [ ]

**SECTION E - ECONOMIC ACCESS FACTORS**

14. What is your main occupation?

1. Unemployed [ ]
2. Farming [ ]
3. Petty trader [ ]
4. Civil servant [ ]
5. Others specify……

15. How long have you worked with respect to your main occupation?

| | | |
|---|---|---|
| 1. | Less than a year | [ ] |
| 2. | 1 year | [ ] |
| 3. | 2 years | [ ] |
| 4. | 3 years | [ ] |
| 5. | 4 years | [ ] |
| 6. | More than 4 years | [ ] |

16. Have you earned any income for the last three months?

| | | |
|---|---|---|
| 1. | YES | [ ] |
| 2. | NO | [ ] |

3. Approximately, how much do you earn in a month?

| | | |
|---|---|---|
| 1. | ≤ 100 GHC | [ ] |
| 2. | ≥100 but < 200GHC | [ ] |
| 3. | ≥200 but < 300 GHC | [ ] |
| 4. | ≥300 but < 400 GHC | [ ] |
| 5. | ≥400 but <500 GHC | [ ] |
| 6. | ≥500 but <1000 GHC | [ ] |
| 7. | ≥1000 GHC | [ ] |

4. Were you insured (NHIS) during your last pregnancy?

| | | |
|---|---|---|
| 1. | YES | [ ] |
| 2. | NO | [ ] |

5. How would you rate the overall service charges at the ANC?

| | | |
|---|---|---|
| 1. | Very affordable | [ ] |
| 2. | Affordable | [ ] |
| 3. | Free | [ ] |
| 4. | Cheap | [ ] |
| 5. | Very Cheap | [ ] |

6. Are you able to afford the cost of ANC services?

| | | |
|---|---|---|
| 1. | Yes, every time | [ ] |
| 2. | Yes, often | [ ] |
| 3. | Yes, sometimes | [ ] |
| 4. | Most often not | [ ] |
| 5. | No, not at all | [ ] |

7. How would you describe the nature of the road linking your place of residence to the antenatal clinic?

| | | |
|---|---|---|
| 1. | Very good | [ ] |
| 2. | Good | [ ] |
| 3. | Satisfactory | [ ] |
| 4. | Poor | [ ] |
| 5. | Very poor | [ ] |

8. What was your usual means of transport to your last antenatal clinic during pregnancy?
   1. Foot (Walk) [ ]
   2. Motorcycle [ ]
   3. Commercial vehicle [ ]
   4. Private [ ]
   5. Others specify……
9. How would you rate access to transportation to the antenatal clinic?
   1. Very easy [ ]
   2. Easy [ ]
   3. Average [ ]
   4. Difficult [ ]
   5. Very difficult [ ]
10. How would you rate the distance from your place of residence to the antenatal clinic?
   1. ≤ 1 km - Very near [ ]
   2. >1- 2 km- Near [ ]
   3. >2 -3 km – Reasonable [ ]
   4. >3 - <5 km- Far [ ]
   5. ≥ 5 km -Very far [ ]

**SECTION F - INSTITUTIONAL FACTORS**

11. How long do you wait at the clinic to receive antenatal services?
1. ≤ 1 hour – Very Short [ ]
2. 1 – 2 hours - Short [ ]
3. >2 - <4 hours – Long [ ]
4. ≥ 4 hours -Very long [ ]
5. How would you rate the attitude of service providers towards pregnant women at the antenatal clinic?
   1. Very good [ ]
   2. Good [ ]
   3. Fair [ ]
   4. Poor [ ]
   5. Very poor [ ]
6. Where is Antenatal Care Services rendered?
   1. Room built for Antenatal [ ]
   2. Under a tree [ ]
   3. On a veranda [ ]
   4. Others specify……
7. Does the ANC setting offer you privacy when you are being examined by health workers?
   1. YES [ ]
   2. NO [ ]

8. Did you receive the following services at the ANC clinic? Tick (√) where appropriate.

| SERVICE RENDERED | YES 1 | NO 0 | CAN'T TELL 2 | PAYMENT YES 1 | NO 0 |
|---|---|---|---|---|---|
| Physical examination | | | | | |
| Laboratory test/screening | | | | | |
| Ultrasound scan | | | | | |
| IPT for malaria control | | | | | |
| Folic acid | | | | | |
| Iron tablets | | | | | |
| Calcium | | | | | |
| Drugs for treating minor ailments | | | | | |
| Tetanus toxoid immunization | | | | | |
| Nutrition education from midwives | | | | | |
| Health education | | | | | |
| Management of minor ailments | | | | | |

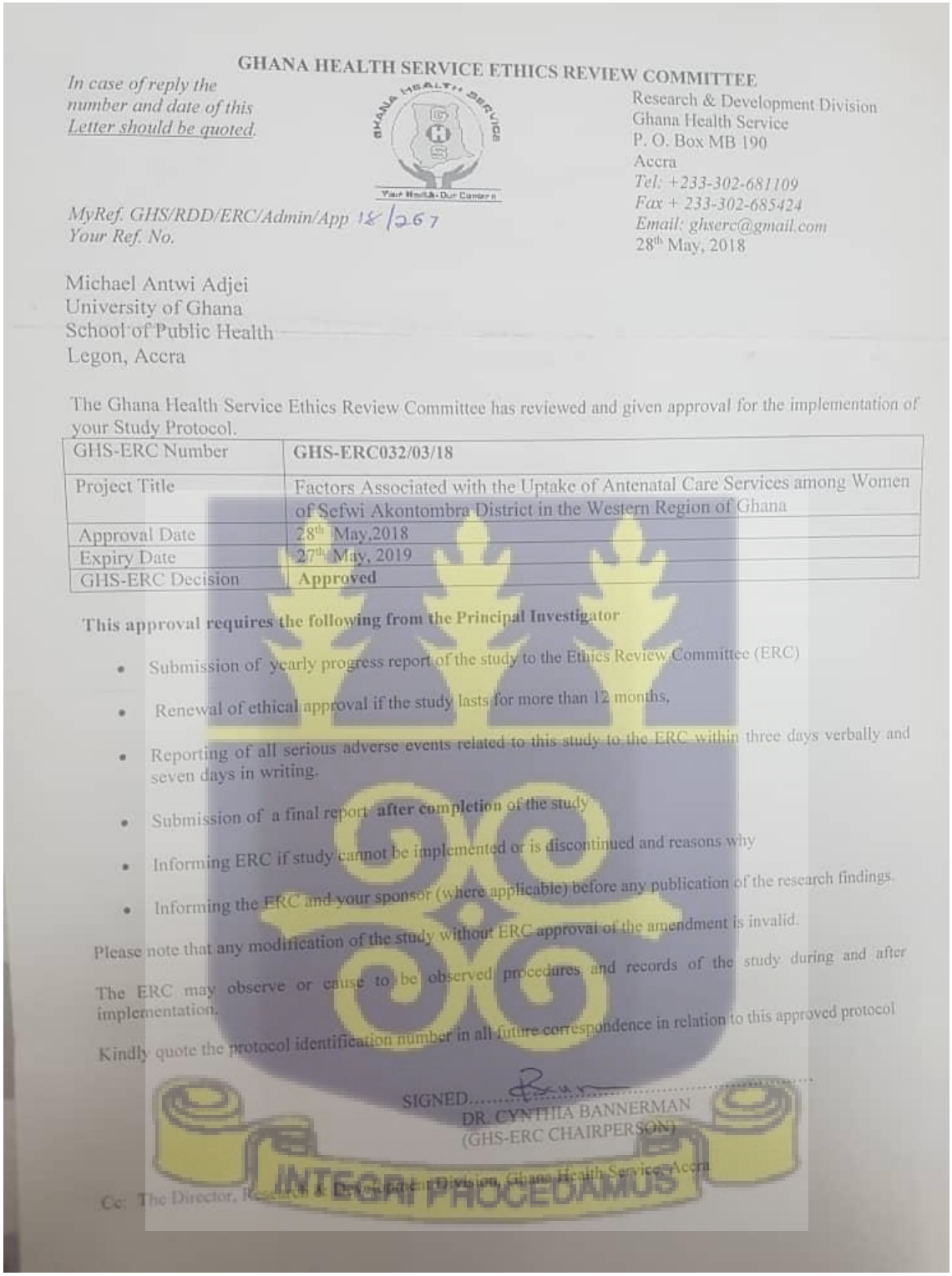
9. How would you rate your satisfaction with the following services/facilities of care at the antenatal clinic? Tick (√) where appropriate.

| Services | VERY SATISFIED 2 | SATISFIED 1 | NOT SATISFIED 0 |
|---|---|---|---|
| Information and education | | | |
| Completeness of information | | | |
| Availability of drugs and supplies | | | |
| Access and cleanliness of the toilet | | | |
| Waiting area cleanliness and comfort | | | |
| Examination area cleanliness | | | |
| Overall cleanliness of the facility | | | |
| Waiting time to see a health worker | | | |
| Courtesy and respect | | | |
| Level of privacy during examination | | | |
| Confidentiality and trust in providers | | | |
| Health facility distance | | | |
| Cost of services provided | | | |



THANK YOU.

## APPENDIX III



GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

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

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
*Tel: +233-302-681109*
*Fax + 233-302-685424*
*Email: ghserc@gmail.com*
28th May, 2018

*MyRef. GHS/RDD/ERC/Admin/App 18/267*
*Your Ref. No.*

Michael Antwi Adjei
University of Ghana
School of Public Health
Legon, Accra

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

| | |
|---|---|
| GHS-ERC Number | **GHS-ERC032/03/18** |
| Project Title | Factors Associated with the Uptake of Antenatal Care Services among Women of Sefwi Akontombra District in the Western Region of Ghana |
| Approval Date | 28th May,2018 |
| Expiry Date | 27th May, 2019 |
| GHS-ERC Decision | **Approved** |

**This approval requires the following from the Principal Investigator**

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

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

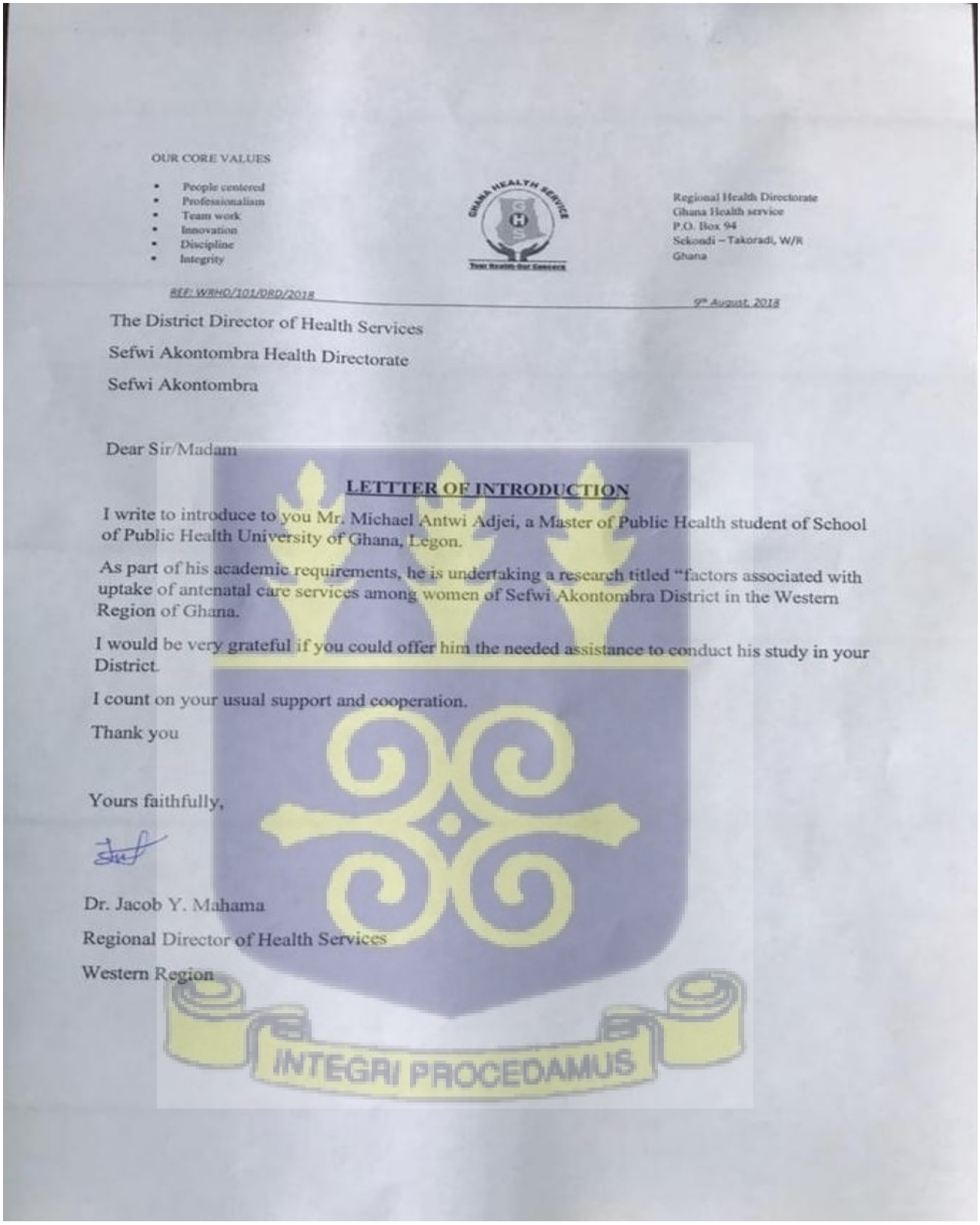
The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

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

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

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

**APPENDIX IV**



OUR CORE VALUES

- People centered
- Professionalism
- Team work
- Innovation
- Discipline
- Integrity

Regional Health Directorate
Ghana Health service
P.O. Box 94
Sekondi – Takoradi, W/R
Ghana

REF: WRHO/101/DRD/2018

9th August, 2018

The District Director of Health Services
Sefwi Akontombra Health Directorate
Sefwi Akontombra

Dear Sir/Madam

**LETTTER OF INTRODUCTION**

I write to introduce to you Mr. Michael Antwi Adjei, a Master of Public Health student of School of Public Health University of Ghana, Legon.

As part of his academic requirements, he is undertaking a research titled "factors associated with uptake of antenatal care services among women of Sefwi Akontombra District in the Western Region of Ghana.

I would be very grateful if you could offer him the needed assistance to conduct his study in your District.

I count on your usual support and cooperation.

Thank you

Yours faithfully,

Dr. Jacob Y. Mahama
Regional Director of Health Services
Western Region