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FACTORS AFFECTING THE UTILIZATION OF ANTENATAL CARE SERVICES IN NEW JUABEN SOUTH MUNICIPALITY IN EASTERN REGION

BY

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DECLARATION

I, Rita Dua Dodd, hereby declare that with the exception of referenced works of other people, which have been cited and duly acknowledged, this work in an output of my own initiative. This dissertation has neither in whole nor in part been presented for an award or a degree elsewhere.

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DEDICATION

This research dissertation is dedicated to my family and friends for their good support during the period of my study.

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ABSTRACT

Background: It is estimated that a global average of 500,000 deaths, caused by various pregnancy and childbirth complications, are recorded every year. In 2013, 99% of maternal deaths occurred in low-income countries, with sub-Saharan Africa contributing about 62%. These maternal deaths attributed in part to the lack of quality antenatal care services for pregnant women.

Objective: The main objective of the study was to determine the factors that affect the utilization of antenatal care services in New Juaben South.

Method: The study employed an explanatory cross-sectional, mixed methods design. The study targeted 590 women within reproductive age and administrative staff of healthcare facilities. Data were collected using structured questionnaires, as well as face-to- face interviews with women attending child welfare clinics, and administrative staff in four healthcare facilities. Four focus group discussions were held with women. Systematic sampling method was employed to select women who attended child welfare clinics. Logistic regression analysis was conducted using STATA version 15.0 and statistical significance of results were determined at 95% confidence level.

Results: The mean age of the women who participated in the study was 28.0 years ± 6.8SD. The antenatal care utilization rate was 29.6%. The age of the mother (AOR = 0.4; 95% CI: 0.1, 0.9) and (AOR = 3.1, 95% CI: 1.5, 6.8), marital status (AOR = 2.4, 95% CI: 1.3, 4.5), religion (AOR = 3.4, 95% CI: 1.2, 9.8), place of residence (AOR = 3.1, 95% CI: 1.6, 5.9), educational status (AOR = 3.5, 95% CI: 1.1, 11.2), timing of start of antenatal care visits (AOR = 4.4 95% CI: 1.8, 10.9), time spent at the facility (AOR: 2.5, 95% CI: 1.2, 5.4) and (AOR: 8.7, 95% CI: 2.4, 30.7) and the distance to the nearest health facility (AOR: 3.8, 95% CI: 1.8, 8.1) were significantly associated with utilization of ANC services.

Conclusion: The factors identified in this study as influencing ANC utilization included age, marital status, place of residence, educational status, timing of start of antenatal care visits, time spent at the facility, and the distance to the nearest health facility. The use of ANC is a fundamental entry point for improved maternal health services. Strategies that facilitate an improved uptake of ANC services should take into consideration the identified factors.

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LIST OF ABBREVIATIONS

ABM	-	Anderson's Behavioural Model
ANC	-	Antenatal Care
CWC	-	Child Welfare Clinic
FGDs	-	Focused Group Discussions
GDHS	-	Ghana Demographic and Health Survey
MCH	-	Maternal and Child Health
IPT	-	Intermittent Preventive Treatment
NHIS	-	National Health Insurance Scheme
SD	-	Skilled Delivery
SSH	-	sub-Saharan Africa
SVD	-	Spontaneous Vaginal Delivery
TBAs	-	Traditional Birth Attendants
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The non-attendance to antenatal care services increases the likelihood of pregnant women experiencing pregnancy and childbearing complications that may eventually lead to death. The World Health Organization (WHO) envisions a world where "every pregnant woman and new-born receives quality care throughout the pregnancy, childbirth and the postnatal period" (Tuncalp et al., 2015). However, maternal mortality continues to be a global health concern, and Ghana is also affected by this phenomenon. About 300,000 pregnancy-related deaths occurred in sub-Saharan Africa in 2015 (Alkema et al., 2017). Blencowe et al. (2016) also indicated that nearly 2.6 million still births were recorded in 2015 in less developed countries including sub-Saharan Africa. To mitigate the prevalence of maternal mortality, the government of Ghana through its maternal health programmes introduced the Free Maternal Health Policy in 2008 (Dalinjong et al., 2018). Under the new policy, pregnant women are expected to register with the National Health Insurance scheme (NHIS) to facilitate the process of accessing comprehensive maternal health care services including antenatal care (ANC) services at relatively free cost.

Although the government has made efforts to create an enabling environment for increasing access to maternal health care services, utilization has consistently remained a major problem. Healthy pregnancy outcomes depend on investments in the preconception stage that enhances the physiological adaptability of the mother, and the utilization of appropriate cost- effective public health interventions accessible at antenatal services. Antenatal care services provides the platform for the initiation of continuum of care service provision within the reproductive health system. It provides a unique opportunity for the provision of key maternal health

interventions such as screening, diagnosis and preventive interventions for maternal diseases. Antenatal care services have been proven to be one of the major interventions that protect and saves lives if appropriate and timely interventions are implemented. Through antenatal care services, health workers are able to communicate better with pregnant women and support them during the period of gestation (WHO, 2016). Equitable access to maternal health services by all pregnant women and its utilization is crucial to ensure the effectiveness of these health promoting and life- saving interventions.

The global interest and commitment to promote the wellbeing of women and children is demonstrated in the Goal 3 of the Global SDGs (United Nations, 2021). Some of its indicators are maternal mortality ratio, proportion of births attended by skilled health personnel, neonatal mortality rate, etc. and these reflect the significance of maternal health issues globally. Campbell et al., (2006) explained that ANC is one of the most cost-effective interventions that helps to mitigate the impact of pregnancy complications. Fisk et al. (2011) also reiterated that optimization of existing research findings on use of antenatal care services and other maternal health interventions helps to alleviate maternal and neonatal diseases. The World Health Organization (2017) defines Antenatal Care (ANC) to include the care rendered by qualified health professionals to adult and adolescent pregnant females to ensure that during pregnancy, they and their unborn children maintain an optimal healthy condition. The World Health Organization further categorizes antenatal care interventions into four main groups; namely: (i) risk identification, (ii) prevention, (iii) management of pregnancy-related or concurrent diseases, and (iv) health promotion and education, including counselling on the relevance of delivering a child in the presence of and with the assistance of a qualified health worker (Hackett et al., 2019). Despite differences in antenatal care in developed and developing countries, there is a general consensus in these regions that the patronage of antenatal care services is a lifesaving remedy for pregnant women and their unborn children (Mgata &

Maluka, 2019). Furthermore, ANC visits creates the avenue for providing malaria preventive measures during pregnancy, early identification and management of obstetric issues, testing for HIV/AIDS and other sexually transmitted infections, and the administration of tetanus toxoid vaccines (Hackett et al. 2019). It also helps create a sense of ease with the health professionals and in the health environment, which will subsequently increase the likelihood delivery and post-natal care at the medical establishment (Dixon et al., 2014)

The Free Maternal Health Policy is aimed at waiving off all maternal care fees for pregnant women who visit public health facilities to patronize such services. This initiative was first implemented in the four underprivileged regions, namely Central, Upper East, Upper West and Northern Regions as a pilot, and later extended to all other parts of the country (Arthur, 2012). The free maternal health policy was introduced with the notion that the costly nature of maternal services hindered its utilization, especially among the poor in Ghana (Abor & Abekah-Nkrumah, 2009). Similar provisions for pregnant women were made in the National Health Insurance Scheme when it was promulgated in 2012 (Dixon et al, 2014). However, when the government noticed that there were some inequities in these individual policies, maternal care was tucked under the National Health Insurance Scheme. In addition to the free maternal services including antenatal care that pregnant women received, they were exempted from paying premium and renewal fees for the NHIS (Dixon et al, 2014). This change was also influenced by the need to achieve the Millennium Developments Goals 4 and 5 which sought to reduce child mortality and improve maternal health, respectively. Although the aforementioned assertion indicates that certain provisions had been made to ensure that woman have access to antenatal services for an incident-free pregnancy and childbirth, the utilization of these services was highly dependent on some factors, such as spousal backing and decisions concerning the use of maternal health services (Whyte, et al., 2013), education level (Sakeah

et al., 2017), being insured under the National Health Insurance Scheme (Afaya et al., 2020), and wealth/ income level (Arthur, 2012), among others. Given the importance of antenatal care in the lives of pregnant women and their foetuses in ensuring good health outcomes and limiting maternal mortality, it has become essential for the government to make efforts to encourage the utilization of antenatal care service among pregnant women in the entire country.

1.2 Problem statement

The prevalence of maternal mortality continues to be a major health concern across the world. It is estimated that a global average of 500,000 deaths, caused by various pregnancy and childbirth complications, are recorded every year (John, Binu, & Unnikrishnan, 2019). In 2013 for instance, 99% of maternal deaths occurred in low-income countries, with the sub-Saharan Africa region contributing about 62% (WHO et al., 2014). Ghana is not exempted from the plights of maternal mortality. The maternal mortality ratio stands at 310 deaths per 100,000 live births (Ghana Maternal Health Survey, 2017). The cause of maternal deaths could be mainly attributed to the absence of quality antenatal care services for pregnant women (World Health Organization, 2015). Kakati, Barua, and Borah (2016) opine that if there exist a proper provision of care and handling during the pregnancy phase, about 88% to 98% of all maternal deaths could be circumvented. Consequently, the availability of ANC, which is one of the four main pillars of safe motherhood (McDonagh, 1996) is crucial in spotting and addressing all potential health threats for pregnant women and unborn babies (Onasoga, Afolayan, & Oladimeij, 2012). It appears that the availability of antenatal care services has had little or no impact in significantly reducing the maternal mortality in Ghana as the maternal mortality rate is still an issue of concern as the country is still nowhere near achieving the Sustainable Development Goal (3.1) target of 70.00 per 100,000 live births by 2030.

Notwithstanding government's efforts in making antenatal care readily available, there are still certain factors that limit the utilization of antenatal care services among pregnant women in the country. For instance, in some rural areas in Ghana, the provision of a comprehensive antenatal care is usually hindered by issues, such as lack of diagnostic apparatus, inadequate staff, and poor referral linkages (Ayanore, Pavlova, & Groot, 2016; Amoakoh-Coleman, et al, 2016). Due to this, most pregnant women are usually referred to other equipped private and public facilities that are distant from their areas of residence. The subsequent costs incurred in visiting these facilities, as well as the loss of time may demoralize these women from complying with their referral orders of attending ANC, which could also result in the late detection and treatment of pregnancy-related issues.

Furthermore, the timely attendance of ANC among adults seems to be different from that of adolescents. Thus, the latter may have limited control in terms of decision making and financial resources (Hackett et al., 2019). Moreover, certain cultural and religious norms and values of some pregnant women could influence them to totally refrain from accessing formal health care and opt for traditional health care. The utilization of ANC services could be further determined by marital status and educational level of the pregnant women (Katemba, 2018). It is expedient to note that the failure to access antenatal care services could result in the upsurge of pregnancy and childbirth complications, which may ultimately lead to death. Once women are deterred in one way or the other from utilizing ANC services, their lives could be at risk.

Some valuable research have been conducted to unravel the factors associated with patronizing ANC services in different parts of the world including Ethiopia (Tekelab et al., 2019), Pakistan (Noh et al., 2019) and South-East Asia, specifically in Indonesia and Philippines (Wulandari

et al., 2021). However, there is limited information about these factors in Ghanaian literature (Sakeah, 2017). Besides, there is the need to conduct such studies in different geographical areas in the country to allow for a comparative discussion about the factors associated with ANC service utilization in various Ghanaian settings. This will provide policy formulators useful information and they will be better informed in designing initiatives to encourage and facilitate the utilization of ANC services nationwide.

Accordingly, the study explored all significant factors that influenced utilization of antenatal care services in the New Juaben South Municipality. A review of the Ghana Demographic and Health Survey (2014) showed that about 87% of pregnant women made 4+ antenatal visits in Ghana. The Northern (73.0%), Volta (77.3%) and Eastern regions (77.4%) recorded lower attendance rate than the national average (87.3%) in 2014 (GDHS, 2014). In 2014, the New Juaben South Municipality recorded 63.9% utilization for 4+ antenatal visits and was reduced to 63.3.% and 63.2% in 2015 and 2016 respectively (GHS/NJS, 2017). However, with the introduction of the revised WHO ANC standards of 8+ antenatal visits in 2016, New Juaben South Municipal begun reviewing the uptake trends to match with the new standard. In 2018, the municipality recorded 8+ antenatal visits of 36.6% which further reduced to 34.7% in 2019 and later to 33.6% in 2020 (GHS/NJS, 2021). The 2017/2018 Ghana Multiple Indicator Cluster Survey report showed that majority of women who utilize antenatal care services receive key services including screening. However, the provision of intermittent preventive treatment (IPT) that seeks to protect women from malaria infection was not received by nearly half of the women. These are essential parts of ANC assessment which every woman is expected to receive during the nine-month cycle. It is therefore important to understand why some pregnant women feel reluctant to utilize ANC services despite the enormous benefits it provides the

pregnant woman and her unborn baby. This study was therefore conducted to unearth some of the factors that influence the utilization of ANC services within the district.

1.3 Justification of the study

In line with the global commitment to eliminate challenges affecting maternal and child health, Ghana has implemented key interventions aimed at improving maternal health outcomes of the country. However, Ghana still lags behind the Millennium development Goal 5.1 target of 190 maternal deaths per 100,000 live births and is yet to attain the corresponding Sustainable Development Goal 3.1 target of 70 maternal deaths per 100,000 live births. It is evident from different studies that through the implementation of appropriate maternal health interventions including increase in access to continuum of care within the maternal health care system, cases of maternal morbidities and mortalities decreases (Dairo and Owoyokun, 2010; Bliss & Streifel, 2015). There are disparities in ANC utilization between developed and developing countries and the corresponding maternal mortality ratio (Dairo and Owoyokun, 2010).

The New Juaben South Municipal Health Directorate over the years has increased the number of facilities conducting deliveries coupled with an increase in skilled health personnel. Despite the gains in facility coverage, the maternal service coverage have been dwindling as the years go by. Antenatal care registrants recorded in 2018 were 5,084 (84.8%), 2019 and 2020 were 5167 (84.2%) and 5,174 (82.4%) respectively. Even with an increased awareness creation and community-level advocacy, the four-time plus ANC visits in the district further decreased from 63.9% in 2108 to 63.3% in 2019 and 63.2% in 2020 (New Juaben South Municipal Annual Report, 2020). The decreasing trend in ANC utilization in New Juaben South Municipal is of great concern to public health considering its toll on healthy maternal outcome. It becomes pertinent to assess the factors influencing the utilization of antenatal care services among pregnant women in the New

Juaben South Municipal.

This study is significant for a number of reasons. Firstly, it would contribute to the depth of knowledge regarding factors associated with ANC utilization rate and enhance local literature on the subject. Secondly, it would provide valuable information to policy makers in designing policies to ensure an optimal utilization of antenatal care services in areas reporting high maternal mortality ratio. Also, health workers would be informed about the factors associated with ANC utilization so that they will be able to take practical steps to improve ANC service utilization in the various facilities and health centres. This study would help to improve the reproductive health status and reduce maternal and child mortality in the country (Zelalem *et al.,* 2014).). Finally, this study when published, would serve as a baseline by which future studies in the setting can be evaluated.

1.4 Research Questions

1. What is the rate of eight-time plus ANC utilization rate in New Juaben South Municipality?
2. What are the socio-demographic factors associated with ANC service in New Juaben South Municipality?
3. What are health service factors associated with ANC service utilization in New Juaben South Municipality?
4. What are the cultural and religious factors associated with ANC service utilization in the study setting?

1.5 General Objective and Specific Objectives

1.5.1 General Objective

The main objective of this study is to determine the factors affecting the utilization of antenatal care services in New Juaben South Municipality.

1.5.2 Specific objectives

1. To estimate the rate of eight-time plus antenatal care service utilization in New Juaben South Municipality.
2. To determine socio-demographic factors associated with utilization of antenatal care services in New South Juaben Municipality.
3. To identify health service factors associated with utilization of antenatal care services in the study area.
4. To determine cultural and religious factors influencing utilization of antenatal care services in New Juaben South Municipality.

1.6 Conceptual framework

The conceptual framework (Figure 1) is developed from Anderson's Behavioural Model of Health Services (Mbalinda et al., 2020). The Anderson's Behavioural Model (ABM) of Health Services depicts a system where health outcomes of any given population is dependent on key influencers. According to the model, environmental conditions which is defined by the available health care system of any given population determines the behavioural factors of the people who are to use health service. Three main factors are defined within the population characteristics, predisposing characteristics, enabling factors and need for health services. Attached to the population characteristics is the health behaviour of the users of health services.

The factors as explained in the model ultimately aims at health outcomes which are defined as the perceived health status and evaluated health status.

In application to this study, the ABM is used to explain the utilization of ANC services within the study area. Under the environmental factors, the study focused on the distance to health facilities, waiting time at the health facilities and the availability of health workers to provide required antenatal care services to pregnant women. Under this study, the environmental factors were categorized under the health service factors of the study objective. A number of factors explains the population characteristics among the pregnant women in the study area. Under the predisposing factors, the demographic characteristics such age, religion, marital status, education, religion, income levels and type of marriage were discussed. Another factor under the population characteristics is the enabling factors which in this study was explained as part of the health service factors would include availability of health workers, attitude of health workers, cost of service to the pregnant women, availability of medical products, quality of service, etc. in health facilities. The perceived need for ANC services would eventually influence the use of ANC services among pregnant women. The health behaviour of the model is explained in cultural and religious factors existing in the communities that most often affects the decision by women to use maternal health care services. The cultural and religious factors are defined with indicators such as participating in decision making, partner support, partner's level of education, support from in-laws, etc.

Both the environmental conditions and the population characteristics influence the outcome. Under the framework, environmental conditions including waiting time, availability of health workers directly influence the use of ANC services. Regarding the population characteristics, demographic characteristics such as age, marital status and occupation will determine the use

of ANC services. Enabling factors in health service, such as attitude of health workers, availability of medical products will also contribute directly to the use of ANC services. The health behaviour of pregnant women influenced under cultural and religious factors also contributes directly to the use of ANC services. Factors such as partner's support and the involvement of women in decision making on when, where and why to utilize maternal health care services is critical in determining the use of ANC services especially for married women.

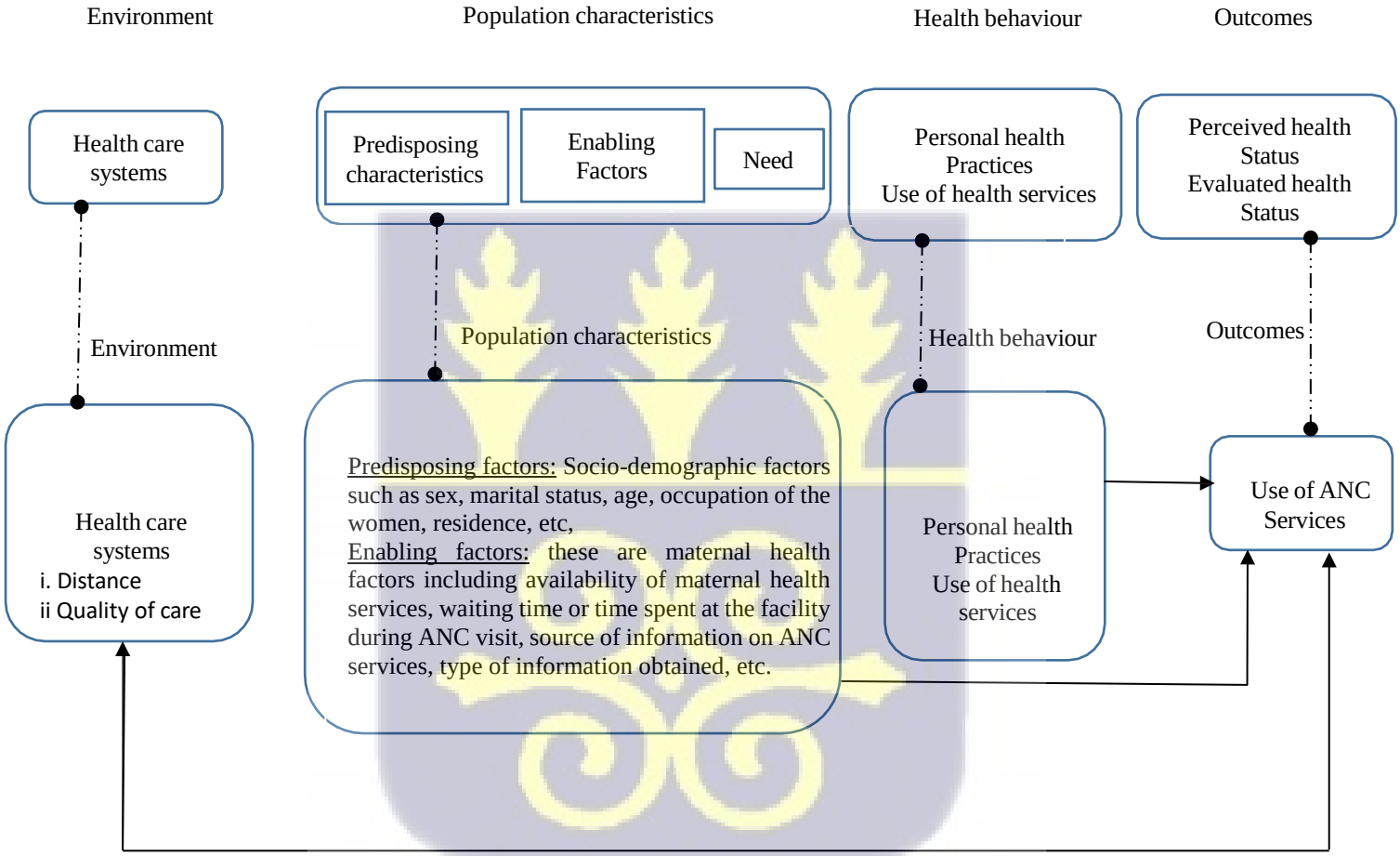

Figure 2.1: Conceptual Framework of Factors affecting ANC utilization among pregnant women in New Juaben South adapted from Anderson's Behaviour Model of Health Services Use (Anderson, 1995)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter present the various concepts and literature on the subject of study. Under the concept, the study discusses the general concept on antenatal care services, describing the various components and various stages of the services expected to be provided. The discussions on the various literature with focus on the specific objectives of the study. First, various observed ANC utilization rate across different WHO regions and countries is presented and discussed and concluded with other studies that have presented varied results of ANC utilization in different parts of Ghana. The final session of the literature discusses the three key factors that are been considered in this study, demographic, health service and cultural and religious factors. For each of the main factors of ANC utilization, the session outlines the key components and presents their main results as observed from different studies. Under this literature review, articles and publications were obtained from sources such as PubMed, Google Scholar, African Journal online and other reports development partners.

2.2 Concept of Antenatal care service

Dulla et al. (2017) explains that the occurrence of maternal morbidity and mortality is as a result of dangers and consequences that might have occurred during pregnancy. Even though maternal mortality spans from the time of child birth through to 24 days of postpartum, Adewoye et al. (2013) explains that majority of them occur at the time of child birth. Adewoye et al. (2013) postulate that the presence of midwives helps to reduce the risk of occurrence

maternal mortality. The WHO (2012) explains that antenatal care is the routine health check-ups and health screening assessment among pregnant women with the aim of helping to diagnose and detect early signs of the presence of disease which may present no symptom and to focus on addressing the challenges the disease may pose to the mother and the unborn child. It comprises of periodic assessment of health conditions of the woman in a health facility through clinical means with the aim achieving an improved health outcome after delivery. Kalayou et al. (2014) maintains that early assessment of pregnancy status and screening for any diseases helps in obtaining favourable health outcome for both mother and the child. Kalayou et al. (2014) further maintains that ANC over the years has served as the entry point for the administration of majority of maternal and other reproductive health interventions to women in general. Through ANC, interventions such family planning services, nutritional education, health condition screening and other essential services are provided to the woman. Dumba (2021) also indicates that through ANC services, pregnant women are able to receive adequate healthcare services at a central point. In one visit to a health facility, a pregnant mother is able to receive multiple services such as screening, health education, pregnancy assessment, disease prevention and diagnoses (Dumba, 2021).

The process of an antenatal care cycle largely begins with the presence or conception of pregnancy as per the WHO standard (Di Mario et al. 2005). However, the presence of pregnancy cannot be determined by the diagnosis alone but through the acceptance of the woman (Kuuire et al. 2017). The acceptance by the woman and the timing of the start of the antenatal visits is dependent on, to some extent (in rural communities), dependent on the cultural system within the woman's community. The confirmation of the presence of the pregnancy is confirmed through a diagnosis at the facility. After the confirmation, the pregnant is now referred to the maternal unit to initiate ANC visits. At her visit, detail biostats of the

woman with reference to the pregnancy and other relevant information is captured in a record book called “antenatal care” which is given to the woman to present to the facility anytime she visits the facility. The record book helps to monitor the pregnancy cycle and manage any complication that may arise during the nine-month period. At any gestation week, records of progress of the foetus is documented in the book including any other form complication that is observed. Gupta et al. (2014) indicated that periodic assessment and a review of the pregnancy history is conducted as a measure to monitor the growth of the foetus. One of the key historical assessments that is conducted is the woman’s parity, deliveries as well as the type of delivery. Women whose history shows at least one caesarean section as a means of delivery is monitored to ensure that similar approach is used during delivery. The decision for spontaneous vaginal delivery (SVD) is equally dependent on the position of the baby which is obtained through the monitoring of the pregnancy during antenatal care services.

In their annual update on maternal health service utilization, the World Health Organization (2016) maintains that through ANC services, the risk of maternal, and neonatal mortalities, still birth and preterm are reduced significantly. In assessing in the importance of the ANC services to women, Demuth et al. (2018) explains that ANC provides the best cost-effective services to pregnant women compared to any other health intervention. Comparatively, it is one of the cheapest but effective healthcare services provided to women and has the potential to cover wide scope and reach proportionately larger target population as compared to any other health intervention globally (Demuth et al., 2018). As a means of sustaining the health status of mothers and their unborn babies, Berhan and Berhan, (2014) indicates that ANC provides the best option for promoting healthy living conditions among mothers and their babies. Ndidi and Oseremen, (2010) also acknowledges the significant role ANC plays in advancing the continuum of care system in health care provision to pregnant women through

the period of antepartum to intra-partum and postpartum. Women who continue to use ANC services continuously are more likely to utilize the services of skilled birth attendant at child birth as compared to women who do not use ANC services (Amutah-Onukagha et al., 2017). In another report, UNICEF, (2017) established that ANC is the entry point for promoting healthy maternal outcome and by inferences reducing the risk of morbidity and mortality among pregnant women.

Due to its essential nature and the importance the world places on ANC services, WHO through its consultative discussions came up with best recommendations for the implementation of ANC services across the globe (WHO, 2016). These recommendations are developed into guidelines that are to be followed through by healthcare providers at various level of health care provision which aims at reducing the risk of complications in pregnancy. Again, the guidelines seek to tackle complex issues which may sometime affect service provision on practices and delivery of ANC services among pregnant women. In most cases, these complex issues are handled through focus antenatal care services. Through focus antenatal care services, maternal complications that may have affected the development and growth of the foetus and the mother are identified and addressed accordingly to avert any possible future death. The guidelines outline five key components of ANC services that is required to provide to the pregnant woman during the nine-month cycle (see Appendix III). However, WHO (2016) indicates that women who receives continuous services through 8+ ANC visits are more likely to complete the entire cycle to be able to receive all these essential services as required. In recent discussions, it has been observed that for pregnant to receive all the essential components of antenatal care services, it is important that every pregnant woman receives 8+ antenatal visits prior to delivery (Mugo et al., 2020).

Despite the significant role ANC services play in reducing the rate of maternal morbidities and mortalities, records of maternal morbidities and mortalities are high especially in developing countries (WHO, UNICEF, UNFPA, 2019). The high records of maternal morbidities and mortalities in developing is largely attributed to poor utilization of maternal health care services especially antenatal care services and access to skilled delivery (Mannava et al., 2015). Dulla et al. (2017) therefore advocates for timely utilization of ANC services among pregnant women as a means of reducing the risk of maternal morbidities and mortalities in developing countries.

2.3 Utilization of Antenatal Care Services among pregnant women

Generally, antenatal care encompasses the health care and sensitization given to pregnant adult and adolescent females to ensure they maintain a positive health status throughout the pregnancy period (Afaya et al., 2020). Formal antenatal care is essential for every pregnant woman in the pregnancy phase because it can help reduce pregnancy-related complications, impairment, and ultimately, death of mothers and their babies (Sakeah et al., 2017). The World Health Organization (WHO) has recommended that it is prudent for pregnant women to access ANC services at least eight visits at weeks 8-12,20-26,30,34, 36-38weeks and 40 weeks so that all risk factors in the pregnancy are detected and mitigated on time (World Health Organization, 2016). Thus, failure to utilize ANC services is likely to worsen the adverse effects of unhealthy lifestyle during pregnancy. The new WHO 2016 guidelines seeks to facilitate the implementation of focused antenatal care services which aims at giving person-centred care to pregnant women which enhances timely provision of information and assessment of pregnant status at all times. Inclusive of this new approach is the provision of psychological and emotional support within the health system which is to be facilitated by health workers, preferably midwives. The utilization of antenatal care services among pregnant women differs

from one country to another and from one study area to the other. Until the recent recommended protocol/guideline by the World Health Organization where women are expected to make at least eight antenatal care visits, women were initially required to make at least four antenatal care visits (WHO, 2016). However, in most of the studies reviewed and discussed below, utilization of ANC services was based on 4+ ANC visits. Few of the recent studies focused on 8+ ANC visits, using the new protocol.

Ekholuenetale (2021) conducted a prevalence study on eight or more antenatal care studies using multi country level national data. The study, which reflected the WHO standard, used recent national surveys in developing countries including Ghana. The study observed a pooled 8+ antenatal care visit of 13.0% for ANC utilization. Further analysis of country specific prevalence showed that Jordan had higher 8+ ANC utilization prevalence of 70% widely followed by Ghana with a utilization rate of 43%. The assessment of the Ghana's ANC utilization prevalence was based on the Multiple Indicator Survey which was conducted in 2019. Ahinkorah et al. (2021) also conducted a study on the barriers associated with access to healthcare services and utilization of antenatal care services in sub-Saharan Africa. The study by Ahinkorah et al. (2021) focused on 8+ antenatal care services among pregnant women. The study observed that only 17.6% of the women in Nigeria made at least eight antenatal care visits prior to delivery. Odusina et al. (2021) also analyzed various data from sub-Saharan African countries to examine noncompliance with the World Health Organization's 8+ ANC visit recommendations. The results of the analysis showed that ANC utilization among the women was very high with a pooled 8+ ANC utilization prevalence of 92.3% with Zambia recording the highest prevalence (98.1%) while Libya recording the least utilization prevalence (73.4%).

While it is noted that women around the world now utilize ANC services at least once (86%), only 62% of them utilize it eight times, with the lowest rates recorded in South Asia and sub-Sahara African regions (UNICEF, 2018). As revealed by an analytical review of the WHO Global Health Observatory data repository, there is a clear indication that between 2000 and 2017, ANC coverage was indirectly related to global maternal mortality rate (World Health Organization, 2020). For instance, France has 99% ANC utilization with a maternal mortality rate of 8 per 100,000 live births. In contrast, countries like Nigeria and Ghana have ANC coverage of 49.1% and 89.3% with maternal mortality rates of 917 maternal deaths per 100,000 live birth and 310 maternal deaths per 100,000 live births respectively. However, there exist certain disparities in ANC utilization among rural and lower socio-economic groups in Ghana (Afaya et al., 2020).

Tegegne et al. (2019) conducted a systematic review of the various surveys that have been conducted in Ethiopia with emphasis on the 2014 Ethiopian Service Provision Assessment Plus survey and the 2016 Ethiopian Demographic and Health Surveys. The study sought to assess the prevailing rate of ANC utilization in the country by juxtapose the two surveys and making deduction on what the existing ANC utilization rate was for the country. Prior to the study, it was observed that the country had noted some major shortfalls in the general maternal health indicators comparative to Millennium Development Goals and later to Sustainable Development Goals. With over 6,000 data available from the two surveys, Tegegne et al. (2019) observed that more than 38% of the women in Ethiopia who have ever given birth had never utilized ANC services prior to delivery in their last pregnancy. The study further observed that less than 40% of the women had 8+ ANC visits during their last pregnancy. The proportion of women who had 8+ ANC services was relatively higher among urban women (66.9%) as compared to women who live rural communities (28.3%). Even though the study noted that more than a quarter of the women had 8+ ANC visits, it was noted that the timing of the ANC

initiation was very late for most women. The study observed that more than 50% of the women begun their ANC visits in the second trimester which most often makes it difficult to for such women to complete all the required components in the WHO guidelines.

Kumar et al. (2019) conducted a similar study as Tegegne et al. (2019) in India where past surveys where analysed to ascertain the prevalence of ANC utilization among pregnant women in the country and its associated factors. Unlike the study by Tegegne et al. (2019) where records of only 6,000+ women used for the analysis, Kumar et al. (2019) obtained data on records of 190,898 women who had delivered as at the time of the surveys. As done in most studies, the measurement of ANC utilization was based on 8+ ANC attendants. The results of the study by Kumar et al. (2019) shows that less than a fourth (21%) of the women had 8+ ANC utilization and were able to complete the required components as indicated in the guidelines. On some specifics, the study noted that about 31% of women were able to access folic acid within the required 100 days period. The uptake of one-dose tetanus toxoid injection was the only component that had higher utilization rate of 90%. As observed in the studies by Tegegne et al. (2019), this study also observed that women who reside in rural communities had lower rates of 8+ ANC utilization (15.4%) as compared to women in urban communities (32.1%).

Tekelab et al. (2019) conducted a meta-analysis and systematic review of studies that have been conducted in Ethiopia on antenatal care utilization. Prior to the study, other national health reports had indicated that only 62% of the women in the country had utilized ANC services at least once. With a pooled analysis of various studies, the study by Tekelab et al. (2019) observed a pooled ANC utilization rate of 63.3%. The observed utilization rate was measured using at least one visit to the facility. However, the rate of ANC utilization among pregnant

women was relatively low (25.6%) when 8+ ANC visit was used as the measurement for utilization. The study further noted that urban women had higher ANC utilization rate as compared to rural women. Tessema et al. (2021) conducted an analysis of different demographic health surveys that have been conducted between 2006 and 2018 across 36 countries within sub-Saharan Africa (SSA). The study used data from 260,572 women across the identified countries and did a pooled analysis of ANC utilization among women who had at least one live birth prior to their respective surveys. The study observed a pooled ANC utilization prevalence of 58.5% across the 36 countries. Regional analysis of the study results further showed that ANC utilization among pregnant women in Southern Africa was relatively higher (78.9%) as compared to the observed pooled prevalence in Eastern Africa (53.3%) while the West African sub-region recorded a prevalence of 59.6%.

Adedokun and Yaya (2020) also did a similar study as Tekelab et al. (2019) in conducting correlates of analysis of various demographic health surveys across 31 countries SSA. The study used surveys that had been conducted from 2010 to 2018 and use the data of 235,207 women within the reproductive age in the selected countries. The study noted that about 13% of the women across the 31 regions had not ever utilized ANC services in their previous pregnancies. Using 8+ ANC visits as measurement of utilization, the study noted that 53% of the women had fully utilized ANC service during their last pregnancy while 35% had partial utilization. Those with partial utilization had visits the facility for ANC service for less than four times prior to delivery. Among the 31 countries where the study was done, Ghana had the highest ANC utilization rate with a prevalence of 86.0% followed by Gambia (78.1%) and South Africa (78.1%). On the other side, Chad, Niger and Burkina Faso recorded the least ANC utilization rates of 28.1%, 33.1% and 34.6% respectively. Ahinkorah et al. (2021) in their study tried to measure the utilization of ANC service with 8+ visits as per the current WHO guidelines and requirements. The study which was also done using available demographic and

health surveys of four countries in SSA (Zambia, Guinea, Nigeria and Mali). The prevalence of 8+ ANC utilization across the countries as observed in the study were 1.5% in Zambia, 2.8% in Guinea, 3.5% in Mali and 17.8% in Nigeria. The result clearly showed that using the new guideline for ANC visits, most countries are likely to record lower rates of ANC utilization.

Sakeah et al. (2017) discussed the factors that influence the utilization of four-time ANC visits among rural communities in Ghana using Navrongo, Dodowa and Kintampo as the study sites. The study observed a higher eight-time ANC utilization rate of 86.1% across the three study sites. However, the rate of eight-time ANC utilization was higher in Navrongo (92.0%) as compared to Kintampo (83.4%) and Dodowa (83.0%).

Amoako et al. (2020) analyzed the factors that influence the utilization of antenatal care services in East Akim Municipality using a sample of 310 women. The study observed that almost all the women (98.4%) in the municipality at one point in time during their pregnancy cycle visited the health facility to access ANC services prior to delivery. Using the 8+ ANC visits as a measurement of full utilization, the study observed that 83.5% of the women had at least eight visits during pregnancy. However, not all the women who had at least eight plus ANC visits begun their ANC services within the first trimester. The study noted that 58% of the women initiated their ANC visits in the first trimester. For all those who started both in the first and second trimester, 61% of them were able to attend ANC services regularly as per schedule. These results clearly show that an analysis of ANC utilization should not only be limited to the number of people of had eight plus visits but also to further investigate to know when the visit begun and how regularly were the women to their agreed schedules.

2.4 Factors Affecting the Utilization of Antenatal Care Services

The World Health Organization has over the years made several efforts to enhance universal utilization ANC services across the globe, there are however, certain conditions that have affected full utilization of ANC services especially in developing countries (Afaya et al., 2020; (WHO, 2016). This session of the literature tries to discuss the various factors that influence the use of ANC services by pregnant women from different perspectives.

2.4.1 Socio-demographic factors associated with antenatal care services

Maternal Age

Gudayu et al. (2014) in their study on the timing and the factors affecting the use of ANC services in Ethiopia discussed the influence of maternal age on ANC uptake. The study noted that pregnant women who were aged 25 years and below had two time the odds of utilizing ANC services and starting the ANC attendance within the first trimester of the pregnancy as compared to their colleagues who are aged more than 25 years. The study further noted that women who got married at aged 25-30 years were more likely to initiate ANC services on time (at first trimester) as compared to teenage pregnant mothers. A study by Dulla et al. (2017) on antenatal care utilization and its associate factors among pregnant women noted that the proportion of pregnant women who utilize eight time ANC services were relatively higher among pregnant women aged 25-30 years (54%) as compared to pregnant women who are less than 20 years (20.1%) and above 30 years (20.4%). Mugo et al. (2020) also noted that pregnant women who are aged 20-29 years are three times more likely to utilize fully ANC services and initiate ANC services at early stage of the pregnancy as compared to pregnant women who are less than 20 years.

Residence

Wulandari et al. (2021) did an extensive analysis of rural-urban disparities on antenatal care utilization among pregnant women in South-East Asia with emphasis in Philippines and Indonesia. The study noted that women who live in the urban towns of Philippines had 0.932 odds of utilizing 8+ ANC services as compared to women living in rural communities. Similarly, urban women living in Indonesia were 1.255 times more likely to make 8+ ANC visits as compared to rural women in the same country. Mugo et al. (2020) also observed that nearly 80% of the women who completed their ANC cycle were living in urban areas. The study therefore concluded that utilization of 8+ ANC services would have reached a national coverage of 70% if all the women in the country were living in urban communities. The study further noted that women who live in urban areas were eight times more likely to received complete components of ANC services as per the guideline as compared to their colleagues who live in rural areas. Tekelab et al. (2019) also concluded that women who live in urban areas were two times more likely to make 8+ ANC visits as compared to women who live rural communities. Tekelab et al. (2019) concluded that there is a positive correlation between the utilization of antenatal care and urban residence and that pregnant women in urban areas are likely to have a proximal access to ANC services as compared to those living in rural centres.

Education

Tessema and Minyihun, (2021) conducted a multi-country analysis of various demographic and health surveys of some selected countries within East Africa on utilization of ANC services among pregnant women. The study observed that full utilization of ANC services with 8+ ANC visits has a positive relationship with the educational status of pregnant women. The study noted that women who had acquired primary education had 1.09 odds of making at least eight ANC visits as compared to women with no education. Similarly, women with secondary education

had 22% increased chances of completing 8+ ANC visits than women with no education while women with tertiary education had 51% increased chances of completing ANC sessions with at least eight visits compared with pregnant women who have no education. The results of the study showed that as the educational status of a woman increases, the chances of making at least eight antenatal visits also increases. Similar to the findings from Tessema and Minyihun, (2021) in East Africa, Wulandari et al. (2021) in their study in Philippines also observed a positive relationship between ANC utilization and educational status of a pregnant woman. In their study, Wulandari et al. (2021) noted that women with primary education were 2.46 times more likely to make at least eight ANC visits as compared to women with no education. Again, women who completed secondary and tertiary levels of education were 4.12 and 6.52 times more likely to complete at least eight ANC visits as compared to those who had no education. Amoako et al. (2020) in their study noted that women with tertiary education were 10 times more likely to make at least eight ANC visits compared to women without education.

Occupation and Income Levels

The study by Wulandari et al. (2021) further noted that as a pregnant woman's income increases, her level of ANC utilization also increases. The study observed that women within the middle-income category (as per the study criteria and categorization) had 59% chances of completing ANC schedules and having at least eight ANC visits as compared to women in the poorest category. Similarly, women within the richer and richest category of income levels were 2.09 and 5.27 times respectively more likely to make at least eight times ANC visits as compared to women in the poorest category. Tessema and Minyihun, (2021) also observed that women with middle and rich wealth (income) status had 9% and 13% chances respectively of utilizing the recommended ANC visits as compared to women with poor income status.

Amoako et al. (2020) in their study observed that women who are self-employed were 2.4 times more likely to complete their ANC schedule and had at least eight ANC visits as compared to women who were unemployed. Tessema and Minyihun, (2021) further observed that women who are employed in any form had 12% chances of completing the recommended ANC schedules as compared to women who are unemployed.

Similarly, Afaya et al.'s (2020) quantitative study revealed that pregnant women who had attained at least basic education were more likely to utilize ANC services as compared to those with no education. Another socio-demographic factor that is associated with ANC service utilization as found in literature is the wealth or income level of the pregnant woman (Arthur, 2012). Thus, pregnant women with sufficient amount of income are likely to access ANC services as compared to poor pregnant women.

Marital Status

The study by Afaya et al. (2020) in Ghana noted that marital status of a pregnant woman is an important determinant especially in rural communities where community members know each other. The study observed that women who were not married had 84% chances of not reaching standard ANC attendance of eight or more as compared to women who are married. The study noted that women who are not married may sometime initiate ANC visits late for fear of intimidation and harassment from other women. Owili et al. (2016) did an extensive study on the nature of family structure and systems and how that affects utilization of ANC services in Kenya with focus single and at least eight-time visits. The study observed that women who are married and live with their respective husbands have higher odds of completing their ANC schedules and having at least eight visits as compared to women who are not married. However, Tarekegn et al. (2014) in a different study observed diverse results as compared to most of the studies. The study by Tarekegn et al. (2014) showed that women who are living alone and women

who are currently not married had higher odds of utilizing more ANC services as compared to women who are currently married.

Parity

Tarekegn et al. (2014) in their study observed some level of associated between ANC utilization and the number of pregnancies or children the mother has had in the past. The study noted that women who were about giving birth for the first time and women who have had only one child in the past 30% increased chances of utilizing ANC services as compared to women who have had more than three deliveries in the past. Dubale Dulla et al. (2017) in their study also observed that the number of pregnancies a woman has had as well as the number of live births of the woman play a significant role in the use of ANC services. Women with less than three pregnancies in the past and women with less than two live births had higher probability of making 8+ ANC visits as compared to women with more than five pregnancies and four live births.

Other demographic factors

Noh et al. (2019) in a study in Pakistan noted that the odds of making at least 8+ ANC visits to a health facility reduces significantly when the household size is increased over time. Households with less than four members are more likely to complete ANC sessions as compared to women who live in households with more than six members. Okedo-alex et al. (2019) on their part indicated that the use of ANC services during pregnancy may be influenced by religion. In their study, Okedo-alex et al. (2019) observed that women who belong to the Christian religion had higher odds of making at least 8+ ANC visits as compared to Traditional and Muslim women. Ononokpono, (2015) had earlier observed a similar result in a study in Nigeria where it was observed that women who were Christians were 2.3 times more likely to have more ANC visits as compared to Muslim women. Makate and Makate, (2017) also noted

that it was easier for Christian women to complete their antenatal schedules as per standard than for a Muslim woman to do same.

2.4.2 Health Service factors associated with antenatal care services

Health services factors which may take several form including attitudes of health workers, cost of service, etc. have been outlined and discussed in this session.

Attitude of health workers

Prior to a study by Ziblim et al. (2018), it had been reported Ghana Health Service, Yendi Municipality Health Directorate that there was an increase in adolescent pregnancy, however, ANC attendance in the various health facilities showed a low visit for adolescent girls. The study by Ziblim et al. (2018) therefore sort to ascertain the reasons behind the low use of ANC services during pregnancy by adolescent pregnant women. The study observed that poor attitude of health workers towards the girls was a major barrier to the use of ANC services by the adolescent pregnant girls. The study which was qualitatively done documented some of the key responses from the participants as *"they don't respect us because we are adolescent, some even insult us for disturbing them and tell us why have become pregnant at this tender age".* In most cases, each adolescent visited the facility for ANC services less than eight times and they were more likely to deliver at home just to avoid the insults and mistreatment of health workers. Mannava et al. (2015) tried to do a detail assessment of the reasons behind poor attitude of maternal health care providers towards pregnant women and its implication for maternal health care services. The study observed that maternal healthcare providers' attitude has direct consequence on the outcome of antenatal care utilization as well as utilization of skilled delivery. The study observed that women who had bitter experience during their first or second antenatal visits are not likely to return to the facility for further maternal care.

Eke et al. (2021) also did a qualitative study on the perceived barriers to utilization of antenatal care and skilled delivery services among pregnant women in selected communities in Nigeria. In this particular study, the researchers decided to solicit information from the maternal healthcare providers themselves to compare with various studies within the country that had used pregnant women to discuss maternal healthcare utilization barriers. The study noted that attitude of health workers as mentioned the health workers themselves was a major problem especially in rural communities. Women in rural communities suffered most mistreatment in the hands of health workers than those in urban areas and this affected utilization of antenatal care services in the rural areas.

Maternal Health Awareness creation and education

The study by Noh et al. (2019) noted that women who receive maternal and child health (MCH) information and education from a qualified health workers (mostly a midwife or a trained nurse) had a 31% chances of utilizing the recommended number of ANC visits during pregnancy as compared to women who did not receive any information on MCH. The study noted that those who also received their education from other licensed health workers had 17% chances of completing their required antenatal care visits as compared to those who did not receive any education on MCH. Yanagisawa et al. (2015) also looked at the effect of MCH handbook on knowledge and practice among pregnant women. The study noted that women who received adequate information on the MCH handbook were 5 times more likely to complete their antenatal schedules prior to delivery as compared to women who did not receive adequate information. The measurement of adequate knowledge was high among women who received their education from midwives and other nurses in the health facilities than those who had their education with either friends or family members.

Cost of antenatal care service

Ouédraogo et al. (2021) also assessed the impact of out-of-pocket payments for ANC services on ANC attendance in some communities in Niger. Contrary to what has been the norm in most developing countries, the study observed that women who were making out-of-pocket payments had higher proportion of ANC attendance and were more regular to schedule than women who did not do out-of-pocket payments. Pell et al. (2013) also did a qualitative study in Ghana, Malawi and Kenya to determine the factors that influence the use of antenatal care services among pregnant women. The study noted among other factors that the cost of antenatal care services was a major factor in determining the number ANC visits a woman is able to make. According to the study, in Ghana for instance, despite the free maternal health policy which has been instituted by government, pregnant women are required to make some payments for ANC procedures and processing of cards, payment for other services that may not have receipt affects the number of ANC attendance the women were able to make. The study further noted that women who did not have enough money to make payment on almost every visit did not continue ANC visits and resorted to traditional birth attendants for support through the pregnancy to delivery.

Tegegne et al. (2019) in their study noted that the cost of medication or drugs prescribed by midwives/doctors to pregnant women deterred women from fully utilizing antenatal care services. It was observed that majority of the women classified the medication as an expensive one, hence the need for pregnant women to receive free medication during the gestation period. Browne et al. (2016) on their part acknowledge the role health insurance scheme plays in reducing the burden of out-of-pocket payment among pregnant women for maternal health care services. Browne et al. in their study analyzed the impact of health insurance scheme in Ghana on antenatal care attendance and skilled delivery utilization in rural Ghana. The study observed

that antenatal care attendance is likely to increase by 96% if all women especially in rural Ghana are insured. Sakeah et al. (2017) in their study also observed that women who possessed health insurance cards were eight times more likely to make ANC visits than women who did not possess any health insurance card.

Time spent at health facility and health facility conditions

Alanazy and Brown, (2020) conducted a study that seeks to ascertain individual and clinical factors that influences the use of antenatal care attendance among pregnant women in Saudi Arabia. The study, among other factors, looked at clinic setting factors and time spent at the facility. For clinical settings, the study noted that the infrastructure at the facilities and its environment had influence on ANC attendance. Where the environment setting did not meet client's expectation, the attendance was very low. On time spent at the facility, the study observed that most pregnant women who attended ANC sessions at initial stage spent more than 3 hours in the facility. This affected subsequent attendance and further reduced the number of visits women had to make prior to delivery. The study observed that, women who spend less than an hour for ANC sessions are more likely to continue their schedules as compared to women who had more than 3 hours per session. Mugo et al. (2020) in the discussion on the compliance to new WHO recommended ANC utilization noted that women who utilize private facilities are more likely to meet the required 8+ antenatal care visits as compared to those who utilize public facilities. The environmental condition at private facilities encourages pregnant women to visit the facilities who are more likely to have place to relax. The study noted that because of the good environment private health facilities presents, pregnant women do not even get worried when the time at the facility is more than expected number of hours. The study concluded that the national ANC attendance would have increased by 68% if all facilities were privately managed.

Distance to Health Facilities

The study by Amoako et al. (2020) further analyzed how the distance to the nearest health facility from the place of residence could influence the outcome of ANC utilization among pregnant women. The study noted that women who live less than 5km from the nearest facility were 3.2 times more likely to complete their antenatal care schedules and makes at least eight visits prior to their delivery as compared to women who live 10 km away from the nearest facility. Tsegay et al. (2013) in their study also observed that proximity to a health facility is a critical factor in determining attendance to ANC services. The study noted that women who stay within 5 kms from a health facility have 83% chances of making more ANC attendance as compared to women who live 10 kms away from a facility. Ziblim et al. (2018) in their study among adolescent women noted that women who live within 1 km radius from a facility are able to makes more than eight visits for ANC services than adolescent girls who stay over 5 km away from the nearest facility.

The study by Tegegne et al. (2019) discussed the factors that influenced the utilization of 8+ antenatal care visits among pregnant women. Significantly, the study noted that women who lived close to health facilities had higher odds of utilizing antenatal care services compared to women who lived more than 5 kms away from their ANC centres. Allegri et al. (2011) had earlier, in a study in Burkina Faso, postulated that distance to nearest ANC centre is critical in promoting positive utilization of ANC services as well as the involvement of men. In addition to the distance, Tegegne et al. (2019) further observed that the attitude of health workers facilitated the utilization of antenatal care services. Largely, the women had very good experience at the health facilities and the resultant effect was an increased utilization of ANC services. It was therefore concluded that pregnant women who visited health facilities where

Patient-centred care is the focus were motivated to continue to utilize the facility for all antenatal visits.

Other health services factors

There are certain obstetric factors that are associated with the utilization of antenatal care services. In a cross-sectional study that explored the timing and factors associated with first antenatal care booking among pregnant women in Northwest Ethiopia, it was revealed that pregnant women who had been previously pregnant were more likely to utilize ANC services given the level of awareness and experience they had on accessing these services (Gudayu, Woldeyohannes, & Abdo, 2014). Similarly, a study conducted by Zegeye, Bitew and Koye (2013) on the determinants of early antenatal care visits among pregnant women attending ANC in a vicinity in Ethiopia revealed that obstetrics factors, such as history of pregnancy complications, good knowledge on early ANC visit, and having planned pregnancy had some influence on the utilization of antenatal care services.

2.4.3 Socio-cultural and religious factors

Social cultural factors discussed in this session includes the role and involvement of partners in seeking antenatal care, belief system and other social system that influence the use of ANC services.

Partner support and decision-making power on use of antenatal care services

Research conducted to explore intra-familial power on maternal health care revealed that the influence of an intimate partner of a pregnant woman was also a factor associated with ANC utilization (White et al., 2013). Specifically, support from the spouse of a pregnant woman concerning the use of ANC services was a determinant of women's access to ANC services (White et al., 2013). Tessema et al. (2021) in their systematic study across SSA countries

observed that women who are responsible for the decision on utilization of antenatal care services have 26% chance of making eight or more ANC visits as compared to women whose husbands are the decision makers for accessing antenatal care services. The study further observed that women who take decision on the use of antenatal care services together with their partners have 36% chance of making eight or more ANC visits as compared to women whose partners are the final decision makers on the use of ANC services. Adedokun and Yaya, (2020) also noted that women who do not find it difficult to get permission to visit the facility were 73% more likely to utilize ANC services adequately as compared to women who most often finds it difficult to get permission to visit the health facility. The study noted that permission to visit the health facility is mostly obtained from partners/husbands.

Belief System

In Ghana, most religious associations rely on spiritual assistance rather than on formal medical care (Aborigo et al., 2015). This belief system among religious faiths increases the risk of maternal complications especially during the time of delivery (Aborigo et al., 2015). This belief system has resulted in over dependence on traditional birth attendants who claims mastery over maternal health care services. Mulondo, (2017) analyzed the factors that are associated with ANC underutilization among pregnant women in Limpopo. The study observed that there were some cultural practices and belief systems that prevents women from attending antenatal care services in a health facility instead of utilizing the services of TBAs. Those belief systems deny women their right to maternal health care services.

Partners' Educational and Occupational Status

Tekelab et al. (2019) in their systematic review noted that a partner's level of education has a great influence on the use of antenatal care services. Using a pooled estimates for all the studies identified, the study observed that women whose husbands were educated had 49% chances of

making eight or more ANC visits as compared to women whose husbands were not educated. Tarekegn et al. (2014) in analyzing the role of education on antenatal care utilization noted that women whose husbands are educated up to secondary or higher level were 90% more likely to make more antenatal care visits as compared to women whose husbands have never been to school before. Sakeah et al. (2017) explored the determinants of attending ANC care for at least eight times in rural Ghana found that low educational levels of husbands were associated with poor ANC utilisation among women in rural areas. Tessema et al. (2021) also observed that the use of antenatal care services with at least eight-time visits was 29% higher among women whose husbands had secondary or higher education compared to women whose husbands had no education.

Tsegay et al. (2013) included the occupation of a partner in their analysis to ascertain whether a husband's occupational status could influence the outcome of antenatal care use. The study observed that women whose husbands are not into farming activities but are in the formal sector were 2.26 times more likely to make more ANC visits compared to women whose husbands are not employed. Tekelab et al. (2019) in a systematic review noted that the use of antenatal care services at least with eight visits were significantly low among women whose husbands were unemployed or were farmers. Tarekegn et al. (2014) also made similar assertion in their study by concluding that when a husband is employed, he is able to support the wife to access maternal health services including antenatal care.

Exposure to media

Tessema et al. (2021) further observed that the odds of utilizing the recommended ANC attendance among pregnant women increases by 1.33 when pregnant women are exposed to media as compared to those who are not exposed to media. Adedokun and Yaya, (2020) also acknowledged the role of media in increasing the knowledge of women on maternal health

which subsequently increases the probability to utilize maternal health care services. The study noted that women who are exposed to media were 1.78 times more likely to utilize ANC visits compared to women who are not exposed to media.

CHARPTER THREE

METHODOLOGY

3.1 Introduction

This chapter explains the methodology employed in the study in terms of study design, study area, target populations, sample size estimation and sampling techniques, methods of data collection and tools, pre-testing, quality control, variables, analysis of data and ethical considerations.

3.2 Study design

The study employed an explanatory mixed method, cross-sectional design. The quantitative aspect entailed the use of a questionnaire to interview pregnant women attending antenatal care, while the qualitative aspect involved key informant interviews with district administrators and managers of various facilities and focus group discussions with antenatal attendees.

Qualitative methods were employed to gather some information to explain some of the key findings from the quantitative data. The design was selected as it could be done within a short time period and the research objectives can be addressed using the design.

3.3 Study area

The study was conducted in the New Juaben South Municipality across four healthcare facilities in the Municipality. The facilities include the Municipal Polyclinic located at Koforidua Central, Medical Village Health Centre, Agavenya CHPS and Magazine CHPS Compounds. The municipality is one of the thirty-three districts situated in the Eastern region of Ghana: and has estimated total population of 156,877 with eighty-five (85) communities and eight sub-municipals for effective and efficient delivery of health services.

Women within reproductive age constitute about 24% (37,650) of the total population in the municipality with the dominant age group being 20-24 years.

As per Figure 3.1, New Juaben South Municipality is bounded in the north by New Juaben North Municipality, in the south by Akwapim North Municipal, on the west by Suhum Municipality and to the east by Yilo Krobo. The Akan ethnic group is the most dominant ethnic group in the municipality followed by Ga Adangbes, Ewes and other ethnic groups. The common language spoken in the Municipality is Twi. The region has one of the highest maternal mortality ratios in the country (540 out of 100, 000 live births) (Ghana Statistical Service, 2013).

Figure 3.1: Map of Eastern Region by districts

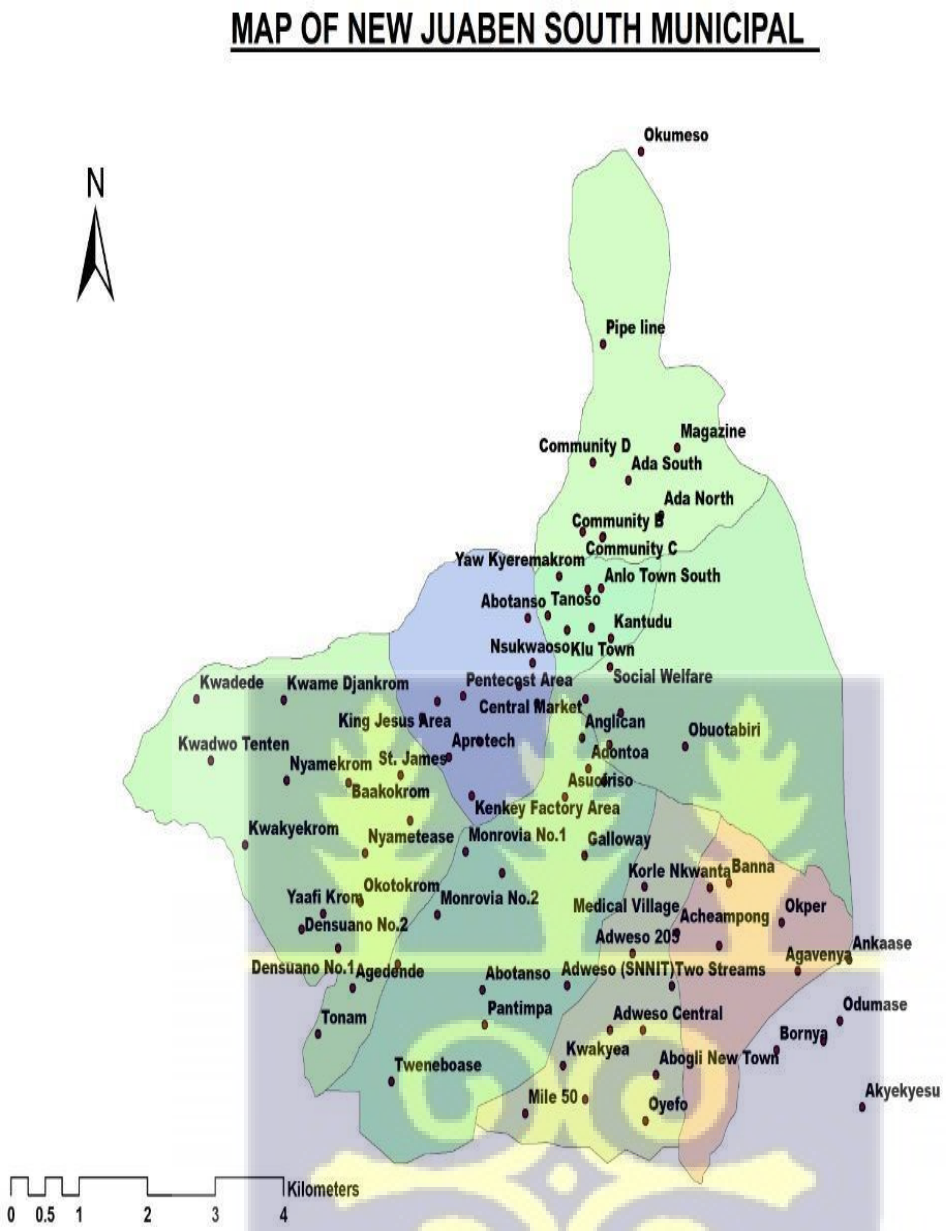

Figure 2.2: Map of New Juaben South Municipality

3.4 Target and study population

The study population consisted of three different groups. For quantitative aspect of the study (questionnaire-based survey), the target population were women within the reproductive age. For the qualitative aspect (key informant interviews), the target population was key staff within the district administration directly responsible for maternal health services. Participants for the

interview were Municipal Director of Health Service, Municipal Health Information Officer and Municipal Public Health Officer. The third target population comprised women within the study area who have given birth at least once and did not take part in the quantitative survey.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

For women within reproductive age who responded to the quantitative structure questionnaire, the inclusion criteria were:

a. Women who have had at least one delivery in the last one year prior to the study
b. Women who were attending child welfare clinics (CWCs) in the sampled facilities or communities
c. Women who delivered and stayed in the district for not less than two years.

3.5.2 Exclusion criteria:

a. Pregnant women who visited the facilities for Antenatal care service.
b. Women who participated in qualitative interview.
c. Women who attend child welfare clinics in the sample facilities who do not give consent or refuse to participate in the study.

For key informant interviews, the following people were selected for the interview:

a) Municipal Director of Health Services in the New Juaben South Municipality.
b) Municipal Public Health Nurse.
c) The Municipal Health Information Officer who is responsible for data management in the municipality.

Focus Group Discussion participants included:

a. Women who have given birth in the past 12 months
b. Women not included in the quantitative survey
c. Women who were attending child welfare clinic in the selected facilities

3.6 Sample Size determination

Using a prevalence of 36.6% of 8+ ANC utilization (attendance) in New Juaben South Municipal for 2018 (GHS/NJS, 2019 Annual Report) was used in calculating the required sample size of the study.

The study sample size was derived using the Cochran formula (Cochran, 1977), which is:

$$N = \frac{Z^2 pq}{e^2}$$

Where:

- N = required sample size,
- Z^2= confidence level of 95% (standard value of 1.96),
- e = margin of error =5% = 0.05
- p = prevalence of antenatal attendance = 36.6% =0.366 (NJS annual report 2019)
- q =1 -P =1 -0.366
- N = $\frac{(1.96)^2 \times 0.366\ (1-0.366)}{0.05^2}$ = 357
- N= 357 participants.

Assuming an effect size of 1.5, 357*1.5 = 535.5 ≈ 536

Adjusting for a 10% non-response rate gives, *0.1 * 536= 53.6 ≈54*

Therefore, the desired sample size for the quantitative study will be 536+54 = 590 participants.

For the key informant interviews, two key informant interviews were conducted in each facility giving a total of eight (8) interviews.

For each of the focus group discussions, between 7-10 women were selected to participate in the discussions. In all, a total of four (4) FGDs were conducted for this study.

3.7 Sampling Techniques

The study employed multi-staged sampling technique. New Juaben South Municipality has eight (8) sub-municipals. Four out of the eight sub-municipals were selected for the study. The first two sub-municipals were selected purposively based on their available facilities. One sub-municipal with the polyclinic was selected while the other two sub-districts were selected based on the type of health facility available (availability of a health centre). The other two sub-municipals were selected at simple ballot among the remaining six sub-municipals.

In each of the selected facilities, proportionate sampling method was employed using the population of pregnant women who delivered in 2020 to determine the number of women who were interviewed per facility (see Table 3.1).

Table 3. 1: Distribution of number of women who participated in the study

Facilities for ANC survey	Population of Average Monthly ANC attendants	Estimated population for survey
Polyclinic	2,142	493
Medical Village	265	61
Magazine CHPS	69	16
Agavenya	88	20
Total	**2,564**	**590**

Women who meet the inclusion criteria were selected by systematic sampling. The skip interval was determined by dividing the required sample size by the average monthly attendance for each facility. The first participant was selected by assigning numbers to ballot papers from 1-n, n being the skip interval. A midwife was asked to draw one ballot paper from the numbers. The number on the ballot paper becomes the first participant. Other participants were selected

by applying the skip interval e.g. k + n = y (2nd participant), y + n = z (3rd participant), etc., where k is the skip interval and n is the number assigned to the first participant in the sample. Where a selected person does not meet the inclusion criteria, the selected person was replaced by the next person who meets the inclusion criteria as determined by skip interval.

The FGDs were held in other communities where the main structured questionnaire was not administered. This was done to ensure that women who participate in FGDs do not participate again the quantitative interviews. For the FGDs, women were invited randomly as they exited the CWC after receiving care. For each group, between 7 and 10 women were selected to participate in the discussions.

3.8 Data Collection

The study used structured questionnaires designed according to the objectives of the study and grouped into four sections (Appendix VI, part A). Section 1 of the questionnaire solicited information on the demographic characteristics such as age, marital status, religion, etc. of the women participating in this study. In the Section 2 of the questionnaire, key information on ANC utilization was collected, including the number of ANC visits, when ANC was initiated, parity of the woman, etc. In Section 3, the participants were asked to indicate all the health service factors that influence ANC utilization. Key among them were the attitude of health workers, time spent during ANC visits, availability of trained health workers and whether payments are made during ANC sessions. The final section of the questionnaire sought to gather responses on socio-cultural factors that also influence the outcome variable (ANC utilization).

For the District Health Administration, a semi-structured questionnaire was used. In the semi-structured tool, eight key questions were answered by the District Director of Health Service District Health information, Officer and Public Health Nurse within the district. The

questions focused on ANC services in the district and the conditions surrounding the administration of maternal health services. The discussions among the women's focus groups was done using discussion guide. The guide helped to solicit information on antenatal care services (Appendix VI, Part B).

Face-to-face interviews were used to collect data from women who met the survey inclusion criteria. For each woman sampled, antenatal records were retrieved from their antenatal cards to obtain information on antenatal utilization. Each interview took between 20 and 30 minutes to complete. Data for the sampled women were conducted at the CWC centres after the women and their respective babies had received their required healthcare services. Per the plan, women who qualified and were sampled were interviewed as part of their exit process (exit interviews) to ensure they were not disrupted during the course of accessing healthcare services**.** Face-to-face interviews were also employed to collect data from health care workers.

Data collection for this study was led by the lead investigator with support from two research assistants. The research assistants were trained on the data collection tools, data collection techniques and ethical requirements. However, for the key informant interviews, the data collection was solely led by the lead investigator.

3.9 Quality control

During the data collection process, the investigator ensured that the responses provided by the women correspond to the questions asked by pre-testing the questionnaire to eliminate ambiguity. The women's questionnaire was tested in a facility that had similar characteristics as the facilities that were sampled. A total of ten women who were attending child welfare

clinics in one facility within the district (where main data collection was not done) were interviewed to test the quality of the questionnaire. Similarly, the questionnaire for administrative staff was tested with three health workers in Nkurankan Health Centre different from the sampled facilities.

Additionally, to better understand the issues affecting antenatal care, the researcher conducted field visits to some of the antenatal care clinics in the study area to observe and interact with some of the women informally and gain an orientation of the organization of services in the antenatal clinic, potential barriers and facilitators to clinic utilization to validate accounts by women and their healthcare providers. To further solicit quality information during FDGs, member checking was done to check the validity of the research output.

3.10 Study variables

The variables for this study would include dependent and independent variables. Details of each of the variables to be studied are presented in Table 3.2. The dependent variable, i.e., utilization of antenatal care services, was measured using eight or more antenatal services. The independent variables as linked to conceptual framework have different categories including demographic, maternal health factors and cultural and religious systems.

Table 3 2: Description of variables for the study

Variable	Operational Definition	Source	Measurement
Dependent Variable			
Utilization of antenatal care services	Proportion of women who made at least eight antenatal care visits at the time of delivery	Antenatal records	Numerical
Independent Variables			
Age	Age in absolute years	Respondent	Numerical
Marital Status	Whether married, never married, or Divorced	Respondent	Categorical
Educational Status	Level of education attained	Respondent	Categorical
Parity	Number of births	Respondent	Numerical
Residence	Place of residence	Respondent	Categorical
Occupation	Type of work of the woman	Respondent	Categorical
Religion	Type of religion	Respondent	Categorical
Type of Marriage	Type of marriage	Respondent	Categorical
NHIA Member	NHIA card holders who access health facility with the card	Respondent	Categorical
ANC attendance	Indicate Yes or No whether	Respondent	Categorical
Trimester ANC begun	According to 1st, 2nd and 3rd Trimester	ANC card	Categorical
Order of last birth	The order of last birth prior to study	Respondent	Numerical
Availability of health Worker	Number of midwives in the facilities in the facility	Health Facilities	Numerical
Husband Support	Husband support for accessing skilled Delivery	Respondent	Categorical
Payment made during ANC	Indicate Yes or No	Respondent	Categorical
Partner's educational status	The level of education of the woman's husband	Respondent	Categorical
Partner's Occupation	Type of work of the husband	Respondent	Categorical
Distance to health facility	Estimates of distance from house to the community where facility is located together with some available landmark	Respondent	Numerical
Mode of transport	Type of transport used to ANC – bicycle, motorbike, vehicle, walking	Respondent	Categorical
Attitude of health Workers	Attitude of health workers towards women who access ANC and SD	Respondent	Categorical
Cost of antenatal care Services	The amount paid by a woman for accessing ANC services	Respondent	Numerical
Time spent at the facility	Average number of hours a pregnant woman spends at the facility for each ANC visit	Respondent	Numerical
Exposure to media	Women have access to radio, TV, social media, etc.	Respondent	Categorical

3.11 Analysis of Data

Quantitative data was summarized using descriptive statistics such as frequency and percentages. The relationship between utilization antenatal care services and independent variables was analyzed at two levels. At first level, inferential statistics using bivariate analysis was done and the results reported as the chi square statistic and p-values. All significant variables tested for association between antenatal care use and the significant variables using multivariate logistic analysis. The results of the multivariate logistic analysis were reported as adjusted odds ratios and the 95% confidence interval constructed around the estimates. The analysis of the data was done using STATA version 15.0.

3.12 Ethical Issues

The study made use of both primary and secondary data and all related ethical issues considered are described below.

Ethical Clearance: Ethical clearance was sought from Ghana Health Service Ethics Review Committee with reference number GHS-ERC 040/07/21 as requirement for the conduct of this study.

Study Approval: A letter of introduction from the School of Public Health (SPH) was obtained and sent to District Health Administration, Ghana Health Service in the municipality to seek for approval for the conduct of this study in the municipality. At the facility level, a similar letter and with an authorization note from the District Health Administration was sent to the facilities to inform them about the study and sought for their approval and support.

Study Subjects: Informed consent was sought from each study participants. Information regarding the purpose of the research and general procedures in the research was provided to

the participants. Each participant signed a consent form to confirm their availability for the study.

Privacy and Confidentiality of persons and data: Participants (both women, health workers and community members) were assured of confidentiality and privacy of the information provided. Study codes were used on all data forms (completed questionnaires). Names of the participants were not written on the questionnaire sheets. Data gathered were encrypted and saved. For each of the questionnaire, codes were written on them for ease of identification. Codes were assigned to distinguish each questionnaire. Each questionnaire was checked by the researcher after the interview to ensure that data gaps were filled prior to data entries. Data entries were done into an Excel file and password-protected on a computer file. The password to this file was only accessible to the lead investigator. Questionnaires that were used for the data collection was kept in a cabinet under lock and key. This would be kept for at least two years before disposing them.

Safety Protocols: With the emergence of Covid-19 pandemic, data collectors were given adequate Personal Protective Equipment (PPE). Each data collector recruited was given face masks, hand gloves, hand sanitizers and liquid soap (for areas where water is easily accessible). All the items for Covid-19 protocols were provided by the principal investigator**.** All data collectors observed social distancing protocols. For interviewees (study participants), face masks were provided to each prior to the start of the interview. Additionally, each participant washed their hands with soap and where appropriate, and used hand sanitizers before the start of any interview.

Description of consenting process: Participants were informed about the purpose of the study. Participants were also informed of the potential risk and benefits of the study related to them participating in the study and further reassured them of confidentiality and privacy. Participants

were informed that the information provided were going to be used purely for the study and nothing further. Again, issues around data storage and data security and usage were discussed with the participants. Participants were informed that participation in the study was voluntary. Participants who were not comfortable with the interview declined and were not disturbed to respond to any question. Participants who were able to sign the consent form were made to sign while those who were unable to sign were given the opportunity to thumb print after interpreting the consent form to them.

Declaration of Conflict of Interest: There is no conflict of interest in this study.

CHAPTER FOUR

RESULTS

4.1. Introduction

This chapter presents the key findings based on the analysis of the data. The findings of the study have been grouped systematically as per the study objectives. The main descriptive statistics is presented first and followed by the different levels of association of the outcome variable against the independent variables.

4.2 Socio-demographic characteristics of respondents and their partners

The result of the analysis on socio-demographic characteristics is presented in Table 4.1. A total of 587 women participated in the study giving a response rate of 99.5%. The mean age of the women who participated in the study was 28.0 years ± 6.8SD with observed minimum and maximum ages as 16 and 40 years respectively. Majority (n = 518; 88.3%) of the women were Christians. Almost half (n = 264; 45.0%) of the women have had only basic education with only a fifth (n = 119; 20.3%) who completed tertiary education. Majority (n = 374; 63.7%) of the women were self-employed while 84.7% (497) of the women reside in urban communities. More than half (n = 349; 59.5%) of the women were married and almost all (n = 334; 96.2%) of the women who are married are into monogamous marriage. Only 8% (47) of the women were not using NHIS card to access antenatal care services. A little over a quarter (n = 152; 25.9%) of the partners of the women had completed basic education. Similar to the women, majority (n = 405; 69.0%) of the partners of the women were self-employed.

Table 4.1: Socio-demographic characteristics of respondents and their partners

Variables	Frequency (n)	Percent (%)
Age in years (M ± SD)	28.0 ± 6.8	
15-19	86	14.6
20-24	152	25.9
25-29	88	15.0
30-34	64	10.9
35-39	104	17.7
40+	93	15.8
Total	587	100
Religion		
Christianity	518	88.3
Islam	69	11.7
Total	587	100
Educational level		
No education	32	5.4
Basic	264	45.0
Secondary	172	29.3
Tertiary	119	20.3
Total	587	100
Employment		
Unemployed Status	69	11.7
Employed (Salary worker)	130	22.2
Self-employed	374	63.7
Other salary workers	14	2.4
Total	587	100
Residence		
Rural	90	15.3
Urban	497	84.7
Total	587	100
Marital status		
Single	164	27.9
Married`	349	59.5
Co-habiting	74	12.6
Total	587	100
Type of Marriage		
Monogamous	334	96.2
Polygamous	13	3.8
Total	347	100
NHIA Card users		
Users of NHIA cards	540	92.0
Non-users of NHIA cards	47	8.0
Total	587	100

Partner's Education Level		
No Education	88	15.0
Basic	152	25.9
Secondary	269	45.8
Tertiary	78	13.3
Total	587	100
Partner's Employment Status		
Unemployed Status	31	5.3
Employed (Salary worker)	85	14.5
Self-employed	405	69.0
Other salary workers	66	11.2

4.3 Antenatal care services utilization among women

As presented in Table 4.2, the results of the analysis of antenatal care services show that almost half (n = 281; 47.9%) of the women have had two children prior to the current child with almost a fifth (n = 115; 19.6%) of the women having no child prior to their current child. All the women have had at least one visit for ANC services prior to delivery of the current birth. However, ANC utilization as per this study was measured using the reviewed WHO standard of 8+ antenatal care visits prior to delivery. The results showed that only 29.6% (174) of the women were able to make at least eight antenatal visits prior to delivery while 15.0% (88) of the women initiated their antenatal care services in the third trimester. Majority (n = 490; 83.5%) of the women utilized Koforidua Polyclinic for their ANC services.

Table 4.2: Antenatal care utilization among women

Variables	Frequency (n)	Percent (%)
Parity		
No child	115	19.6
One child	74	12.6
Two children	281	47.9
Three Children	51	8.7
Four or more children	66	11.2
Total	587	100
ANC Attendance		
At least one visit	587	100
Number of ANC visits		
< 8 ANC visits	413	70.4
8+ ANC visits	174	29.6
Total	587	100
Trimester ANC begun		
First	393	66.9
Second	105	17.9
Third	89	15.2
Total	587	100
Facilities for ANC survey		
Polyclinic	490	83.5
Medical Village	61	10.4
Magazine CHPS	16	2.7
Agavenya	20	3.4
Total	587	100

4.4 Health Service factors

Results of the analysis of health service factors has been presented in Table 4.3. Almost all (n = 553; 94.0%) of the women had friendly experience with health workers at the facility. All the women make payment at the health facility for services received. More than half (n = 56.1%; 329) of the women make payments solely on laboratory services. Again, more than half (n = 317; 54.0%) of the women who make payment at the facility indicated that the cost of the ANC services was moderate. Only 1% (6) of the women indicated that they never met a midwife. On time spent at health facility, 45.8% (269) of the women spend more than two hours at the health facility. Almost half (n = 288; 49.1%) of the women live over 5kms away from the health facilities where they access ANC services. More than half (n = 302; 51.4%) of the women uses vehicle as the main mode of transport to the facility.

Table 4.3: Health Service factors

Variables	Frequency (n)	Percent (%)
Health workers attitude towards antenatal care attendant women		
Friendly	552	94.0
Unfriendly	35	6.0
Total	587	100
Payment made during ANC visits		
Scan only	177	30.1
Lab only	329	56.1
Scan/Lab	51	8.7
Scan/Lab/Medication	30	5.1
Total	587	100
Cost of ANC services at the health facilities		
Expensive	203	34.6
Moderate	317	54.0
Not expensive	67	11.4
Total	587	100
Received services from a midwife		
Midwives available for ANC services	581	99.0
Midwives not available	6	1.0
Total	587	100
Time spent at the facility		
Less than 30 mins	20	3.4
30mins – 1hr	115	19.6
> 1hr but < 2 hrs	183	31.2
2 hrs +	269	45.8
Total	587	100
Distance to ANC centre		
< 3kms	95	16.2
3-5kms	204	34.7
> 5kms	288	49.1
Total	587	100`
Mode of transportation		
Motor bicycle	99	16.9
Vehicle	302	51.4
Walking	186	31.7
Total	587	100

4.5 Socio-cultural characteristics among women

Results of the socio-cultural characteristics is presented in Table 4.4. All the women were involved in decision making concerning their maternal health as well as having the support of their partners to access ANC services. Results on cultural practices also show that 47% of the women do not have any cultural practice that affects have at least utilization of ANC services. All the women had access or own a television or a radio or both. A little over a fifth (n = 119; 20.3%) indicated that they have never heard any education on antenatal care services on either radio or television.

Table 4.4: Socio-cultural factors

Variables	Frequency (n)	Percent (%)
Involved in decision making		
Women involved in decision making	587	100
Partner's Support for ANC services		
Partner supporting women for ANC	587	100
Availability of cultural practice again ANC services		
Cultural practice available	276	47.0
No cultural practice	311	53.0
Total	587	100
Access to Television/Radio		
Own TV or radio	587	100
Receive any information ANC on TV/radio		
Yes	468	79.7
No	119	20.3
Total	587	100

4.6 Quantitative Analysis: Results from the questionnaire surveys

4.6.1 Association between socio-demographic factors associated with ANC utilization

The results of analysis of socio-demographic factors and ANC utilization is presented in Table 4.5. The bivariate analysis of the socio-demographic factors associated with ANC utilization showed that all the variables with the exception of type of marriage and use of NHIS were statistically significant with ANC utilization. Age of the women was significantly associated with ANC utilization ($\chi 2$ (df) = 91.9; p-value < 0.001). The proportion of women who utilized ANC services was significantly higher (58.4%) among women aged 20-24 years compared to other aged groups. There was a significant association between religion and ANC utilization ($\chi 2$ (df) = 14.2; p-value = 0.001). The results also showed that, proportionately, Christians had higher ANC utilization rate (32.2%) compared to those in Islam (10.1%). There was statistically significant association between educational status of the women and ANC utilization ($\chi 2$ (df) = 111.6; p-value < 0.001). The results further showed that, proportionately, women who had attained tertiary education had higher ANC utilization rate (65.6%) compared to women who have attained other levels of education status (32.6% - Secondary,12.9% -Primary and18.7% - No education. The employment status of the women had significant association with ANC utilization ($\chi 2$ (df) = 14.7; p-value = 0.002). The proportion of women utilizing ANC services was proportionately higher among women who were salary workers than any other employment status. Women living in rural communities had higher utilization rate compared to those living in urban communities. Place of residence also showed significant association with ANC utilization ($\chi 2$ (df) = 25.9; p-value < 0.001). Marital status of the women also showed significant association with ANC utilization ($\chi 2$ (df) = 19.4; p-value < 0.001). The proportion of women utilizing ANC services was relatively higher among married women compared to single and cohabitating women.

Table 4. 5: Association between socio-demographic factors associated with ANC utilization

Variable	Utilization of antenatal care services			
	< 8 ANC visits n (% row)	8+ ANC visits n (% row)	Chi-square	p-value
Age in years			**91.9**	**p < 0.001**
15-19	74 (79.6)	19 (20.4)		
20-24	63 (41.5)	89 (58.5)		
25-29	61 (69.3)	27 (30.7)		
30-34	50 (78.1)	14 (21.9)		
35-39	88 (84.6)	16 (15.4)		
40+	74 (79.6)	19 (20.4)		
Religion			**14.2**	**p < 0.001**
Christianity	351 (67.8)	167 (32.2)		
Islam	62 (89.9)	7 (10.1)		
Educational level			**111.6**	**p < 0.001**
No education	26 (81.3)	6 (18.7)		
Basic	230 (87.1)	34 (12.9)		
Secondary	116 (67.4)	56 (32.6)		
Tertiary	41 (34.4)	78 (65.6)		
Employment			**14.7**	**0.002**
Unemployed Status	59 (85.5)	10 (14.5)		
Employed (Salary worker)	78 (60.0)	52 (40.0)		
Self-employed	267 (71.4)	107 (28.6)		
Other salary workers	9 (64.3)	5 (35.7)		
Residence			**25.9**	**p < 0.001**
Rural	43 (47.8)	47 (52.2)		
Urban	370 (74.4)	127 (25.6)		
Marital status			**19.4**	**p < 0.001**
Single	129 (78.7)	35 (21.3)		
Married`	222 (63.6)	127 (36.4)		
Co-habiting	62 (83.8)	12 (16.2)		
Type of Marriage			1.7	0.196
Monogamous	213 (63.8)	121 36.2)		
Polygamous	6 (46.1)	7 (53.9)		
NHIS Card users			1.0	0.307
Users of NHIS cards	383 (70.9)	157 (29.1)		
Non-users of NHIS cards	30 (63.8)	17 (36.2)		

4.6.2 Association between health service factors and utilization of ANC services

The results of the analysis of the relationship between health service factors and ANC utilization is presented in Table 4.6. The results showed that five factors had significant association with ANC utilization. The trimester within which ANC begun or was initiated by the women was significantly associated with ANC utilization ($\chi 2$ (df) = 26.4; p-value < 0.001). Women who initiated their antenatal visits within the first month had higher ANC utilization rate (34.9%) compared to women who initiated their ANC visits during their third trimester (11.2%). The perception of the cost of ANC services as determined by the women showed significant association with ANC utilization ($\chi 2$ (df) = 6.4; p-value = 0.048) The time spent by the women at health facilities during the period of accessing ANC services also showed some significant association with ANC utilization ($\chi 2$ (df) = 15.6; p-value = 0.001). About 65% of the women who spend less than 30 minutes in the health facility utilized ANC services. The proportion of ANC utilization was significantly lower among who spend more than one hour accessing ANC services. The distance to a health facility for ANC services also showed significant relationship with ANC utilization ($\chi 2$ (df) = 16.6; p-value < 0.001). Women who live less than 3 kms from a health facility where ANC services are accessed had higher ANC utilization rate compared to women who live more than 5kms away from their health facilities where ANC services are accessed (43.2% vs 22.6%).

Table 4. 6: Association between health service factors and utilization of ANC services

Variable	Utilization of antenatal care services			
	< 8 ANC Visits	8+ ANC visits n (% row)	Chi-square	p-value
Parity			7.7	0.105
No child	54 (81.8)	12 (18.2)		
One child	55 (74.3)	19 (25.7)		
Two children	197 (70.1)	84 (29.9)		
Three Children	34 (66.7)	17 (33.3)		
Four or more children	73 (63.5)	42 (36.5)		
Trimester ANC begun			**20.4**	**p < 0.001**
First	256 (65.1)	137 (34.9)		
Second	78 (74.3)	27 (25.7)		
Third	79 (88.8)	10 (11.2)		
Facilities for ANC survey			1.1	0.774
Polyclinic	341 (69.6)	149 (30.4)		
Medical Village	46 (75.4)	15 (24.6)		
Magazine CHPS	11 (68.7)	5 (31.3)		
Agavenya	15 (75.0)	5 (25.0)		
Health workers attitude towards antenatal care attendant women			0.1	0.886
Friendly	388 (70.3)	164 (29.7)		
Unfriendly	25 (71.4)	10 (28.6)		
Payment made during ANC visits			7.1	0.068
Scan only	136 (76.8)	41 (23.2)		
Lab only	221 (67.2)	108 (32.8)		
Scan/Lab	38 (74.5)	13 (25.5)		
Scan/Lab/Medication	18 (60.0)	12 (40.0)		
Cost of ANC services at the health Facilities			**6.4**	**0.042**
Expensive	138 (68.0)	65 (32.0)		
Moderate	235 (74.1)	82 (25.9)		
Not expensive	40 (59.7)	27 (40.3)		
Time spent at the facility			**15.6**	**0.001**
Less than 30 mins	7 (35.0)	13 (65.0)		
30mins – 1hr	75 (65.2)	40 (34.8)		
> 1hr but < 2 hrs	131 (71.6)	52 (28.4)		
2 hrs +	200 (74.4)	69 (25.6)		
Distance to ANC centre			**16.6**	**p < 0.001**
< 3kms	54 (56.8)	41 (43.2)		
3-5kms	136 (66.7)	68 (33.3)		
> 5kms	223 (77.4)	65 (22.6)		
Mode of transportation			2.8	0.251
Motor bicycle	69 (69.7)	30 (30.3)		
Vehicle	221 (73.2)	81 (26.8)		
Walking	123 (66.1)	63 (33.9)		

4.6.3 Bivariate analysis: socio-cultural factors associated with utilization of antenatal care services

Table 4.7 shows the results of the association between socio-cultural factors and ANC utilization. The analysis of the relationship shows that only partner's education was statistically significant with ANC utilization ($\chi 2$ (df) = 10.2; p-value = 0.017). The proportion of ANC service utilization among women whose partners had attained secondary and tertiary education were relatively higher (34.6% each) compared to those with basic education or no education (23.7% and 20.5% respectively).

Table 4. 7: Relationship between socio-cultural factors and ANC utilization

Variable	Utilization of antenatal care services			
	< 8ANC visits n (% row)	8+ ANC visits n (% row)	Chi-square	p-value
Partner's Education Level			**10.2**	**0.017**
No Education	70 (79.5)	18 (20.5)		
Basic	116 (76.3)	36 (23.7)		
Secondary	176 (65.4)	93 (34.6)		
Tertiary	51 (61.4)	27 (34.6)		
Partner's Employment Status			4.6	0.199
Unemployed Status	23 (74.2)	8 (25.8)		
Employed (Salary worker)	53 (62.4)	32 (37.6)		
Self-employed	294 (72.6)	111 (27.4)		
Other salary workers	43 (65.2)	23 (34.8)		
Availability of cultural practice again ANC services			0.2	0.692
Cultural practice available	192 (69.6)	84 (30.4)		
No cultural practice	221 (71.1)	90 (28.1)		
Receive any information about ANC on TV/radio			0.5	0.462
Yes	326 (69.7)	142 (30.3)		
No	87 (73.1)	32 (26.9)		

4.6.4 Multivariate analysis: factors associated with utilization of ANC services

To further test for the strength of the relationship between ANC utilization and all significant variables, multiple regression analysis was conducted for all significant variables. The results of the multivariate analysis of the study is presented in Table 4.8. After controlling for all significant variables, eight variables showed significant relationship with 8+ ANC utilization. Women aged 15 – 19 years (AOR = 0.4; 95% CI: 0.1, 0.9) were 60% less likely to utilize antenatal care services compared to women who were aged 40+. Again, women who were aged 20-24 years (AOR = 3.1, 95% CI: 1.5, 6.8) were three times more likely to utilize ANC services compared to women who were aged 40 years or more. Women who were Christians (AOR = 3.4, 95% CI: 1.2, 9.8) were three times more likely to utilize ANC services during pregnancy than women who were in Islam. Women who had completed tertiary education (AOR = 3.5, 95% CI: 1.1, 11.2) were three times more likely to utilize ANC services during pregnancy than women who had never had formal education. Women who resided in rural communities (AOR = 3.1, 95% CI: 1.6, 5.9) were three times more likely to utilize ANC services during pregnancy than women who resided in urban communities. Women who were married (AOR = 2.4, 95% CI: 1.3, 4.5) were twice more likely to utilize ANC services during pregnancy than women who were single.

Women who initiated ANC visits in the first trimester (AOR = 4.4 95% CI: 1.8, 10.9) were four times more likely to make eight or more ANC visits than those who initiated ANC visit in the third trimester. Women who spent less than 30 minutes at the facility (AOR: 8.7, 95% CI: 2.4, 30.7) were nine times more likely to utilize ANC services than women who spent more than 2 hours at the facility. Similarly, women who spent between 30 minutes and 1 hour at the facility (AOR: 3.8, 95% CI: 1.8, 8.1) were four times more likely to utilize ANC services than those who spent more than 2 hours at the facility. Women who spent more than 1 hour but less

than 2 hours at the health facility (AOR: 2.5, 95% CI: 1.2, 5.4) were twice more likely to utilize ANC services than women who spent more than 2 hours at the facility. Women who lived within less than 3km of an ANC facility (AOR = 2.4, 95% CI: 1.2, 4.6) were twice more likely to utilize ANC services compared to women who lived within more than 5 km away from their ANC centres.

Table 4. 8: Relationship between 8+ ANC utilization and other significant factors

Variables	Adjusted Odds Ratio	Confidence Interval (95%)	p-value
Age in years			
15-19	0.4	**0.1 – 0.9**	**0.040**
20-24	3.1	**1.5 – 6.8**	**0.003**
25-29	0.8	0.3 – 1,9	0.630
30-34	0.8	0.3 – 2.1	0.674
35-39	0.9	0.4 – 2.2	0.874
40+	1	-	-
Religion			
Christianity	3.4	**1.2 – 9.8**	**0.025**
Islam	1	-	-
Educational level			
No education	1		
Basic	0.5	0.2 – 1.6	0.255
Secondary	2.2	0.7 – 6.9	0.171
Tertiary	3.5	**1.1 – 11.2**	**0.030**
Employment			
Unemployed Status	1		
Employed (Salary worker)	1.4	0.5 – 3.9	0.556
Self-employed	0.9	0.3 – 2.4	0.881
Other salary workers	2.1	0.4 – 10.1	0.367
Residence			
Rural	3.1	**1.6 – 5.9**	**0.001**
Urban	1	-	-
Marital status			
Single	1	-	-
Married`	2.4	**1.3 – 4.5**	**0.004**
Co-habiting	0.6	0.2 – 1.5	0.252
NHIS Card user			
Uses NHIS card	1.6	0.7 – 4.3	0.268
Does not use NHIS card	1	-	-
Trimester ANC begun			
First	4.4	**1.8 – 10.9**	**0.001**
Second	1.7	0.6 – 5.0	0.314
Third	1	-	-
Cost of ANC services at the health facilities			
Expensive	1	-	-
Moderate	0.7	0.4 – 1.3	0.268
Not expensive	1.1	0.5 – 2.4	0.849
Time spent at the facility			
Less than 30 mins	8.7	**2.4 – 30.7**	**0.001**
30mins – 1hr	3.8	**1.8 – 8.1**	**p < 0.001**
> 1hr but < 2 hrs	2.5	**1.2 – 5.4**	**0.015**
2 hrs +	1	-	-
Distance to ANC centre			
< 3kms	2.4	**1.2 – 4.6**	**0.009**
3-5kms	0.7	0.3 – 1.3	0.268
> 5kms	1	-	-
Partner's Education Level			
No Education	1	-	-
Basic	1.1	0.5 – 2.7	0.788
Secondary	1.1	0.5 – 2.5	0.816
Tertiary	0.4	0.2 – 1.2	0.098

4.7 Qualitative Analysis: Results of key informant interviews and Focus Group Discussions

4.7.1 Key Informant Interviews

The study conducted three informant interviews among managers of the Municipal Health Directorate to gather their perspectives on antenatal care services within the municipality. The respondents included the Municipal Health Director, the Health Information Officer and the Municipal Public Health Nurse. The results of the key informant interviews showed that there are 54 health facilities in the municipality, of these 11(20.4%) facilities provide antenatal care services to pregnant women. These facilities provide antenatal care services to diverse clients depending on the capacity of the facility. In general, the key services provided by the facilities include laboratory examination, ultrasound scan, physical examination, health education on maternal health services and focused antenatal counselling.

Assessment of the three discussions shows that antenatal care service provision under the maternal health portfolio is challenged with some major issues across the facilities. These challenges include the following:

a. Inadequate or shortage of midwives in the municipality to provide maternal health care services to pregnant women. Even though there are more facilities that could have managed antenatal care services, the absence of midwives limit some of the facilities in their quest to provide antenatal services to pregnant women.
b. Poor attitude of health workers within the various facilities towards pregnant women deters others from utilizing maternal health services. According to the respondents, there have been series of reports on how health workers behave towards pregnant women, and this has been a major challenge for the district.
c. Another major challenge for providing quality maternal health care services to pregnant women is inadequate logistics at the health facilities. Logistics play an important role in

the delivery of health care service and remain a major component of the health system. Some of the facilities lack basic logistics that helps women to get complete during antenatal visits. Laboratories and ultrasound scans are absent in some selected facilities within the municipality, and this affects the administration of antenatal care services in the municipality.

The municipal health directorate managers also indicated that, beyond these challenges that have been discussed, there are other barriers that affects the utilization of antenatal care services. The barriers mentioned include cultural practices and knowledge about antenatal care services. Though specific cultural practices were not indicated, the belief is that there are sects of the population whose cultural practices and belief system affects women early initiation of antenatal visits. The municipal health directorate also indicated that knowledge levels among pregnant women and their sexual partners have been low in the municipality. Another significant problem mentioned by the municipal team is the late initiation of antenatal care services among pregnant women. It was mentioned that though almost all pregnant women utilize at least one antenatal care visit, the timing of the ANC visit raises a lot of concern. The results further show that because of the late initiation of ANC services, most of the women are unable to make at least eight antenatal visits prior to delivery. Nonetheless, there were some positives on factors that may influence the use of antenatal care services. The respondents indicated that waiting time at the facility during antenatal care visits have consistently been short in almost all the facilities. It was further mentioned that some of the health workers demonstrate professionalism in their line of duty and empathise with the pregnant women. This encourages the women to visit such midwives or health workers frequently.

4.7.2 Qualitative analysis of factors influencing ANC utilization

The study further conducted four focused group discussions in four selected communities. The summary of the results of the discussions is presented in Table 4.9. The qualitative survey gathered views of women in the four selected communities.

Time wasting at the health facility

The utilization of ANC services has been affected by a number of barriers. The discussions with participants revealed that though ANC is well acknowledged as a major health intervention that helps to reduce maternal mortality and morbidity, there is so much time wasted by pregnant women at the health facilities for accessing antenatal care services. A participant indicated that:

> *Most often, we spend more than 4 hours accessing antenatal care services in this facility. When you are told to go for MRI scan and other laboratory examination, you are likely to waste almost the whole day in the facility. The attitude of health workers further worsens the case. When you are tired after spending so much time in the facility, a health worker who is already frustrated with workload then turned to you and may insult you with the least provocation (Mother, FGD 3).*

Attitude of health workers

The attitude of health workers have always been one of the major determinants in the utilization of general maternal health services. Depending on when ANC begins, some women are unable to complete their required visits because of the negative attitudes of some health workers. One of the participants noted that.

> *During ANC sessions, some of the midwife's shout on us. Sometimes without provocation, they insult you and call you names. It is difficult for some of us to go the*

same facility when the nurses who are sometimes younger than us are insulting us (A teacher, FGD 4).

Sometimes the senior nurses and midwives allow the young nurses who have just come from school to attend to us. These young ones do not have any experience. When you begin to question their services, they get annoyed and begin to insult you. Sometimes it is disheartening to see someone who could be your own daughter insulting you (FGD 2).

Dependent on herbal medicine than orthodox medicine

In communities where traditional belief system is high, the use of herbal medicine is high. Both women and children depend on these herbal medicines for all sorts of treatment. References are always made to the potency of herbal preparations especially with the kind of advert that are placed on radio. A participant in one of the FGDs indicated that:

When you take the herbal medicine, it makes so easy for you to give birth. When you take the orthodox medicine especially the ones given to you at ANC, your delivery period may prolong and if care is not taken, you may have some serious complications. Herbal medicine is however able to prepare the womb for delivery and even strengthens the unborn baby (A farmer, FGD1).

Another participant indicated that:

Anytime we take the herbal medicine, it keeps us very strong to do any activity. It is always easy to access these herbal preparations (A housewife, FGD 1).

Cost of ANC services

Financial constraints to accessing quality antenatal care services is a national challenge. The introduction of Free Maternal Health policy was not able to eliminate the fee paying during ANC. Services such as an ultrasound scan, laboratory examinations and medical treatment are

always borne by the women. The cost of ANC services was a major factor that run through all the discussion groups. A participant mentioned

> *It is always difficult for some of us to pay for the scans other laboratory test. The facility I visit does not have the scan machines and therefore, the cost of even travelling to the next facility is another issue. Sometimes you are asked to go for several test but because there is no money, we are unable to do all (A trader, FGD 1).*

Another participant indicated:

> *When you go to the hospital, you spend on almost everything in the hospital. They say health insurance is there, but we don't see it value. You pay for all the expensive services that are provided. For instance, we wanted the cost of lab and scan to be included in NHIS but it is not.*

Table 4.9: Summary of Focused Group Discussions

Question	**FGD 1**	**FGD 2**	**FGD 3**	**FGD 4**
Community	Debrahkrom	Magazine	Agavenya	Medical Village
What is the view of women on antenatal care services	1. ANC services is perceived as time wasting since women spent more time than expected 2. Women see the use of herbal medicine appropriate than going for ANC services	1. Women are not attending ANC services because of perceived evil beliefs 2. The midwives tell the student nurses to take care of the pregnant women.	1. The nurses are not friendly. 2. They are also saying herbal medicine are more effective than the drugs given to them at the facility. 3. Long waiting time	Women generally say antenatal care is not important
Why are women not using ANC services?	1. Financial difficulties 2. Herbal medicine works faster than hospital medicine	1. Most women have delivered before because of that they have experience to take care of them self. 2. Financial difficulties	1. The midwives do not have time for them. Student nurses are sometimes used 2. Long waiting time	Financial difficulties
Why are some women not willing to start ANC at early stage?	1. Women feel not sick at early stage 2. Bad attitude of health workers prevents early initiation of ANC	1. When they start early, they do not provide good services to them. 2. Long waiting time at the facility	1. Financial difficulties. 2. The distance from the communities to the facility is long.	The scan request are many which deters women from using ANC

The roles of husbands in on ANC utilization	1. Support them financially 2. encourage the pregnant woman to attend ANC services	1. Husband roles is to encourage their wives to attend antenatal care. 2. To support their wives financially to attend antenatal care.	1. Supporting them financially 2. Encourage them to report to the facility for care early	1 Supporting them financially 2 Encourage them to report to the facility for care early
Actions to improve early initiation of ANC	1. Continues health education on benefit of antenatal care attendance especially on the need for	Giving continue health education on the important of antenatal care in the communities	1. Health education on the important of ANC services should be done continuously in the community	Provide some education at community level
	initiating ANC visits at the first trimester 2. Midwives should Improve their interpersonal relationship with pregnant women		2. They should report early to the ANC when they detect that they are pregnant.	
What measures to ensure women complete eight ANC visits	1. Follow-up visits to pregnant women who defaults in their visits 2. Regular discussions on importance of ANC	The midwives should attend to the pregnant women quickly when they come for the services.	Follow-up visit should be done to remind them their time of next visit and by calling them on phones.	Regular reporting and follow up

CHAPTER FIVE

DISCUSSION

5.1 Introduction

The study examined the factors associated with antenatal care utilization rate in the New Juaben South Municipality. This chapter presents a discussion of the main findings compared with similar studies in Ghana and elsewhere, the implications for policy and practice and the limitations of the present study.

5.2 Antenatal care service utilization: eight or more antenatal care visits

The utilization of antenatal care services is one of the key indicators under the maternal health care services. There have been varied measurement criteria over the years as recommended by WHO. In an acknowledgement of the significant role antenatal care services play in reducing the risk of maternal morbidities and mortalities, the World Health Organization (WHO) has recommended that it is prudent for pregnant women to access to ANC services at least eight visits at weeks 12, 20, 26, 30, 34, 36, 38 and 40 weeks so that all risk factors in the pregnancy are detected and mitigated on time (World Health Organization, 2016). The prevalence of 8+ ANC visits was relatively lower (29.6%) among pregnant women in the New Juaben municipality compared to the prevalence of ANC visits less than 8. Available data from the Ghana Health Service directorate on maternal health service performance shows that the trend in ANC utilization had been dwindling over the years since the introduction of the new guideline. In 2018, the municipality recorded 8+ ANC utilization prevalence of 36.6% and was further reduced to 34.7% in 2019 and 31.2% in 2020. The observed result in this study is more reflective of the consistent decline the municipality has witnessed over the years since the introduction of the 8+ ANC visits. This is noted to be one of the low utilization rates compared

to various National surveys and studies in Ghana. Nonetheless, all the women visited the hospital at least once for antenatal care services prior to delivery. Globally, it is estimated that about 86% of all women utilize antenatal care services for at least once, however, only 58% of them utilize it eight times, with the lowest rates recorded in South Asia and sub-Sahara African regions (UNICEF, 2018).

Ekholuenetale, (2021) conducted a prevalence study on eight or more antenatal care studies using multi country level national data. The study, which reflected the WHO standard, used recent national surveys in developing countries including Ghana. The study observed a pooled 8+ antenatal care visit of 13.0% for ANC utilization. Further analysis of country specific prevalence showed that Jordan had higher 8+ ANC utilization prevalence of 70% widely followed by Ghana with a utilization rate of 43%. The assessment of the Ghana's ANC utilization prevalence was based on the Multiple Indicator Survey which was conducted in 2019. Ahinkorah et al. (2021) also conducted a study on the barriers associated with access to healthcare services and utilization of antenatal care services in sub-Saharan Africa. The study by Ahinkorah et al. (2021) focused on 8+ antenatal care services among pregnant women. The study observed that only 17.6% of the women in Nigeria made at least eight antenatal care visits prior to delivery. Odusina et al. (2021) also analysed various data from sub-Saharan African countries to examine noncompliance with the World Health Organization's 8+ ANC visit recommendations. The results of the analysis showed that ANC utilization among the women was very high with a pooled 8+ ANC utilization prevalence of 92.3% with Zambia recording the highest prevalence (98.1%) while Libya recording the least utilization prevalence (73.4%).

Further discussion was done to compare at least the four times ANC visit with other studies since majority of the studies reviewed in this study compared utilization prevalence with 4+ ANC visit. It was noted in this study that only 32.5% made at least four antenatal care visits.

Adedokun and Yaya, (2020) analyzed the utilization of antenatal care services using 4+ antenatal visits as measurement of utilization among 31 African countries. Comparative analysis of the 31 countries showed that Ghana had the highest antenatal care utilization rate of 86% with the nearest being Gambia with 78.1%. The 2017 Ghana Maternal Health Survey (GMHS) report indicate that about 89% of Ghanaian women who are pregnant make at least four antenatal visits before delivery. Sakeah et al. (2017) in a comparative study in Navrongo, Dodowa and Kintampo antenatal care utilization observed a utilization rate of 86.1% for at least 4 antenatal visits across the three study sites. Amoako et al. (2020) in a different study in East Akim Municipality observed that about 98% of the pregnant women visited a health facility at least once for ANC services, however, 83.5% had made at least four visits during pregnancy. All these results and others findings in Ghana have largely observed a higher antenatal care utilization rate. It is therefore a concern to note that antenatal care utilization in the study area is relatively low.

One of the fundamental linkages to antenatal care utilization is the gestation time within which ANC was initiated. In the GMHS report, it was observed that about 64% of pregnant women initiated their ANC visits in the first semester. This will significantly impact on the overall four plus visits for any category of women. For this study, 66% of the women initiated ANC visit in the first semester. This was expected to have translated into higher ANC utilization, however, the results showed otherwise. A major observation on this part of the result was that majority of the women reported to the facility to confirm their pregnancy status in the first trimester. They are therefore booked as having initiated ANC services only to leave and return

when they are a bit closer to delivery. A report by WHO Global Health Observatory shows that about countries that record higher ANC utilization have significantly lower in maternal mortality rates. For instance, in the US, while the attendance to ANC was 99% maternal mortality rate of reported to be 8 per 100,000 live births (WHO, 2020).

The comparative analysis of the utilization rate in this study to that of other studies and surveys in Ghana have shown that the result is extremely lower. However, it is relatively higher compared to some observed results in other countries. Kumar et al. (2019), in a study in India on the use of antenatal care services among pregnant women showed that only 21% of the women were able to utilize 4+ ANC services. Tekelab et al. (2019) conducted a meta-analysis and systematic review of studies that have been conducted in Ethiopia on antenatal care utilization. The study noted that only 62% of the women in the country had utilized ANC services at least once, however, analyzing ANC utilization with 4+ ANC visits showed that only 25.6% of the women were able to make the 4+ ANC visit was. Tegegne et al. (2019) also in a different study in Ethiopia noted that more than 38% of the women in Ethiopia who have ever given birth had never utilized ANC services while only a quarter were making at least four antenatal care visits. The lower limit of four visits in these earlier studies was based on the WHO recommendations in place until the recent revision to a minimum of eight ANC visits. While the observed result in this study may be relatively better than others that have been observed in other countries, it is important to situate the discussion within the context of Ghana to appreciate the reasons this study recorded relatively lower ANC utilization rate.

5.3 Factors associated with the utilization of eight antenatal care visits

With low utilization of ANC services in the study area, it is important to unravel the factors associated with this phenomenon. The study observed several factors linked to the low utilization of ANC services in the municipality. As per the study objectives, two of the three

main factors (demographic and health) had positive relationship with ANC utilization. Age of the women, religion, educational status, marital status and residence of the women were socio-demographic factors that influenced the outcome of ANC utilization. However, for maternal and health- related factors, the timing of ANC initiation and the distance to the health facility had positive relationship with ANC utilization.

The utilization of antenatal care services among women differs according to age groups. In most cases, younger adults (women) who are more conscious about maternal health services compared to women who have are perceived to have adequate experience with maternal health service and are at the later part of the reproductive system. The study observed that women who are within the age group of 20-24 years are more likely to make at least eight antenatal care visits prior to delivery compared to women who are 40 year or more. At age 20 years, most women are now starting to give birth. In Ghana, the average age at first birth is estimated at 21 years (GSS & GHS, 2018). At this age, most women are yet to experience any of the characteristics associated with pregnancy. These women come very conscious of their status and make every effort to ensure that the outcome of the pregnancy is joy and happiness to the family. Even for women who are newly married, they receive the best of care and support of their partners to ensure that their first child is healthy and strong as much as possible. However, for women who are aged, mostly after 40 years, they tend to depend on their experience in the past. Having adequate knowledge in the dynamics of pregnancy, they may decide to wait until last hour before rushing to the hospital for delivery.

Different studies have equally observed similar results on the relationship between age of a woman and the utilization of antenatal care services. Gudayu et al. (2014) in their study on the timing and the factors affecting the use of ANC services in Ethiopia noted that pregnant women

who were aged 25 years and below had two time the odds of utilizing ANC services and starting the ANC attendance within the first trimester of the pregnancy as compared to their colleagues who are aged more than 25 years. Mugo et al. (2020) also noted that pregnant women who are aged 20-29 years were three times more likely to utilize fully ANC services and initiate ANC services at early stage of the pregnancy as compared to pregnant women who are less than 20 years and more than 40 years. Despite these relationships as observed, a study by Dulla et al. (2017) noted a slightly different result. Dulla et al. (2017) noted that the proportion of pregnant women who utilize eight-time ANC services were relatively higher among pregnant women aged 25-30 years compared to pregnant women who are less than 20 years and above 30 years.

Religion may be seen as major player in influencing the outcome of antenatal care utilization, however, there are some levels of significance that is placed on the contribution of religion on maternal health in general. The study noted that, among the religious sects in the municipality, women who belong to the Christian faith were more likely to make eight antenatal care services. Studies from other countries have also corroborated the findings in this study. Okedo-alex et al. (2019) in a different study in Nigeria noted that women who belong to the Christian religion had higher odds of making eight ANC visits compared to Traditional and Muslim women. Ononokpono, (2015) had earlier observed a similar result in a study in Nigeria where it was observed that women who were Christians were more likely to have more ANC visits as compared to Muslim women. Makate and Makate, (2017) also in a different study in Ethiopia noted that it easier for Christian women to complete their antenatal schedules as per standard than for a Muslim woman to do same.

Another significant determinant of antenatal care utilization as observed in this study was educational status of the women. The higher the educational status of a woman, the higher the probability of the woman utilizing antenatal care services. The study note that women with

tertiary education had the highest probability of utilizing eight or more antenatal care services compared to women with no education or only primary education. The significant role of education on maternal health cannot be overemphasized. Women who are enlightened or have gained higher level of education are able to read more about pregnancy and its related complications and better understand what is to be done during such period. They are able to ask and inqure more about why certain type of services are provided to them. Women with higher education also appreciate the importance of antenatal care service and therefore commit to it. Different studies have equally established a strong relationship with level of education of pregnant women and the utilization of antenatal care services.

Tessema and Minyihun, (2021) in a study in East Africa observed that full utilization of ANC services with 8+ ANC visits has a positive relationship with the educational status of pregnant women in that the higher the educational status of a woman, the higher the use of antenatal services. Wulandari et al. (2021) in their study in Philippines also noted that the odds of ANC utilization increases with an increase in educational status. Women who completed secondary and tertiary levels of education were thrice and six times more likely to complete at least eight ANC visits as compared to those who had no education. Amoako et al. (2020) in their study in Ghana noted that women with tertiary education were ten time more likely to make at least four ANC visits compared to women without education. These evidence further confirms the argument that seeks to sugest that education plays a major role in enhancing the use of maternal health services.

The place of residence of every individual largely influences the lifestyle of the individual. General observation over the world has been that those who reside in urban areas have easy access to quality health service and are able to utilize general health services compared to their colleagues in rural areas where access to quality health care is limited. Despite these general

observations, the observed made in this study is the direct opposite of what has been observed in several studies. The study noted that women who lived in rural communities had higher odds of utilizing antenatal care services than those who lived in urban areas. This finding could suggest that persons in the rural areas either have access to ANC services via the CHPs compounds, or they have gained some insight on the essence of ANC services for pregnant women. Tekelab et al. (2019) had argued that there is a positive correlation between the utilization of antenatal care and urban residence and that pregnant women in urban areas are likely to have a proximal access to ANC services as compared to those living in rural centres. Wulandari et al. (2021) also mentioned that women who live in the urban towns of Philippines were more likely to utilize 8+ ANC services as compared to women living in rural communities. Mugo et al. (2020) also observed that nearly 80% of the women who completed their ANC cycle were living in urban areas. It is therefore important to emphasize that the place of residence of a woman determines a woman's access to maternal health services and this invariable influence the outcome of ANC service utilization.

The final socio-demographic factor in this study that influenced the outcome of antenatal care utilization was the marital status of the women. The study noted that women who are married were more likely to make at least eight antenatal care services compared to women who were single. One advantage that married women have over single mothers is the support the kind of support they receive from their partners. However, for singles, the fear of been stigmatized for getting pregnant without a husband deters them from accessing antenatal care services. Afaya et al. (2020) in a study in Ghana noted that marital status of a pregnant woman is an important determinant especially in rural communities where community members know each other. The study observed that women who were not married were less likely to reach standard ANC attendance eight visit as compared to women who are married. Owili et al. (2016) also analysed the role of marriage in ANC utilization and observed that women who are married and live

with their respective husbands have higher odds of completing their ANC schedules and having at least eight visits as compared to women who are not married. However, Tarekegn et al. (2014) in a different study observed a diverse results as compared to most of the studies. The study by Tarekegn et al. showed that women who are living alone and women who were formerly married but are currently not married had higher odds of utilizing more ANC services as compared to women who are currently married.

Another significant relationship was observed between the distance to ANC centres and the utilization of ANC services. It was observed that women who live within less than 3km from their ANC facilities were more likely to utilize ANC services compared to women who live more than 5 km away from their ANC centres. Amoako et al. (2020) in their study in Ghana noted concluded that the distance to the nearest health facility from the place of residence could influence the outcome of ANC utilization among pregnant women. The study noted that women who live less than 5km from the nearest facility were more likely to complete their antenatal care schedules and makes at least eight visits prior to their delivery as compared to women who live 10 km away from the nearest facility.

Tsegay et al. (2013) in their study also observed that proximity to a health facility is a critical factor in determining attendance to ANC services. Ziblim et al. (2018) in their study among adolescent women noted that women who live within 1 km radius from a facility are able to makes more than eight visits for ANC services than adolescent girls who stay above 5km away from the nearest facility. Tegegne et al. (2019) in their study also observed that a-unit increase in the distance from the facility significantly influenced the number of times of visits to the facility.

5.5 Implications for policy and practice

Early commencement of antenatal care should be a point of emphasis in policy as it maximizes the opportunity to attain the required number of visits. The existing guidelines encourage early antenatal care visits and emphasis should be continuous to optimize the gains. Future policy reforms may need to consider mapping of districts to determine 'at risk' clusters based on sociodemographic determinants of antenatal service utilization. In the present study, quantitative surveys indicate inequities across some of the sociodemographic factors limit adequate utilization of antenatal care services and include older maternal age, basic or secondary level of education, urban residence and being a Muslim. Women in these groups should receive priority attention to close the gaps in service utilization rates. Mapping these areas in the district will help the district plan more effectively to increase antenatal care among them. Interventions should be evidence driven and institutionalized to sustain the gains. Notably, cost of care and NHIS subscription (influencing access to healthcare) which have been key factors in earlier studies, were reiterated in the present study but mainly in the qualitative aspect of the study. The quantitative surveys did not support this finding and the reason for the disparity is not clear at this time.

Government policies over the years have had diverse impact on access and utilization of maternal health services. Within the context of national healthcare services, the quest to achieve universal health coverage have been hindered with limited access to maternal health services within the continuum of care. Despite the introduction of NHIS policy to facilitate improved access to antenatal care services, prevailing barriers have limited women from utilizing comprehensive ANC services.

Policy reviews on the items included in the NHIS should be discussed with the involvement of key stakeholders. Even though the cost of ANC services was not a major issue at quantitative level, it was a major concern raised by the women during the qualitative assessment. Indeed, payments made during ANC services (mainly on lab, scan and other medications) do not sit well with some of the women. Government policy on the items included in the Free Maternal Health Policy should be clear.

The qualitative interviews showed that the attitude of health workers prevented women from utilizing antenatal care services. Within the health system framework, health workers play a pivotal role in service delivery and serve as a link to both governance and community members who are the recipients of health service delivery. Health workers attitude towards beneficiaries of healthcare services determines the level of utilization. It is therefore incumbent on health workers to deliver quality services through patient care system. This may imply poor quality of care in terms of respectful maternal healthcare. Unattended this would greatly impair attainment of Sustainable Development Goal 3, which aims for the health and well-being of all, including pregnant women. In an effort to reduce maternal and child mortality in Ghana, the government has implemented several interventions which in the absence of respectful maternal care and positive staff attitude may not optimize the full gains of these laudable interventions. This calls for a re-orientation of maternal healthcare staff during in-service training.

5.6 Limitation of the Study

The study employed a cross-sectional design which precludes any conclusions about causality. The survey used a probability-based sampling method (systematic sampling) to recruit participants for the study making the results generalizable. However, the qualitative sample was not similarly selected, this confines the results to the study sample. Nonetheless, the results affirm findings from the quantitative survey and may be useful in contextually similar settings.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6. 1 Conclusion

All the women who participated in the study were able to make at least one antenatal care visit. However, the eight or more antenatal service utilization rate among the women was relatively lower with three of every ten women making at least eight antenatal visits. This result was noted to be the lowest among several studies and surveys in Ghana. The outcome of the timing of the start of antenatal care visit was comparatively better. More than two-thirds of the women started their antenatal care visits in the first semester.

Antenatal service utilization among the women was determined by both socio-demographic and maternal health service factors. Sociodemographic factors, such as age, marital status, religion, educational status and residence were significantly associated with the utilization of antenatal care services. Additionally, other factors such as trimester within which antenatal care visit begun and the distance to health facility were significantly associated with utilization of antenatal care services. Nearly all the results conform to most studies, except the residence of the women, which was directly contrary to findings in earlier studies.

6.2 Recommendations

The following recommendation are made to address the low utilization of antenatal care services:

Public Health/Clinical Practice:

1. The qualitative interviews showed that the attitude of health workers prevented women from utilizing antenatal care services. It is therefore recommended that midwives who provide maternal health services are given refresher trainings on respectful maternal

healthcare, professional ethics and patient charter to help them appreciate the significant role they play in maternal health interventions.

2. Targeted education should be given to women who are more than 30 years on the importance of early initiation and continued antenatal care services and their relationship to maternal morbidity and mortality.
3. Health workers at various ANC units in the New Juaben South Municipality should conduct follow-up visits to pregnant women who default in their visits to ensure that pregnant women are able to complete their ANC schedules. Electronic reminders and home visits have proven useful in this regard.

Policy Recommendation:

1. Government policy on Free Maternal Health Service under the National Health Insurance programme should be reviewed to include the cost of laboratories services and ultrasound scans as a means of encouraging women who delay in initiating antenatal care visits due to cost.
2. Emphasis on early initiation of antenatal care visits should receive additional emphasis at the implementation levels and should be accounted for during monitoring and supervisory visits.
3. Districts should map areas where sociodemographic barriers cluster for more targeted interventions to close the gaps in ANC service utilization, which left unattended may lead to adverse maternal and child health outcomes negating attainment of SDG

Recommendation for Research:

1. The observed results on ANC utilization was relatively low and this require further assessment targeting wider population, possible more than 1,000 women to verify the utilization rate for a second study.

2. Further research on the linkage between antenatal care utilization and pregnancy outcome including pregnancy complications and utilization of skilled delivery should be conducted to enhance the discourse on maternal health care system in the New Juaben South municipality.

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APPENDIX I: PARTICIPANT INFORMATION SHEET (WOMEN WITHIN REPRODUCTIVE AGE)

Study Title: Factors affecting utilization of antenatal care services in New Juaben South Municipality in Eastern Region

Date: December 1, 2021

Introduction: This study has been conducted by Rita Dua Dodd (Principal Investigator) a Master of Public Health (MPH) student of School of Public Health, University of Ghana, Legon.

Address: Rita Dua Dodd, P. O. BOX 190, Koforidua

Background and Purpose of Research:

This study is seeking to assess the factors that influence the utilization of antenatal care among pregnant women during the nine-month cycle. Maternal health care continues to pose a lot challenges to Ghana's quest to achieve desirable targets on the Sustainable Development Goals. The introduction of the free maternal health care services was to improve utilization of antenatal care services. However, there are still challenges with uptake of antenatal are services. There is therefore the need to understand why some women continue to default or do not go antenatal care services as required by WHO.

Safety Protocol:

With the emergence of Covid-19 pandemic, data collectors will be provided with adequate Personal Protective Equipment (PPE). Each data collector recruited to participate in the data collection will be given face masks, hand gloves, hand sanitizers and liquid soup to be used in areas where water is easily accessible. All data collectors will be required to observe social distancing protocols. For interviewees (study participants), face mask will be provided to each prior to the start of the interview. Additionally, each participant will be required to wash hand with soup and where appropriately, use hand sanitizers before the start of any interview.

Possible Risk and Discomfort

This study poses no risk and discomfort to you as a participant in this study. You will spend about 25 minutes in answering the questionnaires. You will be required to sign a consent form

before we start the interview. You will be considered as volunteers and can opt out of the study or decline to answer any question.

Possible Benefits

There is no direct benefit to you as a participant, however, the outcome of the study will inform policy makers to formulate interventions that may indirectly benefit you.

Confidentiality

All the information collected from you will be kept strictly confidential and will be used for the intended purpose only. You will not be identified by name in any dissemination reports or publications resulting from this study.

Data Security and Record Keeping

Study materials (questionnaires and informed consent) will be stored in a locked file cabinet in the office of the principal investigator. Data will be entered STATA software package version 15 by the research assistants, and electronic files will be made accessible only to the research team. Study materials (questionnaires and informed consent) will be labelled and given a unique study identification number for the participants. The data storage will be done by the principal investigator.

My right to refuse or withdraw:

I have the right to take part in this research or not without losing any benefit. I may stop participating in this research any time I wish.

I have read the above information/ it has been read and well translated to me in my local language in the presence of a witness. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntary to participate as a subject in this study and understand that I have the right to withdraw from the study at any time.

Signed by:……

Name:……..Date:…….

Place……

If illiterate right thumb print Name of witness……

…… Signature……

Contact information:

Do you have any questions or clarifications?

If any of your questions were not satisfactorily answered by me, or you have further questions regarding this study, you may contact:

Rita Dua Dodd

Tel:. 0244093526

Email: rduadodd@gmail.com

Or

Dr. Emilia Asuquo Udofia
Department of Community Health, University of Ghana Medical School, College of Health Sciences, University of Ghana, Korle Bu Campus

Tel: 0243259018

If you have any concerns or need clarifications regarding ethical issues, please contact

Nana Abena Kwaa Ansah Apatu (Administrator)

Ghana Health Service, Ethics Review Committee, Accra

Tel: 0503539896.

APPENDIX II: PARTICIPANT INFORMATION SHEET II (HEALTH WORKERS FOR KEY INFORMANT INTERVIEWS

Study Title: Factors affecting utilization of antenatal care services in New Juaben South Municipality in Eastern Region

Date: December 1, 2021

Introduction: This study is been conducted by Rita Dua Dodd (Principal Investigator) a Master of Public Health (MPH) student of School of Public Health, University of Ghana, Legon.

Address: Rita Dua Dodd, P. O. BOX 190, Koforidua

Background and Purpose of Research:

This study is seeking to assess the factors that influence the utilization of antenatal care among pregnant women during the nine-moth cycle. Maternal health care continues to pose a lot challenges to Ghana's quest to achieve desirable targets on the Sustainable Development Goals. The introduction of the free maternal health care services was to improve utilization of antenatal care services. However, there are still challenges with uptake of antenatal are services. There is therefore the need to understand why some women continue to default or do not go antenatal care services as required by WHO.

Safety Protocol:

With the emergence of Covid-19 pandemic, everyone participating in this study will be given appropriate Personal Protective Equipment (PPE). All data collectors will be required to observe social distancing protocols. You will be given facemask and ensure that frequently, you sanitize your hands in the course of the conversation.

Possible Risk and Discomfort

This study poses no risk and discomfort to you as a participant in this study. This discussion will take a maximum of 15 minutes. You will be required to sign a consent form before we start the interview. You will be considered as volunteers and can opt out of the study or decline to answer any question.

Possible Benefits

There is no direct benefit to you as a participant, however, the outcome of the study will inform policy makers to formulate interventions that may indirectly benefit you.

Confidentiality

All the information collected from you will be kept strictly confidential and will be used for the intended purpose only. You will not be identified by name in any dissemination reports or publications resulting from this study.

Data Security and Record Keeping

Study materials (questionnaires and informed consent) will be stored in a locked file cabinet in the office of the principal investigator. Data will be entered STATA software package version 15 by the research assistants, and electronic files will be made accessible only to the research team. Study materials (questionnaires and informed consent) will be labelled and given a unique study identification number for the participants. The data storage will be done by the principal investigator.

My right to refuse or withdraw:

I have the right to take part in this research or not without losing any benefit. I may stop participating in this research any time I wish.

I have read the above information/ it has been read and well translated to me in my local language in the presence of a witness. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntary to participate as a subject in this study and understand that I have the right to withdraw from the study at any time.

Signed by:……

Name:……..Date:…….

Place……

Contact information:

Do you have any questions or clarifications?

If any of your questions were not satisfactorily answered by me, or you have further questions regarding this study, you may contact:

Rita Dua Dodd

Tel:. 0244093526

Email: rduadodd@gmail.com

Or

Dr. Emilia Asuquo Udofia
Department of Community Health, University of Ghana Medical School, College of Health Sciences, University of Ghana, Korle Bu Campus

Tel: 0243259018

If you have any concerns or need clarifications regarding ethical issues, please contact

Nana Abena Kwaa Ansah Apatu (Administrator)

Ghana Health Service, Ethics Review Committee, Accra

Tel: 0503539896.

APPENDIX III: PARTICIPANT INFORMATION SHEET III (FOCUS GROUP DISCUSSIONS)

Study Title: Factors affecting utilization of antenatal care services in New Juaben South Municipality in Eastern Region

Date: December 1, 2021

Introduction: This study is been conducted by Rita Dua Dodd (Principal Investigator) a Master of Public Health (MPH) student of School of Public Health, University of Ghana, Legon.

Address: Rita Dua Dodd, P. O. BOX 190, Koforidua

Background and Purpose of Research:

This study is seeking to assess the factors that influence the utilization of antenatal care among pregnant women during the nine-moth cycle. Maternal health care continues to pose a lot challenges to Ghana's quest to achieve desirable targets on the Sustainable Development Goals. The introduction of the free maternal health care services was to improve utilization of antenatal care services. However, there are still challenges with uptake of antenatal are services. There is therefore the need to understand why some women continue to default or do not go antenatal care services as required by WHO.

Safety Protocol:

With the emergence of Covid-19 pandemic, everyone participating in this study will be given appropriate Personal Protective Equipment (PPE). All data collectors will be required to observe social distancing protocols. You will be given face-mask and ensure that frequently, you sanitize your hands in the course of the conversation.

Possible Risk and Discomfort

This study poses no risk and discomfort to you as a participant in this study. This discussions will take a maximum of 25-30 minutes. You will be required to sign a consent form before we start the interview. You will be considered as volunteers and can opt out of the study or decline to answer any question.

Possible Benefits

There is no direct benefit to you as a participant, however, the outcome of the study will inform policy makers to formulate interventions that may indirectly benefit you.

Confidentiality

All the information collected from you will be kept strictly confidential and will be used for the intended purpose only. You will not be identified by name in any dissemination reports or publications resulting from this study.

Data Security and Record Keeping

Study materials (questionnaires and informed consent) will be stored in a locked file cabinet in the office of the principal investigator. Data will be entered STATA software package version 15 by the research assistants, and electronic files will be made accessible only to the research team. Study materials (questionnaires and informed consent) will be labelled and given a unique study identification number for the participants. The data storage will be done by the principal investigator.

My right to refuse or withdraw:

I have the right to take part in this research or not without losing any benefit. I may stop participating in this research any time I wish.

I have read the above information/ it has been read and well translated to me in my local language in the presence of a witness. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntary to participate as a subject in this study and understand that I have the right to withdraw from the study at any time.

Signed by:……

Name:……..Date:…….

Place……

Contact information:

Do you have any questions or clarifications?

If any of your questions were not satisfactorily answered by me, or you have further questions regarding this study, you may contact:

Rita Dua Dodd

Tel:. 0244093526

Email: rduadodd@gmail.com

Or

Dr. Emilia Asuquo Udofia
Department of Community Health, University of Ghana Medical School, College of Health Sciences, University of Ghana, Korle Bu Campus

Tel: 0243259018

If you have any concerns or need clarifications regarding ethical issues, please contact

Nana Abena Kwaa Ansah Apatu (Administrator)

Ghana Health Service, Ethics Review Committee, Accra

Tel: 0503539896.

APPENDIX IV: CONSENT FORM

Study Title: Factors affecting utilization of antenatal care services in New Juaben South Municipality in Eastern Region

PARTICIPANTS' STATEMENT

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

I voluntarily agree to be part of this research.

Name or Initials of Participant……..

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

Date:…….

INTERPRETERS' STATEMENT

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

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

Name of Interpreter……

Signature of Interpreter……..

Date:……

STATEMENT OF WITNESS

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

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

Name: ……

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

Date: ……

INVESTIGATOR STATEMENT AND SIGNATURE

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

Researcher's name……

Signature …….

Date…….

APPENDIX V:

Table 2.1: Summary list of WHO recommendations on antenatal care (ANC) for a positive pregnancy experience

A. Nutritional interventions		
	Recommendation	**Type of recommendation**
Dietary interventions	**A.1.1:** Counselling about healthy eating and keeping physically active during pregnancy is recommended for pregnant women to stay healthy and to prevent excessive weight gain during pregnancy	Recommended
	A.1.2: In undernourished populations, nutrition education on increasing daily energy and protein intake is recommended for pregnant women to reduce the risk of low-birth-weight neonates.	Context-specific recommendation
	A.1.3: In undernourished populations, balanced energy and protein dietary supplementation is recommended for pregnant women to reduce the risk of stillbirths and small-for-gestational-age neonates.	Context-specific recommendation
	A.1.4: In undernourished populations, high-protein supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended
Iron and folic acid supplements	**A.2.1:** Daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental μiron and 400 g (0.4 mg) of folic acid[c] is recommended for pregnant women to prevent maternal anaemia, puerperal sepsis, low birth weight, and preterm birth.	Recommended
	A.2.2: Intermittent oral iron and folic acid supplementation with 120 mg of elemental μ iron and 2800 g (2.8 mg) of folic acid once weekly is recommended for pregnant women to improve maternal and neonatal outcomes if daily iron is not acceptable due to side-effects, and in populations with an anaemia prevalence among pregnant women of less than 20%.	Context-specific recommendation
Calcium supplements	**A.3:** In populations with low dietary calcium intake, daily calcium supplementation (1.5–2.0 g oral elemental calcium) is recommended for pregnant women to reduce the risk of pre-eclampsia	Context-specific recommendation
Vitamin A supplements	**A.4:** Vitamin A supplementation is only recommended for pregnant women in areas where vitamin A deficiency is a severe public health problem to prevent night blindness	Context-specific recommendation
Zinc supplements	**A.5:** Zinc supplementation for pregnant women is only recommended in the context of rigorous research.	Context-specific recommendation (research)
Multiple micronutrient supplements	**A.6:** Multiple micronutrient supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended
Vitamin B6 (pyridoxine) supplements	**A.7:** Vitamin B6 (pyridoxine) supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended

Vitamin E and C supplements	**A.8:** Vitamin E and C supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended
Vitamin D supplements	**A.9:** Vitamin D supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes	Not recommended
Restricting caffeine intake	**A.10:** For pregnant women with high daily caffeine intake (more than 300 mg per day) lowering daily caffeine intake during pregnancy is recommended to reduce the risk of pregnancy loss and low-birth-weight neonates.	Context-specific recommendation
B. Maternal and foetal assessment [1]		
	Recommendation	**Type of recommendation**
B.1: Maternal assessment		
Anaemia	**B.1.1:** Full blood count testing is the recommended method for diagnosing anaemia in pregnancy. In settings where full blood count testing is not available, on-site haemoglobin testing with a haemoglobinometer is recommended over the use of the haemoglobin colour scale as the method for diagnosing anaemia in pregnancy.	Context-specific recommendation
Asymptomatic bacteriuria (ASB)	**B.1.2:** Midstream urine culture is the recommended method for diagnosing asymptomatic bacteriuria (ASB) in pregnancy. In settings where urine culture is not available, on-site midstream urine Gramstaining is recommended over the use of dipstick tests as the method for diagnosing ASB in pregnancy.	Context-specific recommendation
Intimate partner violence (IPV)	**B.1.3:** Clinical enquiry about the possibility of intimate partner violence (IPV) should be strongly considered at antenatal care visits when assessing conditions that may be caused or complicated by IPV in order to improve clinical diagnosis and subsequent care, where there is the capacity to provide a supportive response (including referral where appropriate) and where the WHO minimum requirements are met	Context-specific recommendation
Gestational diabetes mellitus (GDM)	**B.1.4:** Hyperglycaemia first detected at any time during pregnancy should be classified as either gestational diabetes mellitus (GDM) or diabetes mellitus in pregnancy, according to WHO criteria	Recommended
Tobacco use	**B.1.5:** Health-care providers should ask all pregnant women about their tobacco use (past and present) and exposure to second-hand smoke as early as possible in the pregnancy and at every antenatal care visit	Recommended
Substance use	**B.1.6:** Health-care providers should ask all pregnant women about their use of alcohol and other substances (past and present) as early as possible in the pregnancy and at every antenatal care visit.	Recommended

Human immuno-deficiency virus (HIV) and syphilis	**B.1.7:** In high-prevalence settings, provider-initiated testing and counselling (PITC) for HIV should be considered a routine component of the package of care for pregnant women in all antenatal care settings. In low-prevalence settings, PITC can be considered for pregnant women in antenatal care settings as a key component of the effort to eliminate mother-to-child transmission of HIV, and to integrate HIV testing with syphilis, viral or other key tests, as relevant to the setting, and to strengthen the underlying maternal and child health systems.	Recommended
Tuberculosis (TB)	**B.1.8:** In settings where the tuberculosis (TB) prevalence in the general population is 100/100 000 population or higher, systematic screening for active TB should be considered for pregnant women as part of antenatal care.	Context-specific recommendation
B.2: Foetal assessment		
Daily foetal movement counting	**B.2.1:** Daily foetal movement counting, such as with "count-to-ten" kick charts, is only recommended in the context of rigorous research.	Context-specific recommendation (research)
Symphysis-fundal height (SFH) measurement	**B.2.2:** Replacing abdominal palpation with symphysis-fundal height (SFH) measurement for the assessment of foetal growth is not recommended to improve perinatal outcomes. A change from what is usually practiced (abdominal palpation or SFH measurement) in a particular setting is not recommended.	Context-specific recommendation
Antenatal cardiotocography	**B.2.3:** Routine antenatal cardiotocography is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended
Ultrasound scan	**B.2.4:** One ultrasound scan before 24 weeks of gestation (early ultrasound) is recommended for pregnant women to estimate gestational age, improve detection of foetal anomalies and multiple pregnancies, reduce induction of labour for post-term pregnancy, and improve a woman's pregnancy experience.	Recommended
Doppler ultrasound of foetal blood vessels	**B.2.5:** Routine Doppler ultrasound examination is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended
C. Preventive measures		
Recommendation		**Type of recommendation**
Antibiotics for asymptomatic bacteriuria (ASB)	**C.1:** A seven-day antibiotic regimen is recommended for all pregnant women with asymptomatic bacteriuria (ASB) to prevent persistent bacteriuria, preterm birth and low birth weight.	Recommended
Antibiotic prophylaxis to prevent recurrent urinary tract infections	**C.2:** Antibiotic prophylaxis is only recommended to prevent recurrent urinary tract infections in pregnant women in the context of rigorous research.	Context-specific recommendation (research)

Antenatal anti-D immunoglobulin administration	**C.3:** Antenatal prophylaxis with anti-D immunoglobulin in non-sensitized Rh-negative pregnant women at 28 and 34 weeks of gestation to prevent RhD alloimmunization is only recommended in the context of rigorous research.	Context-specific recommendation (research)
Preventive anthelminthic treatment	**C.4:** In endemic areas, preventive anthelminthic treatment is recommended for pregnant women after the first trimester as part of worm infection reduction programmes.	Context-specific recommendation
Tetanus toxoid vaccination	**C.5:** Tetanus toxoid vaccination is recommended for all pregnant women, depending on previous tetanus vaccination exposure, to prevent neonatal mortality from tetanus.	Recommended
Malaria prevention: intermittent preventive treatment in pregnancy (IPTp)	**C.6:** In malaria-endemic areas in Africa, intermittent preventive treatment with sulfadoxine-pyrimethamine (IPTp-SP) is recommended for all pregnant women. Dosing should start in the second trimester, and doses should be given at least one month apart, with the objective of ensuring that at least three doses are received.	Context-specific recommendation
Pre-exposure prophylaxis (PrEP) for HIV prevention	**C.7:** Oral pre-exposure prophylaxis (PrEP) containing tenofovir disoproxil fumarate (TDF) should be offered as an additional prevention choice for pregnant women at substantial risk of HIV infection as part of combination prevention approaches.	Context-specific recommendation
D. Interventions for common physiological symptoms		
	Recommendation	**Type of recommendation**
Nausea and vomiting	**D.1:** Ginger, chamomile, vitamin B6 and/or acupuncture are recommended for the relief of nausea in early pregnancy, based on a woman's preferences and available options.	Recommended
Heartburn	**D.2:** Advice on diet and lifestyle is recommended to prevent and relieve heartburn in pregnancy. Antacid preparations can be offered to women with troublesome symptoms that are not relieved by lifestyle modification.	Recommended
Leg cramps	**D.3:** Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy, based on a woman's preferences and available options.	Recommended
Low back and pelvic pain	**D.4:** Regular exercise throughout pregnancy is recommended to prevent low back and pelvic pain. There are a number of different treatment options that can be used, such as physiotherapy, support belts and acupuncture, based on a woman's preferences and available options.	Recommended
Constipation	**D.5:** Wheat bran or other fibre supplements can be used to relieve constipation in pregnancy if the condition fails to respond to dietary modification, based on a woman's preferences and available options.	Recommended
Varicose veins and oedema	**D.6:** non-pharmacological options, such as compression stockings, leg elevation and water immersion, can be used for the management of varicose veins and oedema in pregnancy, based on a woman's preferences and available options.	Recommended

E. Health systems interventions to improve the utilization and quality of antenatal care		
	Recommendation	**Type of recommendation**
Woman-held case notes	**E.1:** It is recommended that each pregnant woman carries her own case notes during pregnancy to improve continuity, quality of care and her pregnancy experience.	Recommended
Midwife-led continuity of care	**E.2:** Midwife-led continuity-of-care models, in which a known midwife or small group of known midwives supports a woman throughout the antenatal, intrapartum and postnatal continuum, are recommended for pregnant women in settings with well-functioning midwifery programmes.	Context-specific recommendation
Group antenatal care	**E.3:** Group antenatal care provided by qualified health-care professionals may be offered as an alternative to individual antenatal care for pregnant women in the context of rigorous research, depending on a woman's preferences and provided that the infrastructure and resources for delivery of group antenatal care are available.	Context-specific recommendation (research)
Community-based interventions to improve communication and support	**E.4.1:** The implementation of community mobilization through facilitated participatory learning and action (PLA) cycles with women's groups is recommended to improve maternal and new-born health, particularly in rural settings with low access to health services Participatory women's groups represent an opportunity for women to discuss their needs during pregnancy, including barriers to reaching care, and to increase support to pregnant women.	Context-specific recommendation
	E.4.2: Packages of interventions that include household and community mobilization and antenatal home visits are recommended to improve antenatal care utilization and perinatal health outcomes, particularly in rural settings with low access to health services.	Context-specific recommendation
Task shifting components of antenatal care delivery	**E.5.1:** Task shifting the promotion of health-related behaviours for maternal and newborn health to a broad range of cadres, including lay health workers, auxiliary nurses, nurses, midwives and doctors is recommended.	Recommended
	E.5.2: Task shifting the distribution of recommended nutritional supplements and intermittent preventive treatment in pregnancy (IPTp) for malaria prevention to a broad range of cadres, including auxiliary nurses, nurses, midwives and doctors is recommended.	Recommended
Recruitment and retention of staff in rural and remote areas	**E.6:** Policy-makers should consider educational, regulatory, financial, and personal and professional support interventions to recruit and retain qualified health workers in rural and remote areas.	Context-specific recommendation
Antenatal care contact schedules	**E.7:** Antenatal care models with a minimum of eight contacts are recommended to reduce perinatal mortality and improve women's experience of care.	Recommended

Source: (WHO, 2010)

APPENDIX VI: DATA COLLECTION TOOL

FACTORS AFFECTING UTILIZATION OF ANTENATAL CARE SERVICES IN NEW JUABEN SOUTH MUNICIPALITY IN EASTERN REGION

Part A: Women within Reproductive Age (users of antenatal care service)

	Questionnaire Code: …… Date …… **Session 1: Socio-demographic characteristics of participants**		Code
1.	Age (in years)		
2.	Religion	Christian Muslim Traditional Other, Specify	
3.	Level of education	Primary/Basic Secondary Tertiary Never school	
4.	Employment Status	1. Unemployed 2. Employed/Salaried 3. Self Employed 4. Other, specify	
5.	Residence	Rural Urban	
6.	Marital Status	1. Single 2. Married 3. Divorced/Separated 4. Cohabitating	
7.	If married, Type of Marriage	1. Monogamy 2. Polygamy	
8.	NHIA Card Holder	1. Yes 2. No	
9.	Number of children		
10.	Household monthly income	1. Yes 2. No	

	Session 2: ANC utilization among women		
11.	Parity	1. One birth 2. Two birth 3. Three birth 4. Four or more births	
12.	Attendance to ANC services	1. Yes 2. No	Confirm from ANC card

13.	Number of ANC visits prior to delivery		Confirm from ANC card
14.	Which trimester did you begin ANC attendance?	1. First 2. Second 3. Third	Confirm from ANC card
15.	Where did you attend ANC service?		Name of the facility
Section 3: Health service factors			
16.	Health workers attitude towards pregnant women during ANC	1. Friendly 2. Not friendly	
17.	Do you make any payment at the health facility when you go for ANC services?	1. Yes 2. No	
18.	If yes, on what do you make the payment?	1. Scan 2. Lab 3. Medication 4. Assessment 5. Others, specify	
19.	How would classify the payments at the health facility for ANC services?	1. Very expensive 2. Expensive 3. Moderate 4. Not expensive	
20.	Availability of midwives/nurse in the facility at all times	1. Yes 2. No	
21.	What is the time spent in the facility during ANC visit?	1. Less than 30 mins 2. 30mins – 1hr 3. > 1hr but < 2 hrs 4. 2 hrs +	
22.	Do you get all the services (assessment, scanning, lab, etc) you need at your facility during ANC visits?	1. Yes 2. No	
23.	Distance to nearest health facility	1. < 3kms 2. 3-5kms 3. > 5kms	
24.	Mode of transport to the nearest facility	1. Motor bicycle 2. Vehicle 3. Walking	
25.	Do you receive any education on the importance of ANC and skilled delivery?	1. Yes 2. No	
Session 4: Socio-cultural factors			
26.	Education of husband/partner	1. No education 2. Primary 3. Secondary 4. Tertiary	
27.	Occupation of partner	1. Unemployed 2. Employed (Salary) 3. Self Employed 4. Other, specify	

28.	Involvement in decision on accessing antenatal care services	1. Yes 2. No	
29.	What is your partner's position on antenatal care services	1. Support to use health facility 2. Beliefs in TBAs' services 3. Thinks it should be delayed until third trimester	
30.	Is there any cultural practice in the community that discourage women from using health facilities for delivery?	1. Yes 2. No 3. Don't know	
31.	Do you have any radio, TV or phone?	1. Yes 2. No	
32.	Do you get any information on antenatal care services on aby of these media outlets	1. Yes 2. No	

THANK YOU FOR TAKING PART IN THIS STUDY.

Part B: Key Informant Interviews – Municipal Health Directorate

1. What is the number of health facilities in the New Juaben South Municipal? ----------
2. What is the proportion of health facilities offering antenatal services in the New Juaben south municipality? ----------
3. What is the ratio of
   a. Midwife to Expected Pregnancies in the municipality? ----------
   b. Community Health Nurse to Expected pregnancies in the municipality? ----------
4. What are the available Antenatal services in the New Juaben South Municipality? ----------
5. What are the gaps in the delivery of antenatal services and to what extent does it affect ANC service utilization in the municipality?----------
6. What are some of the reasons that encourages pregnant women to go for ANC services in the facilities within the district?.....
   .....
   .....
7. What stakeholders do you collaborate with in the delivery of antenatal services in the New Juaben South Municipality and the level of collaboration?----------

8. What role does the Health Directorate play to ensure effective utilization of antenatal services in the New Juaben South Municipality?----------

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What role does the Midwives play to ensure effective utilization of antenatal services in the New Juaben South Municipality? (This can be answered by a midwife from any of the facilities) _____

_____

9. In your assessment, what are the barriers to antenatal care utilization in this municipality? A: Four-time plus ANC visits:

B: Timing of ANC initiation:

Part C: Focus Group Discussion: Selected Groups in the communities

1. What is the view of women in this community on antenatal care attendance?

2. Why are some women not willing to utilize antenatal care services?

3. Why are women not willing to start antenatal care services early?

4. What are the roles of husbands/partners on decision to attend antenatal care?
5. What should be done to ensure that women are willing to start ANC services on time?
6. What should be done to ensure that women are willing to complete their antenatal schedules?
7. Is there anything else you are willing to share with the group about antenatal care services in your community?

THANK YOU FOR TAKING PART IN THIS STUDY.