

UNIVERSITY OF GHANA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY



**TITLE: FACTORS INFLUENCING ANTENATAL CLINIC ATTENDANCE AMONG
PREGNANT WOMEN IN THE NINGO-PRAMPRAM DISTRICT IN GREATER ACCRA
REGION, GHANA**

BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTER
OF PHILOSOPHY IN MIDWIFERY DEGREE**

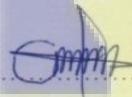


DECLARATION

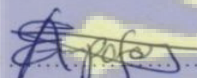
I, Elizabeth Hutchison declare that this thesis is the result of my work conducted under the supervision of Dr Caroline Dinam Badzi and Dr Evelyn Asamoah-Ampofo for the award of Master of Philosophy Degree in Midwifery at the School of Nursing and Midwifery of the University of Ghana, Legon. All the resources assessed as literature have all been duly referenced.

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DEDICATION

This thesis is dedicated to my husband Dr. Samuel Antobam, children and my entire family for their unwavering love and support throughout this academic journey.



ACKNOWLEDGEMENT

I am deeply thankful to God Almighty. His Grace and mercy have brought me this far. My heartfelt gratitude also goes to my supervisors, Dr. Caroline Dinam Badzi and Dr. Evelyn Asamoah Ampofo. Their guidance, understanding, and wealth of knowledge helped me achieve this goal.

Thank you to the entire staff of the School of Nursing and Midwifery, University of Ghana, for your support in diverse ways. Additionally, my appreciation goes to my wonderful participants who availed themselves for this study and the entire management and staff of Prampram Polyclinic.



ABSTRACT

Despite the availability of antenatal care services, many pregnant women in Ghana, especially those in rural areas delay initiating antenatal care attendance. Without access to vital screening and support services to monitor pregnancy progress, detect complications early and ensure safe delivery, the risk of preventable maternal deaths can increase. The world Health Organization advises a minimum of eight antenatal visits starting within the first 12 weeks of pregnancy. However, several context-sensitive factors contribute to antenatal clinic attendance among pregnant women. This study sought to identify factors influencing antenatal clinic attendance among pregnant women in the Ningo-Prampram district. A cross-sectional quantitative study was conducted among pregnant women attending ANC at the Prampram Clinic. Simple random sampling was used to select 243 participants who had a median age of 27 from the source population. Data was collected using questionnaires, cleaned in MS Excel and exported into STATA 17.0 for analysis. Both descriptive and inferential statistics were performed, and all tests were considered statistically significant at a p-value of 0.05. The results indicated that a total of 146 (60.1%) of the pregnant women had attended ANC more than four times and 97 (39.9%) attended ANC less than four times. Demographic factors had a significant association with ANC visits in this study. Likewise, perceived susceptibility to pregnancy-related complications and health facility-related factors. Sociocultural factors also showed a statistically significant association with antenatal clinic attendance. In conclusion, this study reveals that sociocultural factors such as norms and customs regarding pregnancy significantly influenced antenatal clinic attendance among pregnant women in the Ningo-Prampram District. Addressing these factors through community-based interventions could significantly improve ANC attendance and ultimately enhance maternal and child health outcomes in the Greater Accra Region.



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LIST OF ABBREVIATIONS

ANC	- Antenatal Care
DHIMS	- District Health Information Systems
GSS	- Ghana Statistical Service
WHO	- World Health Organization
DCNO	- Deputy Chief Nursing Officer
ABM	- Andersen's Behavioural Model
JHS	- Junior High School
SHS	- Senior High School
TBAs	- Traditional Birth Attendants
GHS	- Ghana Health Service
PHC	- Population and Housing Census
LMICS	- Low-and-Middle-Income Countries
ERC	- Ethics Review Committee
STATA	- Statistical Software used for analyses





CHAPTER ONE: INTRODUCTION

1.1 Background

Reproductive health problems continue to be a global burden, especially in developing countries, despite improvements brought about by maternal and child healthcare initiatives (Belaid et al., 2020). Globally, pregnancy-related problems claimed the lives of almost 303,000 women and teenage girls in 2015 (Rayjade et al., 2024). Globally, the majority (60%) of newborn deaths or stillbirths occur during the antenatal period due to conditions like poor development, hypertension, and untreated infections (Blencowe et al., 2016). According to the latest available estimate, Ghana's maternal mortality rate stands at 310 deaths per 100,000 live births (GSS 2017). Though the country has made significant gains, this figure is far from the sustainable development target of 70 deaths per 100,000 live births by 2030.

As defined by the World Health Organisation (WHO), antenatal care (ANC) is the care given to pregnant women and adolescent girls by skilled health personnel to ensure the best health outcomes for women and their unborn babies (Anc & Anc, 2016). It is well established that pregnancy-related care or antenatal care aids in ensuring the well-being of both pregnant women and their unborn babies (Deshpande et al., 2021). Expectant mothers or teenage girls with access to high-quality prenatal care are protected from maternal fatalities. The government and international community have supported numerous ANC initiatives, but utilisation of such services which is a proximate driver of mother's and baby's positive health outcomes, is still low (Mugo et al., 2020).

Seeking medical attention has several advantages, especially in communities with limited public health and socioeconomic resources. It offers the chance to reduce foetal and neonatal mortality linked to obstetric problems and prevents the direct causes of maternal fatalities (Nuamah et al., 2019). ANC services such as screening and treating pregnancy complications, vaccination, iron and folic acid supplementation, and prophylaxis for malaria are key to reducing maternal and neonatal morbidity and mortality (Oshinyemi et al., 2018). To achieve the full benefits of these services, the timing of antenatal clinic visits is very crucial as early visits give patients a chance to assess risks before delivery and to manage and intervene quickly with pregnancy problems, saving both maternal morbidity and mortality.

In 2016, the WHO came up with new recommendations about antenatal care. It recommended that women should make at least eight contacts with their care provider with the first visit within the first twelve weeks of pregnancy. By these standards, Ghana's situation can be deemed a little better as studies in southern rural Ghana and the whole country show that more than half of pregnant women start their first ANC visit within the first twelve weeks of gestation as recommended by the WHO (GSS, 2017; Manyeh et al., 2020). That said, the circumstances are much distinct in some districts. In the Ningo Prampram district, for example, current information from the district health management systems (DHIMS) shows that only 41% of women seek care in the first trimester, with the remaining (59%) reporting in the second and third trimesters (DHIMS, 2022). Previous studies have only focused on the attendance rate and birth outcomes (Weyori et al., 2022). There is limited information on why the district still has a significant proportion of pregnant women attending ANC services at advanced gestational age. This study aims to identify factors influencing antenatal visits among pregnant women in the Ningo Prampram district of the Greater Accra Region.

1.2 Problem Statement

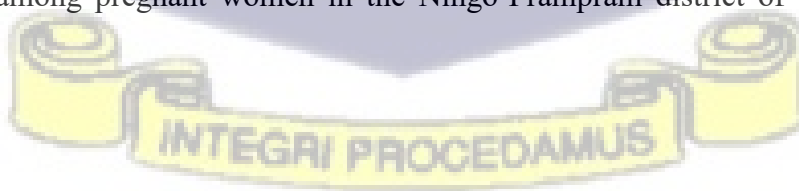
During pregnancy, women experience many biological changes which require careful attention from maternal care providers (Nuamah et al., 2019). Antenatal care services offered across maternity centres include screening, treatment of complications, vaccination, and iron and folic acid supplementation which are aimed at ensuring safety of both the mother and foetus until delivery. However, the timing within which these services are offered is crucial for determining complications and providing treatment early. The World Health Organization recommends that pregnant women visit antenatal clinics at least eight times before delivery, and the first of these visits should be done within the first 12 weeks of pregnancy (GSS, 2017). However, this is not always adhered to.

Many pregnant women in sub-Saharan Africa, especially teenage pregnant women, begin attending prenatal care late and as a result, they do not entirely benefit from its preventative and therapeutic services (Warri & George, 2020). Cultural and traditional behaviours, attitudes, and beliefs have a significant impact on pregnancy with evidence of sociocultural behaviours typically impacting a

woman's decision to access antenatal care (Felisian et al., 2023). A report from the Ghana maternal health survey in 2017 indicates that of the pregnant women who attended ANC, 64% of them began within the first trimester with 36% of them initiating antenatal care in the second and third trimesters (Survey, 2022). This is an increase from 57% to 64% between 2007 and 2017. Thus, about one-third of pregnant women in the country do not have antenatal care until the 2nd and 3rd trimesters before their first visit to the ANC clinic.

The problem is much higher in some districts. In the Ningo Prampram district, for example, current information from the district health management systems (DHIMS) shows that only 41% of women seek care in the first trimester with the remaining (59%) reporting in the second and third trimesters (DHIMS, 2022). As stated earlier, this trend is worrying as most women in the district do not benefit fully from antenatal care. According to information from the Ningo Prampram district health directorate and that on the district health information systems (DHIMS), pregnancy-related issues like anaemia are high with about 50% of pregnant women being anaemic (DHIMS, 2022). Anaemia if not well managed can lead to poor birth outcomes like low birth weight, intrauterine growth retardation, and bleeding after delivery. Early antenatal services will give health workers sufficient time to correct anaemia before women reach full term.

There is limited information on why the district still has a considerable number of pregnant women attend ANC services at advanced gestational age despite several efforts like improved health education, community involvement, and improved customer care to enhance early ANC visits. Without adequate information, interventions aimed at promoting ANC attendance might not be targeted to the major needs of pregnant women within the Prampram district. Consequently, the challenges faced by pregnant women who miss 1st trimester visits will persist, increasing the risks for maternal deaths in the district. Hence this study sought to identify the factors that influence antenatal visits among pregnant women in the Ningo-Prampram district of the Greater Accra region of Ghana.



1.3 Objectives

The main objective was to identify factors influencing antenatal visits among pregnant women in the Ningo-Prampram district.

1.3.1 Specific Objectives

The specific objectives of the study were to;

1. Assess the socio-demographic background (predisposing factors) of women attending ANC at the Prampram Polyclinic
2. Ascertain the knowledge of pregnant women on their susceptibility to pregnancy-related complications (need factors)
3. Identify the factors (enabling and need factors) influencing ANC visits among pregnant women

1.4 Research Questions

1. What are the demographic and sociocultural factors influencing ANC visits among pregnant women at the Prampram polyclinic?
2. How knowledgeable are pregnant women about their susceptibility to pregnancy-related complications?
3. What is the health facility-related factors influencing ANC attendance among pregnant women in the Ningo Prampram district?

1.5 Significance of the Study

This study is significant for its potential to enhance maternal and child health outcomes by identifying the specific challenges and motivators affecting antenatal care (ANC) attendance. Understanding these factors can help address barriers to healthcare access, such as socio-cultural, economic, or logistical obstacles that may prevent women from receiving adequate care (Paul & Chouhan, 2020). Additionally, by highlighting the local gaps in meeting the World Health Organization's recommendation of at least eight ANC visits, with the first within the first 12 weeks of pregnancy, the study can help bridge the gap between global health standards and local practices.

Findings will provide valuable insights for policymakers, guiding them in resource allocation and in designing maternal health initiatives tailored to the district's needs, such as improving healthcare facilities, offering transportation support, or developing community-based educational programs. Ultimately, this study can empower women and communities by fostering awareness and support for ANC, hence reducing maternal health risks and improving long-term healthcare outcomes in the Greater Accra Region.

1.6 Definition of Terms

TERM	DEFINITION
Antenatal	the period from conception to birth.
Antenatal care	the term describes the care skilled health professionals give to teenage girls and pregnant women to ensure the best health outcomes for mother and baby.
Antenatal coverage	is the percentage of women who access antenatal services in each geographical area.
Antenatal Attendance	The number of times a pregnant woman visits the antenatal clinic
Focused Antenatal	a client-centred comprehensive approach to antenatal care where one midwife sees a client throughout pregnancy.
Grandmultiparity	This term is used to describe a woman who has given birth to five or more infants.
Nulliparity	This is used to describe a woman who hasn't given birth before.
Traditional Antenatal care	This is a model of care developed in the 1900's which focuses on frequency of visit and classifies women into high risk or low risk
Maternal Mortality	The death of a woman from any cause related to pregnancy or aggravated by the pregnancy or its management during pregnancy

	or within 42 days of termination of pregnancy irrespective of the site or duration of the pregnancy.
Pre-eclampsia	This is a complication of pregnancy characterised by high blood pressure, high levels of protein in urine and other signs of organ damage.
Skilled delivery	Delivery conducted by a trained person or a professional
Still birth	The death of a baby before delivery or during delivery.
Trimester	A division of the duration of pregnancy into three months

1.7 Organization of the Study

The research was divided into six sections. Background data, the problem statement, the study's purpose, main and specific objectives, and research questions are all introduced in the first chapter. Additionally, the first chapter covers the organisation of the study, the definition of terms, and the significance of the study.

The second chapter included an explanation of the model, a study of relevant literature employing the model's structures, and a justification of the chosen model. Chapter three also discussed the study's methodology, the research design, target population, inclusion and exclusion criteria, sample size and sampling technique, data collection tool and procedure, data management and analysis, validity and reliability, and ethical considerations.

Chapter 4 presented the study's findings which were then analysed in Chapter 5. The study's summary, conclusions, suggestions, and implications for nursing and midwifery practice and research were all covered in chapter six.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This section entails the theoretical framework and literature review for developing this study. The literature section sheds light on the overview of antenatal care, its importance, the demographic, social, and cultural factors associated with ANC attendance, the knowledge of pregnant women's susceptibility to pregnancy-related complications, and factors influencing access to ANC services among pregnant women. Articles used in this section were sourced from Google Scholar and PubMed.

2.2 Theoretical Framework

Justification for the selected theoretical framework

To identify a model that would best achieve the objectives of the research, three models were examined, namely the theory of planned behaviour, the health belief model, and the Andersen Behavioural model. The Theory of Planned Behaviour employs a social psychology method to understand and forecast the factors that influence health behaviour (Ajzen and Fishbein, 1980; Montano et al, 1997). According to the theory, there is a substantial correlation between the desire to execute a specific behaviour and the actual performance of that behaviour. It operates on two basic assumptions: people behave under free will and are rational beings. It predicts behaviour from the intention that there is a relationship between beliefs, attitudes, intentions, and behaviour. Thus, the main constructs of this theory include intentions, attitudes, beliefs, evaluation, perceived power, etc. Intentions lead to behaviour and are informed by subjective norms, attitudes, and self-efficacy (Hojjati et al., 2025). This model was not used because the constructs do not answer the research questions.

The Health Belief Model was the second model examined. A psychological model that deals with attitudes and personal beliefs, the Health Belief Model explains and forecasts health behaviours. The model tries to forecast health-related behaviour based on specific thought patterns (Leone et al., 2017). According to the HBM, an individual's beliefs of the disease's severity, and personal vulnerability to the condition, as well as the advantages and obstacles to that action, will determine

whether they engage in a particular health practice (Mckellar & Sillence, 2020). In this case, beliefs are more important than overt behaviour. This model was not used because the focus of the study was not on health conditions. Andersen's behavioural was the third model to be reviewed. This model was adopted because of the relatedness of the constructs in the conceptual framework to the research objectives that this study seeks to answer.

2.2.1 Andersen's Behavioural Model (ABM)

Andersen's Behavioural Model, originally developed by Ronald Andersen in the 1960s, is widely used to explain and predict healthcare attendance (Alkhawaldeh et al., 2023). According to the model, three major factors influence healthcare use: predisposition, enabling resources, and needs. This model, which was originally developed for healthcare access and usage in the United States, has been applied globally to investigate a variety of healthcare attendance behaviours, including maternal healthcare. The model has been revised several times, incorporating environmental and personal health beliefs to provide a more comprehensive view of health service use (Lederle et al., 2021; Alkhawaldeh et al., 2023).

Constructs of ABM

The model focuses on three core factors to explain healthcare (ANC) attendance: predisposing, enabling, and needs factors (Rice, 2017).

- 1. Predisposing factors:** Individuals' use of healthcare services is influenced by demographic and social factors such as age, marital status, educational level, and cultural beliefs (Rice, 2017). For antenatal care (ANC), predisposing factors could include the woman's age, previous pregnancy experiences, and education level, which may influence her decision to seek regular ANC.
- 2. Enabling Factors:** This construct encompasses factors that either facilitate or hinder access to healthcare services. It includes aspects such as income, healthcare insurance,

access to transportation, and the availability of healthcare facilities (Rice, 2017). In the context of ANC, enabling resources include the woman's financial ability, access to healthcare facilities, and support from family or community networks.

- 3. Needs Factors:** This refers to perceived and evaluated health needs. This includes the individual's perception of their health status and any professional assessment of their health condition (Rice, 2017). The need factors for ANC may include the perceived importance of ANC for maternal and foetal health, as well as any complications that require medical attention during pregnancy.

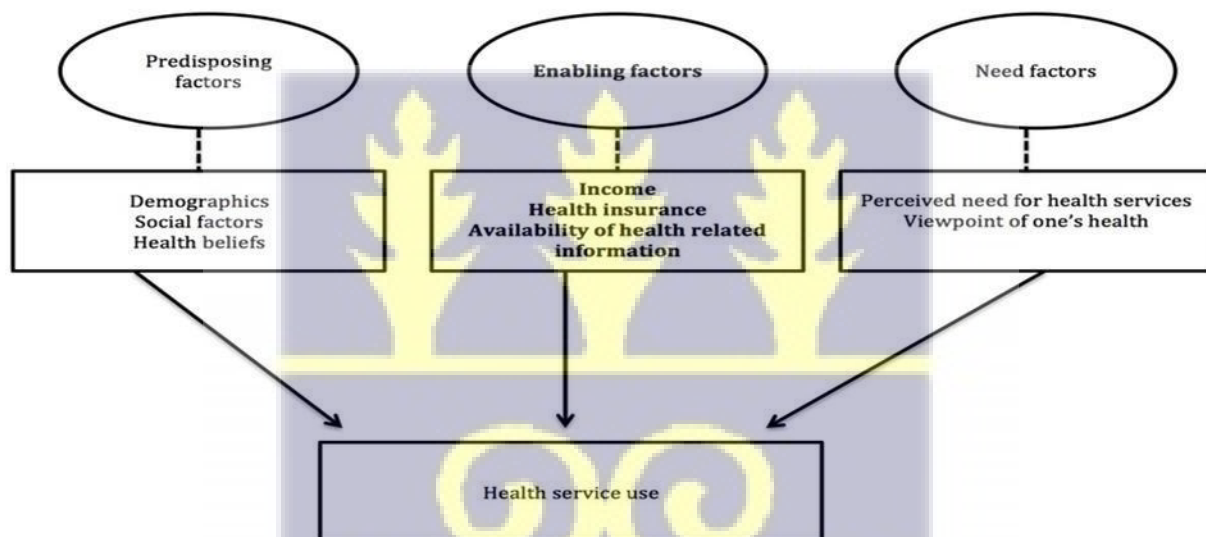


Figure 1: Andersen's Behavioural Model; adopted from Rice, 2017

Justification for Use in This Study

Andersen's Behavioural Model is an appropriate framework for investigating factors influencing antenatal visits because it provides a comprehensive picture of the various determinants that can influence healthcare attendance. The model's structure allows for the examination of a variety of factors; predisposing, enabling, and need-based that are closely related to issues affecting ANC attendance, particularly in LMICs. ANC attendance for pregnant women is determined by a variety of factors, including personal characteristics, social supports, and structural barriers, all of which

can be effectively analysed using this model (Andersen, R. M., & Davidson, 2007). Furthermore, Andersen's model has been validated in several studies on maternal healthcare, demonstrating its relevance and adaptability to understanding ANC use in diverse settings (Anyia et al., 2008; Arthur, 2012; Gabrysch & Campbell, 2009; Lilyquist, 2023; Mohebi et al., 2021). This study will use Andersen's Behavioural Model to identify the specific factors that have the greatest influence on ANC attendance and to better understand the barriers to adequate antenatal care. This framework will allow for a detailed analysis of how personal and external determinants influence pregnant women's healthcare-seeking behaviours, providing insights that can be used to inform ANC attendance strategies.

Application to the Study

In this study, Andersen's Behavioural Model guided the investigation of factors influencing antenatal visits among pregnant women by organizing data collection and analysis around the model's constructs. Data was collected on demographic variables such as age, education, and marital status to determine how these factors influenced ANC attendance. Cultural beliefs and previous interactions with healthcare services were also considered. Additionally, factors like income, transportation availability, and family or community support that may impact a woman's ability to attend ANC appointments were considered. Data on healthcare access and insurance status were used to assess enabling factors. To better understand how health needs influence ANC attendance, data on perceived health status, experiences with pregnancy complications, and perceived importance of ANC were also collected.

2.3 Empirical Review

2.3.1 Overview of Antenatal Care

Antenatal care (ANC) is an integral part of maternal health services around the world. It comprises regular screenings, medical exams, and education to guarantee the health and welfare of the mother and the foetus. The World Health Organisation (WHO) recommends at least eight ANC visits during pregnancy to monitor maternal and foetal health, provide essential vaccinations, and offer advice on nutrition and delivery planning (Duodu et al., 2022). Globally, ANC is recognised as

critical for lowering maternal and neonatal mortality. Comprehensive ANC can significantly reduce adverse pregnancy outcomes such as preterm birth and low birth weight (Ameyaw et al., 2024). In most high-income countries, ANC services are well-established and accessible. In the United States and Europe, prenatal care includes routine screenings, personalized care plans, and early intervention strategies, contributing to high rates of positive pregnancy outcomes (Dickson et al., 2017). Despite these advancements, disparities persist within and between countries, limiting access to high-quality ANC.

In Africa, the quality and accessibility of ANC services vary greatly. Many countries face challenges such as limited healthcare infrastructure, inadequate training for healthcare workers, and socioeconomic barriers (Dadjo et al., 2022). According to a comprehensive review and metaanalysis, 37.15% of African women had first-trimester ANC contact, suggesting that many of them are not receiving early ANC. (Abdo et al., 2023). Urban residence, higher educational status, and planned pregnancies were all linked to higher rates of early ANC contacts. However, maternal and neonatal mortality rates are still high, with Sub-Saharan Africa accounting for a significant proportion of global maternal deaths (Alibhai et al., 2022).

In Ghana, trends in ANC visits have improved over time. The proportion of mothers who had four to seven ANC visits increased from 49.3% in 2006 to 58.61% in 2017-2018 (Tekelab et al., 2019). Higher household affluence, health insurance coverage, and formal education were linked to increased likelihood of appropriate ANC attendance (Tekelab et al., 2019). The overall quality and accessibility of ANC services were impacted by regional inequities and urban-rural gaps that persist despite these gains (Okedo-alex et al., 2019).

Antenatal care is a fundamental component of maternal health services globally, with significant variations in quality and accessibility across different regions. High-income countries generally have well-established ANC services, while low- and middle-income countries, including many in Africa, face numerous challenges. In Ghana, although there have been improvements in ANC attendance, disparities remain. To enhance maternal and newborn health outcomes, specific policies and initiatives are needed to address these issues.

2.3.2 Importance of Antenatal Care

ANC plays a vital role in improving maternal health. Frequent antenatal care visits facilitate the early identification and treatment of possible health problems, including anaemia, preeclampsia, and gestational diabetes (Molloy et al., 2018). Early identification and treatment of these conditions can significantly reduce the risk of complications during pregnancy and childbirth. For instance, a study by Nguyen et al. (2023) found that comprehensive ANC significantly reduces the incidence of preterm birth and low birth weight. Moreover, ANC provides an opportunity for healthcare providers to educate pregnant women about healthy behaviours, nutrition, and the importance of taking prenatal vitamins, such as folic acid, to prevent neural tube defects (World Health Organization [WHO], 2019; UNICEF, 2024). This education empowers women to make informed decisions about their health and the health of their babies.

Pregnant women can also receive tetanus vaccinations, therapy for hypertension to avoid eclampsia, and micronutrient supplements through antenatal care (WHO, 2016). HIV tests and drugs to stop HIV transmission from mother to child can also be provided during prenatal care. Health professionals can assist prevent malaria in endemic areas by providing pregnant women with insecticide-treated mosquito nets and drugs to help avoid this crippling and occasionally fatal disease (Lateef et al., 2024; UNICEF, 2024).

The benefits of ANC also extend to neonatal health as well. Regular ANC visits ensure that foetal growth and development are closely monitored (WHO, 2016). Ultrasound scans and other diagnostic tests can detect congenital anomalies and other potential issues early, allowing for timely interventions (Deshpande et al., 2021). Additionally, ANC includes the administration of essential vaccinations, such as the tetanus toxoid vaccine, which protects both the mother and the newborn from tetanus. A systematic review by Khan et al. (2023) highlighted that ANC is associated with a reduction in neonatal mortality rates. The study found that countries with higher ANC coverage had significantly lower rates of neonatal deaths, underscoring the importance of accessible and quality ANC services.

Again, early and regular ANC visits are crucial for maximising the benefits of antenatal care. The WHO recommends that the first ANC visit should occur within the first trimester of pregnancy (Deshpande et al., 2021; Lateef et al., 2024). Early initiation of ANC allows for the timely

identification of risk factors and the implementation of appropriate interventions. A study by Abdo et al. (2023) found that women who initiated ANC in the first trimester were more likely to receive adequate care throughout their pregnancy. The study also noted that early ANC initiation was associated with better maternal and neonatal health outcomes, including lower rates of preterm birth and low birth weight. Regular ANC visits throughout pregnancy ensure continuous monitoring and support. The frequency of visits allows healthcare providers to track the progress of the pregnancy, address any emerging issues, and provide ongoing education and counselling. This continuous care is essential for maintaining the mother's and foetus's health and well-being (American College of Obstetricians and Gynaecologists, 2021).

Timing of Antenatal Visits

The timing of antenatal visits refers to the first time a pregnant woman receives care from a healthcare provider. The timing of the first visit is crucial to reap the full benefits of ANC visits as mentioned above. This visit is used to assess the health status of the mother and the baby and serves as a yardstick for future visits (Gebresilassie et al., 2019). There are some variations in the timing and number of ANC. For most health facilities the recommendation is that there should be at least four visits with focused antenatal care. But, to facilitate a standardized procedure, the WHO in 2016, came up with recommendations for a positive pregnancy experience in observation of ANC visits and treatment processes and offered advice to nations and health facilities. These recommendations suggest that women have at least eight encounters with healthcare providers during pregnancy and the first visit must be within the first twelve weeks of pregnancy (WHO, 2016). However, many pregnant women in the sub-Saharan African region start antenatal care visits late hence they do not entirely benefit from its preventative and therapeutic services (Warri & George, 2020). The literature shows there is a high prevalence of delayed ANC visits among pregnant women.

The findings of this study are consistent with that of Wolde et al which revealed that the majority (52%) of the participants started ANC after the first trimester (Wolde et al., 2019). In a similar study in South Africa, 84% of the respondents initiated antenatal visits after the first trimester (Mulondo, 2020). By these standards, Ghana's situation can be deemed a little better as studies in southern rural Ghana and the whole country show that more than half of pregnant women start

their first ANC visit within the first twelve weeks of gestation as recommended by the WHO (GSS, 2017; Manyeh et al., 2020).

Demographic, Social and Cultural Factors Associated with ANC Attendance (Predisposing Factors)

2.3.3 Demographic Factors (Predisposing factors)

Antenatal care (ANC) is one of the cornerstones of maternal and child health programs that prevent and reduce maternal and child morbidity and mortality (Badolo et al., 2022) and demographic factors have been found to influence its usage (Adhikari et al., 2016; Badolo et al., 2022; Duodu et al., 2022; Islam et al., 2022; Ngambi et al., 2022; Pandey & Karki, 2014; Paul & Chouhan, 2020; Sekyere & Freda, 2021; Thakkar et al., 2023; Ziblim, 2018). Understanding these demographic associations is essential for designing targeted interventions to increase ANC attendance and improve maternal health outcomes, especially in low- and middle-income countries (LMICs).

Maternal age is a significant determinant of ANC attendance, with research indicating that younger and older mothers may have different levels of access to and attitudes toward ANC services. For example, Ngambi et al. (2022) found that women under 20-24 years were more likely to attend regular ANC sessions, compared to those aged 45-49 years. Also, studies by Pandey and Karki (2014), Paul and Chouhan (2020) and Islam et al. (2022) found an association between age and ANC attendance.

Additionally, educational attainment is another crucial factor influencing ANC attendance. Women are more likely to use ANC services if they have greater education (Duodu et al., 2022; Ngambi et al., 2022). In Malawi, women who had completed secondary and tertiary education were significantly more likely to attend at least four ANC visits compared to those with no formal education (Ng'ambi et al., 2022). Similarly, a study in Ghana found that women with upward attainment of formal education levels were more likely to initiate early ANC visits (Duodu et al., 2022). Again, Thakkar et al. (2023) found that women with less formal education were more likely to have an inadequate number of ANC visits. Studies conducted in Bangladesh (Islam et al., 2022), Nepal (Pandey & Karki, 2014) and India (Paul & Chouhan, 2020) also found educational level to

be associated with ANC attendance. Ziblim (2018) also reported that the partner's educational level was associated with ANC attendance.

Marital status also plays a role in ANC attendance. Studies suggest that marital status has a significant association with ANC attendance among pregnant women (Ziblim, 2018; Sekyere & Freda, 2021). Parity, or the number of previous pregnancies, also affects ANC attendance. Women with higher parity are generally less likely to attend ANC services. In Malawi, women who had previously delivered two or more children were less likely to attend at least four ANC visits compared to first-time mothers (Ngambi et al., 2022). This finding is supported by research in Papua New Guinea, where lower probabilities of attending an early ANC were linked to increased parity (Seidu, 2021). Furthermore, compared to women who were not employed, working women were five times more likely to report receiving ANC services (Badolo et al., 2022).

Socioeconomic status, often measured by income or wealth, plays a vital role in ANC attendance and women from higher socioeconomic backgrounds are more likely to access ANC services. For example, women from the richest socioeconomic quintile were more likely to attend at least four ANC visits than those from the lowest quintile (Ng'ambi et al., 2022). The likelihood of women using ANC services was 32.0% lower in communities with a high concentration of poverty than in those with a low concentration (Badolo et al., 2022).

Geographic location, including urban versus rural residence, significantly influences ANC attendance. Women residing in urban areas are more likely to access ANC services compared to those in rural areas. The disparity is often due to the availability of healthcare infrastructure and transportation challenges in rural areas (Fenta et al., 2024). In Papua New Guinea, regional differences were observed, with women from certain regions being less likely to attend early ANC visits compared to others (Seidu, 2021). Also, rural women face longer travel times and higher transportation costs, which can deter them from seeking ANC (Okedo-alex et al., 2019).

In summary, the attendance of antenatal care services is influenced by a complex interplay of demographic factors. Addressing these factors through targeted interventions and policies is essential to improve ANC attendance and maternal health outcomes.

2.3.4 Social Factors (Predisposing factors)

Antenatal care (ANC) is important for monitoring and promoting maternal and neonatal health pregnancy. Despite its importance, ANC attendance varies across different regions and citizenry, impacted by a range of social factors. This literature review explores the key social determinants impacting ANC attendance, drawing on recent studies and systematic reviews. Partner support including financial assistance, emotional support, and encouragement to attend ANC visits (Okedo-Alex et al., 2019) influences attendance of ANC services. Lack of partner support has been identified as a barrier to ANC attendance, particularly in patriarchal societies where women's autonomy is limited (Fenta et al., 2024).

Additionally, cultural and religious beliefs can either facilitate or hinder ANC attendance. In certain cultures, some customs and beliefs may deter women from seeking formal healthcare services. Conversely, in communities where modern healthcare is valued, women are more likely to utilize ANC services (Okedo-Alex et al., 2019). Religious beliefs also play a role, with a study indicating that women from certain religious backgrounds are more likely to attend ANC (Fenta et al., 2024). Furthermore, mass media exposure is associated with increased ANC attendance. Women who have access to information via television, radio, and other media are more likely to be aware of the benefits of ANC and the services available. The authors also indicated that media campaigns are effective in raising awareness and encouraging women to seek ANC.

The independence and decision-making authority of women in the home are significant indicators of ANC attendance. According to Okedo-Alex et al., (2019), women with more control over household decisions, including healthcare, are more likely to go to ANC appointments. Conversely, women with limited autonomy frequently rely on their partners or family members to make healthcare decisions, which can delay or prevent ANC attendance. Attendance at antenatal care services is influenced by a complex interaction of social factors. Addressing these factors through targeted interventions and policies is critical for increasing ANC attendance and maternal health outcomes.

2.3.5 Cultural Factors (Predisposing Factors)

The health and welfare of expectant mothers and their unborn infants depend on antenatal care, or ANC. However, there are a number of cultural considerations that affect ANC service attendance. This literature review examines the cultural determinants of ANC attendance, drawing on studies from diverse regions and contexts. The biggest obstacles to early and adequate ANC attendance, according to a study conducted in Bangladesh by Nisha et al. (2021), were women's fear of caesarean sections, lack of autonomy in making decisions, and ignorance of the best time for the first ANC contact. Additionally, it was found that many rural women sought care from traditional rather than formal practitioners due to superstitions about pregnancy, which hindered them from getting early and proper prenatal care.

According to reports from Malawi, maternal cultural beliefs include seeking advice from village elders, fidelity to one's spouse, and disclosing pregnancy. Health workers mentioned that providers often held the same cultural beliefs and, as a result, turned women away if they tried to break cultural norms (Roberts et al., 2016). Kota et al. (2023) also found that indigenous beliefs especially in rural areas decreased odds of using healthcare services (ANC services) among pregnant women in Togo.

According to reports, prenatal attendance and competent delivery in Ghana's Savannah Region are influenced by sociocultural factors (Ziblim et al., 2020). Pregnant women's diet at the antenatal clinics and the positive attitude of the healthcare professionals were found to be two significant elements that influence prenatal care. The study also revealed that husbands had a significant influence on prenatal attendance. While women were said to be the ones who chose to give birth at home, factors influencing the delivery location included the presence and accessibility of Traditional Birth Attendants (TBAs) in the community.

In South Sudan, Mzimhiri et al. (2024) Low ANC attendance among pregnant women was shown to be caused by a combination of superstitions in rural areas and a lack of room for decisionmaking in homes, particularly in the first trimester. Religious beliefs and ethnic backgrounds have a significant impact on ANC attendance. In many cultures, traditional beliefs and practices can either help or hinder the use of ANC services. In some African communities, traditional healers and midwives are preferred over formal healthcare providers due to longstanding cultural practices

(Okedo-Alex et al., 2019). Additionally, certain religious beliefs may discourage the use of modern medical services, impacting ANC attendance.

Cultural attitudes towards pregnancy and healthcare practices also influence ANC attendance. As Alibhai et al. (2022) discovered, some cultures regard pregnancy as a natural process that does not necessitate medical intervention unless complications arise. This perception may lead to lower ANC attendance rates. The authors also noted that cultural stigmas associated with pregnancy outside of marriage may discourage women from seeking ANC services. In summary, cultural factors significantly influence ANC attendance. Addressing these cultural barriers requires a multifaceted approach, including community education, policy changes, and improved healthcare infrastructure.

2.3.6 Knowledge of Pregnant Women on their Susceptibility to Pregnancy-related Complications (Need Factors)

Understanding the knowledge of pregnant women about their susceptibility to pregnancy-related complications is crucial for improving maternal and neonatal health outcomes. This literature review examines various studies that explore the awareness and knowledge levels of pregnant women regarding potential complications during pregnancy.

Awareness of obstetric danger signs is an important part of maternal health knowledge. A study conducted in Kigali, Rwanda, discovered that pregnant women's overall knowledge of obstetric danger signs was relatively low, particularly during labour and the postpartum period (Uwiringiyimana et al., 2022). According to the study, only 56% of women could identify danger signs during pregnancy, and this percentage decreased significantly during labour and postpartum. Higher education levels and attendance at multiple antenatal care (ANC) visits were associated with better knowledge.

A study by Hibstu and Siyoum (2017) revealed that knowledge of danger signs was 21.9%. Maternal age, paternal occupation, and place of residence all had a positive influence on knowledge of obstetric danger signs. Woldeamanuel et al. (2019) also revealed that only 37.5% of women were aware of obstetric danger signs. Moreover, attending formal education, living in an

urban area, walking less than 20 minutes to a health facility, having two or more pregnancies, and receiving health education were all found to be significantly associated with knowledge of obstetric danger signs. The study recommended that continuous health education and appropriate counselling for pregnant mothers be performed.

Furthermore, pregnant women's understanding of lifestyle risks such as smoking, alcohol consumption, and poor nutrition influences their susceptibility to complications. A study by Oechsle et al. (2020) examined the awareness of lifestyle-related risks among pregnant women in Germany. The findings revealed that, while most women were aware of the dangers of smoking and alcohol, they had little knowledge of the effects of poor nutrition and physical inactivity. To address these gaps, it was suggested that incorporating comprehensive lifestyle education into routine ANC would be vital.

Additionally, educational interventions have been shown to significantly increase pregnant women's knowledge of pregnancy-related complications. A systematic review by Yunitasari et al. (2023) emphasised the significance of targeted educational programmes in raising awareness of obstetric danger signs in developing countries. The review discovered that women who were educated on danger signs were more likely to seek timely medical care, reducing the risk of complications.

Regular antenatal care visits are critical in increasing pregnant women's awareness of potential complications. The World Health Organization (WHO) recommends antenatal care models with at least eight contacts to reduce perinatal mortality and improve women's experience of care (Thomson et al., 2021). These visits allow healthcare providers to educate women on the signs and symptoms of complications, which is critical for early detection and intervention.

Again, cultural and socioeconomic factors have a significant influence on pregnant women's knowledge of pregnancy-related complications. In many low- and middle-income countries, traditional beliefs and practices can impede the dissemination of accurate health information. For example, a study conducted in Nigeria discovered that cultural beliefs and low socioeconomic status were major barriers to women's knowledge of obstetric danger signs (Okereke et al., 2020). The authors proposed incorporating cultural considerations into health education programs for improving knowledge and health outcomes.

Finally, educational interventions, ANC visits, and cultural and socioeconomic contexts all have an impact on pregnant women's knowledge of their susceptibility to pregnancy-related complications. Improving maternal and neonatal health outcomes requires increased knowledge through targeted education and regular ANC visits.

2.3.7 Factors Influencing Access to Antenatal Clinic Visits (Enabling Factors)

Access to antenatal clinic (ANC) visits is essential for protecting the health and well-being of both expectant mothers and their unborn children. Various factors influence the utilisation of ANC services, ranging from individual characteristics to broader socioeconomic and cultural contexts. This literature review examines the key factors influencing access to ANC visits.

Socioeconomic status is an important determinant of ANC use. Women from higher socioeconomic backgrounds are more likely to use ANC services due to their greater financial resources and educational attainment (Tohan et al., 2024). A study by Fagbamigbe and Idemudia (2015) in Nigeria found that women with higher income and education levels were more likely to attend ANC visits compared to their lower-income counterparts. The study also highlighted that financial limitations and illiteracy were two main obstacles to receiving ANC services.

Education also plays an important role in determining ANC use. Educated women are more likely to understand the significance of ANC and the potential complications of pregnancy. A study conducted in Ethiopia found that women with secondary or higher education were significantly more likely to attend ANC visits than those without formal education (Tura et al., 2013). The study emphasised the need for educational interventions to improve ANC utilisation.

Cultural beliefs and practices can help or hinder access to ANC services. In many developing countries, traditional beliefs and practices frequently discourage the use of formal healthcare. A study conducted in Uganda discovered that cultural beliefs about pregnancy and childbirth significantly influenced the timing and frequency of ANC visits (Atuhaire & Mugisha, 2020). The study concluded that incorporating cultural considerations into health education programs could increase ANC use.

Geographic location is another important factor influencing access to ANC services. Women in rural areas frequently face significant barriers to accessing healthcare services due to distance, poor infrastructure, and a lack of transportation. A study by Mugo et al. (2015) in Kenya discovered that women in rural areas were less likely to attend ANC visits than those in urban areas. The study suggested improving healthcare infrastructure and transportation services to improve ANC access in rural areas.

The quality and availability of healthcare services are also important factors in determining ANC utilization. A study by Khatri et al. (2022) The availability of trained healthcare providers, adequate infrastructure, and necessary medical supplies were emphasized as critical for ensuring highquality ANC services. The study highlighted the importance of strengthening the health-care system in order to improve ANC access and quality.

Marital status and family support are significant predictors of ANC use. Married women, particularly those with supportive partners, are more likely to attend ANC appointments. A study in Tanzania found that women with supportive partners were more likely to use ANC services than those without partner support (Exavery et al., 2013). The study emphasized the importance of including partners and family members in maternal health education programs.

Knowledge and awareness of the importance of ANC and the potential complications during pregnancy are critical for increasing ANC use. A study by Ali et al. (2018) in Pakistan discovered that women with more knowledge about ANC were more likely to attend ANC appointments. The study recommended comprehensive health education programs to raise awareness and knowledge of ANC.

To summarize, socioeconomic status, educational level, cultural beliefs, geographical location, healthcare system factors, marital status, and knowledge and awareness all have an impact on antenatal clinic access. Addressing these barriers necessitates a multifaceted approach that includes educational interventions, health system strengthening, and community involvement. Future research should concentrate on developing and implementing strategies to increase ANC access, particularly in low-resource settings.

2.4 Summary of Literature Review

This study will apply Andersen's Behavioural Model (ABM) to identify factors affecting antenatal care (ANC) attendance in the Ningo-Prampram District. ANC is crucial for monitoring maternal and foetal health, with the World Health Organisation recommending at least eight visits to detect complications and provide guidance on nutrition and delivery. Demographically, age, educational attainment, marital status, parity, employment, socioeconomic status, and geographic location affect ANC attendance. Socially, partner support, autonomy in decision-making, and media exposure significantly impact ANC attendance. Culturally, beliefs and practices around pregnancy impact ANC attendance. Cultural norms, superstitions, and preferences for traditional care over formal healthcare often deter ANC attendance.

Pregnant women's understanding of their risk for complications and access to antenatal care (ANC) are essential for better maternal and neonatal health outcomes. Awareness of obstetric danger signs is generally low, particularly among women with limited education or fewer ANC visits. Educational initiatives, regular ANC, and greater awareness of lifestyle risks, such as poor nutrition, smoking, and alcohol use, are recommended to improve health knowledge and behaviours.

Access to ANC is shaped by socioeconomic status, education, cultural beliefs, geography, and healthcare system quality. Women with higher socioeconomic standing and education are more likely to attend ANC, while those in rural areas face challenges due to distance and limited healthcare infrastructure. Supportive family relationships also increase ANC attendance, highlighting the importance of family involvement. Overcoming these barriers requires multifaceted approaches, including community-based education and improvements in healthcare services, particularly in low-resource areas.



CHAPTER THREE: METHODOLOGY

The methods employed to conduct the research are the main focus of this chapter. Research design, research setting, study population, sample size and technique, data collection tool and procedure, inclusion and exclusion criteria, data processing and analysis, validity and reliability, and ethical considerations are among the subjects discussed.

3.1 Research Design

This study is guided by Andersen's Behavioural Model which suggests that individuals' use of health services is influenced by three categories of factors, and these are predisposing, enabling and need factors. The model assumes that these factors interact with each other at a particular point in time to influence behaviour. This implies that a research design that will capture these variables simultaneously would be most appropriate for the study.

Research designs are methods and strategies that cover everything from general hypotheses to specific methods of data collection and analysis. A study design is a strategy that describes who, where, and when data are to be gathered and analyzed (Parahoo 2014). According to Creswell and Creswell (2017), research designs can be either quantitative, qualitative, or both, and each is supported by a different paradigm and philosophical tenet.

To achieve the objectives of this study within good time and budget limitations, a descriptive quantitative cross-sectional design was adopted. A descriptive cross-sectional design is a nonexperimental research design in which data is collected at one point in time (Mimansha Patel & Nitin Patel, 2019). Descriptive research describes a population or sample and provides information on the sample's characteristics. It frequently seeks to represent the larger population. The reason for choosing this method was that cross-sectional studies enable one to gather information from a sizable subject pool within a shorter time and with fewer resources (Alenezy et al., 2020).

3.2 Study Setting

This was a facility-based study at the Prampram Polyclinic in the Ningo-Prampram District. The district is one of the twenty-nine districts in the Greater Accra Region. Originally, it was part of the then-Dangbe West District until 2012 when the Southern part was split to create the Ningo Prampram District and the remaining part named the Shai Osudoku District. Prampram is a coastal town. It is a growing hub of industrial activity and is 45 minutes from Accra, the country's capital, and 15 minutes from the port city of Tema. The Ghana Statistical Service's 2021 population and housing census indicates the current population base of the district is 213,359 (PHC, 2021). Women in their fertile age are 51,206 with an annual expected pregnancy of 8,534. The Prampram Polyclinic is the largest public health facility within the Ningo-Prampram district. In 2022, the Polyclinic recorded annual ANC registrants of 1243 out of which only 389 of them representing 32% reported in the first trimester, and over 68% of them reported in the second trimester (GHS, DHIMS, 2022).

3.3 Target Population

The groups the researcher is interested in are considered the research population (Willie, 2024). It is the group of people to which the study's findings would be extrapolated (Scârneaci-Domnişoru, 2024). The research population from which the sample was taken were women visiting the antenatal clinic.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

All pregnant women visiting the ANC clinic who were aged between 18 and 45 years.

3.4.2 Exclusion criteria

All pregnant women who were too sick to participate in the study.

3.5 Sample Size

Yamane's 1967 formula was used to determine the sample size. The mathematical representation of this is.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n signifies the sample size

N signifies the population under study e

signifies the margin of error

N = 600 (this represents an average number of antenatal attendants over a period of one month as per facility records and DHIMS) $n = \frac{600}{1 + 600(0.05)^2}$ $n = \frac{600}{1 + (0.0025)}$ $n = \frac{600}{1.0025}$

$$n = 229 + 11(5\% \text{ non-response rate}) \quad n = 240$$

The target sample size for this study was 240. According to facility records and information from the District Health Information and Management Systems (DHIMS, 2022), Prampram Polyclinic has an annual antenatal attendance of 6370 which translates into an average weekly attendance of 150. Given this population size and assuming a refusal rate of about 5%, we were able to recruit and successfully interview 243 clients within two weeks.

3.6 Sampling technique

Determining the sample size is a crucial stage in the study approach. It is the act of deciding how many replicates to include in the statistical sample. Determining the sample size contributes to improving the standard of evidence-based research (Kaur, 2017).

This study adopted the simple random sampling technique to select participants. This technique is a probability sampling method in which the odds of each member of the population being chosen for the sample are equal (Makwana et al., 2023). To select participants, a list of all the members of the population (ANC attendants) was made from the ANC register, and a unique random number was assigned to each of them via Stata's *runiform* command. The list was then arranged in ascending order, and the first 250 participants were selected. This technique was adopted because it is fair and unbiased, it is also easy to implement, and results can be generalized because the sample is likely to be representative of the population. A total of 243 questionnaires were retrieved after the data collection while 7 were not completed. This represents a response rate of 97.2%.

3.7 Data Collection Tool

Data was collected by administering a questionnaire. Questions were developed based on the literature and constructs of the conceptual framework. The questionnaire was divided into four segments. The first segment consisted of the demographic data of respondents; the second was on their gynaecological and obstetric history; the third section consisted of questions on the factors that influence antenatal clinic visits. These were subdivided into socio-cultural factors, access-related factors, and facility-related factors. The fourth and final segment questions were about respondents' susceptibility to pregnancy complications. The questionnaire was pretested on fifteen pregnant women at the Old Ningo Health Centre, and the necessary corrections were made before the final administration. Cronbach alpha scores of the questionnaire used were .86 and .78 for Factors influencing ANC visits and Perceived susceptibility respectively.

3.8 Procedure for Data Collection

The University of Ghana's School of Nursing and Midwifery provided an introductory letter to the Ghana Health Service Ethical Review Committee's office for approval, and subsequently, permission was granted (GHS- ERC:043/08/24) to conduct the study. The letter was sent to the administrator and Deputy Chief Nursing Officer (DCNO) of the Prampram Polyclinic requesting permission to use pregnant women as study participants, taking into consideration the inclusion

criteria. Two research assistants were employed to assist with the data collection. The assistants were equipped with the necessary training needed to enhance their work. The research team was introduced to the administrator as well as the DCNO, and the head of maternity before the data collection. Participants were recruited from the antenatal clinics. The purpose of the study, as well as the expectations of the participants and researcher, were documented and attached to the letter. When permission was granted, the purpose of the study was explained to participants, and their consent was sought before administration of the questionnaire. The participants were guaranteed their privacy and confidentiality as discussed in the ethical terms.

The questionnaire was administered to the participants (see Appendix D) by the researcher to collect data on the respondent's demographics, and reproductive history. The interview took approximately 20 minutes in duration. The interviewer asked about the respondent's characteristics, including the gestational age, which a midwife at the facility determined. The completed questionnaires were securely stored in a study file to protect confidentiality.

3.9 Data Management

The completed forms were routinely collected. Data from the questionnaires were entered into Excel, cleaned, and imported into Stata 17.0 for analysis. The appropriate variable and value labels were attached to the electronic data set. In addition, a codebook was provided for the final data set. To preserve participant confidentiality, data were recorded using numeric study identifiers, rather than names, and all data (both hard copy and electronic) were kept in locked file cabinets and password-protected electronic files, respectively. In addition, the presentation of study findings was scrutinized to ensure the confidentiality of all respondents and the facility. Data collection sites were not identifiable in any reports, presentations, or journal articles.

3.10 Data Analysis

To meet the study objectives, it is important to describe how the outcome/dependent variables indicated in the objectives are operationalized. Antenatal attendance is measured by the number of times women have gone for ANC visits in the current pregnancy. This is given as a continuous

variable in the study. As mentioned in the study's problem statement, ANC attendance in the first trimester has generally been poor among the population served by the Prampram Polyclinic. To investigate this, women with gestation age 12 weeks and above were asked whether they had gone for ANC at least once in the first trimester. Since the interest is in knowing why many do not do this, a binary outcome of one is created for those who had not gone for ANC in the first trimester and zero for those who did. The third outcome objective of the study is to assess pregnant women's basic understanding of the implications of pregnancy-related complications for the mother and baby.

Women who said they had no understanding are coded one, and those who said they knew the dangers that complications could have on mother or baby were coded zero. Concerning the explanatory variables, all of them are categorised to help capture the nuances within various groups. For example, though age was given as a continuous variable, it was recategorized into 18-19, 20-30, and 31+ year olds to capture possible differences between teenagers, young adults and older adult women. The same logic goes for the number of children categorised as no child, one child, 2-4 children and 5 or more to capture how these differences influence the outcome variables.

The data was exported into Excel and then imported into Stata 17 for data cleaning, management of missing data points, and analysis. Descriptive statistics, such as mean ranges, were used to explore the continuous variables upon assessing the normality of the continuous variables with the Shapiro-Wilk test. For example, the Shapiro-Wilk test score of $W=0.86481$ on ANC attendance, the continuous outcome variable, via Stata's `swilk` command, indicates that the distribution of this variable is closer to 1, and therefore, it has a relatively normal distribution. Also, frequencies and percentages were used to describe the categorical socio-demographic background variables. Chi-square and Fisher's exact test were used to do bivariate tests of the relationship between the explanatory variables and the three outcome variables: ANC attendance, ANC visit in the first trimester and understanding of basic implications of pregnancy-related complications to the mother and the baby.

Subsequently, stepwise multivariable regression models were used to determine the explanatory variables influencing the three outcome variables. The rationale for using stepwise regression is

that there are many indicators being used to measure demographic, sociocultural, gynaecological and service-related factors influencing these three outcomes: ANC attendance, no ANC visit in the first trimester and no basic understanding of the implications of pregnancy-related complications. With a cut-off point pegged at 0.2 significance level, the stepwise process eliminates all variables or indicators that do not have an important effect on the outcome variables. Three models are used: The first is multivariate stepwise linear regression since the outcome is a continuous variable -ANC attendance. The other two models are multivariate stepwise binary logistic regression models since the outcomes are all measured in zero or one. In all the bivariate and multivariate estimates, the significance levels were at $p\text{-value} \leq 0.1, 0.05$ and 0.01 with 90%, 95%, and 99% confidence levels.

3.11 Risk-benefit Analysis

Risks associated with participation in this study were minimal. All women received standard ANC services from the study facility irrespective of their agreement to participate in the study. No punitive measures occurred as a result of the findings for respondents or providers. Benefits associated with participation in this study were minimal for the individuals involved. However, knowledge gained from this study will be used as an evidence base for education, sensitization, and other programmatic interventions in their communities.

3.12 Validity and reliability

The two most crucial and essential characteristics in the assessment of any measuring tool or instrument for good research are reliability and validity. Reliability and validity promote transparency and reduce the chance that researcher bias may be introduced. Validity is the degree to which an idea is accurately measured in a quantitative study (Heale & Twycross, 2015). Reliability, on the other hand, refers to the degree to which a test or measure produces the same scores when applied in the same circumstances (Ahmed et. al, 2021)

To ensure validity and reliability, the research questions were aligned with the ethical principles. Also, a validated questionnaire was used for data collection. The questionnaire was pretested on

about fifteen antenatal attendants at Ningo Health Centre who met the inclusion criteria. The purpose of this exercise was to evaluate the tool for clarity and to see if they attempted to address the research topics. The details of the study were also explained to the identified individuals who satisfied the inclusion criteria. The consent of these participants was sought before enrolling them in the pilot study. Participation in this research was voluntary.

All clients' information was kept confidential, and anonymity was maintained by using codes. Clients' consent was sought before interviews were conducted. This was an exit interview with women who have received ANC services. The interviewers were strategically positioned at the two facilities to ensure accessibility to and interaction with ANC clients who have been served. We ensured the process did not disrupt the normal flow of services at the facility. We recruited consecutive, potentially eligible women (i.e., meeting the first four eligibility criteria) at the study facilities (see Appendix D for eligibility screening tool) and conducted the consent process with those interested in hearing about the study. The consenting process involved reading the complete consent form (see Appendix E) aloud to individual women and asking questions throughout to ensure their comprehension.

Only women who provided written consent (i.e., their signature or, in the case of semi-literate women, their mark with a witness present for the consenting process) were enrolled in the study. They were given an unsigned copy of the form for future reference, as it provided contact information in the event of any questions or concerns.

3.13 Ethical Considerations

A crucial component of the research process is ethical concern. Research is guided by broad ethical norms that address matters including secrecy, privacy, anonymity, integrity, and respect for basic human rights (Gostin & Gostin, 1991). It is also necessary to protect confidentiality and preserve pertinent information about the study (Kang & Hwang, 2023). The research proposal was submitted to the Ethics Review Committee of Ghana Health Service, and clearance was obtained before data collection (GHS-ERC:043/24). Please refer to Appendix 5.

To obtain authorization to carry out the study in the district, the University of Ghana's School of Nursing and Midwifery also sent an introductory letter to the Ningo-Pampram District Health Directorate. The autonomy and right to self-determination of each participant were upheld. Study participation was entirely voluntary, and participants were free to leave the study whenever they wanted. Consent forms were to be signed by participants who agreed to participate in the study and met the inclusion criteria.

Lastly, the principles of confidentiality and anonymity were followed; as a result, the questionnaire did not ask for the participants' identities, and the data they submitted was kept completely private.



CHAPTER FOUR: RESULTS

4.1 Introduction

In this chapter, the findings from this study are presented in tables and charts wherever applicable. The sub-themes were derived from the specific objectives. But before the results are presented, it is important to describe the background characteristics of the respondents to help give context to the results presented in subsequent sections of this chapter.

4.2 Socio-demographic background of respondents

As shown in Table 4.1 below, the majority (56.4%) of respondents fall within the 20–30 age range, indicating a relatively young women attending antenatal services. The 18–19 age group is the smallest (13.2%), suggesting fewer participation of teenagers. Christianity dominates (76.1%) religious background, followed by Islam (15.2%), with a small proportion (8.7%) identifying themselves as traditional believers or having no religion. Ga-Dangbe respondents are the largest ethnic group (43.2%), which is not surprising given that the study was cited in a predominantly speaking area. The Akan (22.2%) and Ewe (25.9%) are also well-represented in the sample. A nearly even split exists between those who are cohabiting (43.6%) and married (43.6%), with a smaller proportion of single respondents (12.8%). The high percentage of cohabiting individuals is interesting; it is beyond the scope of this study to investigate why

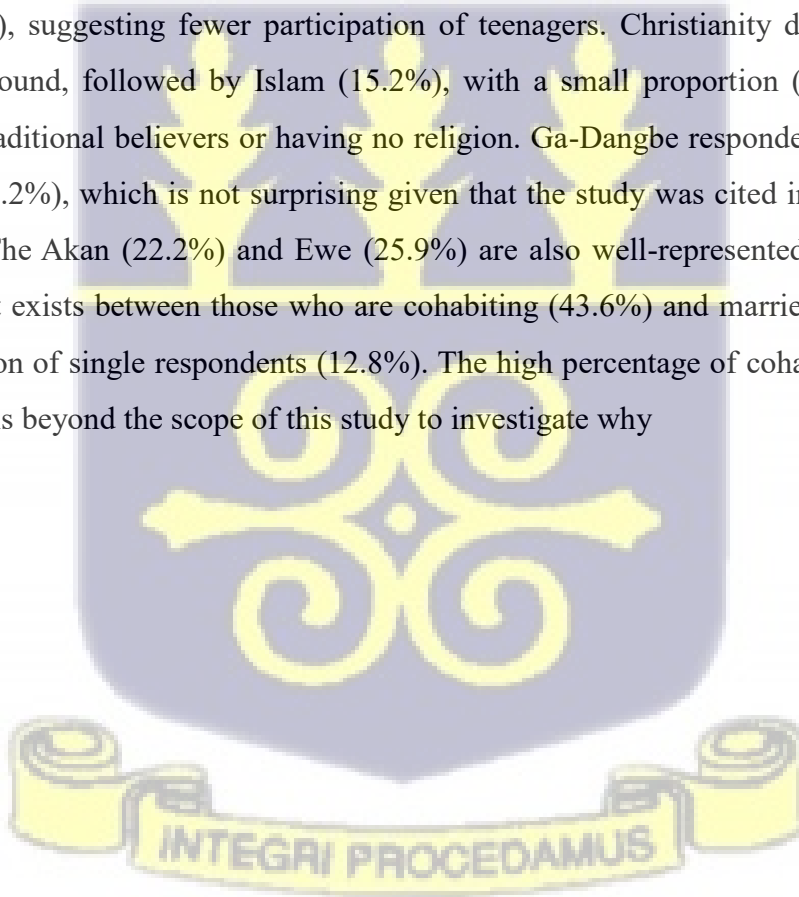


Table 4.1: *Socio-demographic background of the respondents*

	Frequency (n=243)	Percentage (100%)
Age group		
18--19	32	13.2
20--30	137	56.4
31+	74	30.4
Religion		
Christian	185	76.1
Muslim	37	15.2
Traditional/none	21	8.7
Ethnicity		
Akan	54	22.2
Ewe	63	25.9
Ga-Dangbe	105	43.2
Other	21	8.7
Marital status		
Single	31	12.8
Cohabiting	106	43.6

Married	106	43.6
Education level		
Primary/None	97	39.9
JHS	68	28.0
SHS/Higher	78	32.1
Occupation		
Unemployed	75	30.9
Trader/Salaried/Farmer	111	45.7
Other occupation	57	23.4
Parity		
Nulli para (No child)	12	4.9
Primi para (1 child)	126	51.8
Multi para (2-4 children)	91	37.5
Rand para (5+ children)	14	5.8
Place of residence		
Prampram/Miotso	94	38.7
Dawhenya	78	32.1
Ningo	56	23.0
Other	15	6.2

this is the case. Table 4.1 also shows that a significant portion (39.9%) has primary education or none, indicating that about two-fifth of the respondents have very low or no education. The percentage of those attaining SHS (Senior High School) or higher (32.1%) is relatively moderate. Nearly one-third (30.9%) of respondents are unemployed. The largest working group (45.7%) consists of traders, salaried workers, or farmers, showing a mix of formal and informal employment. Most respondents were concentrated in Prampram, Miotso and Dawhenya, which comprise 70.8% of the population surveyed. The presence of 6.2% in "Other" locations indicates a small but diverse geographical spread.

4.3 Results from the descriptive bivariate analyses

Following the analytical approach, the results from the descriptive analyses are presented as follows. These are presented in four tables showing the demographic and sociocultural characteristics as well as historical characteristics regarding obstetrics and ANC attendance services. The results from the stepwise multivariate regression models come after the descriptive tables. Figure 2 below shows the basic distribution of respondents across the three outcome variables of interest. With a gestational age of 12 weeks and above for all the respondents, most (55%) had attended ANC only between one and three times. Only 7% of them had attended seven or more times at the time of the interviews. More than half (52%) of the respondents did not go for an ANC visit in the first trimester when they were asked about the gestation age at which the

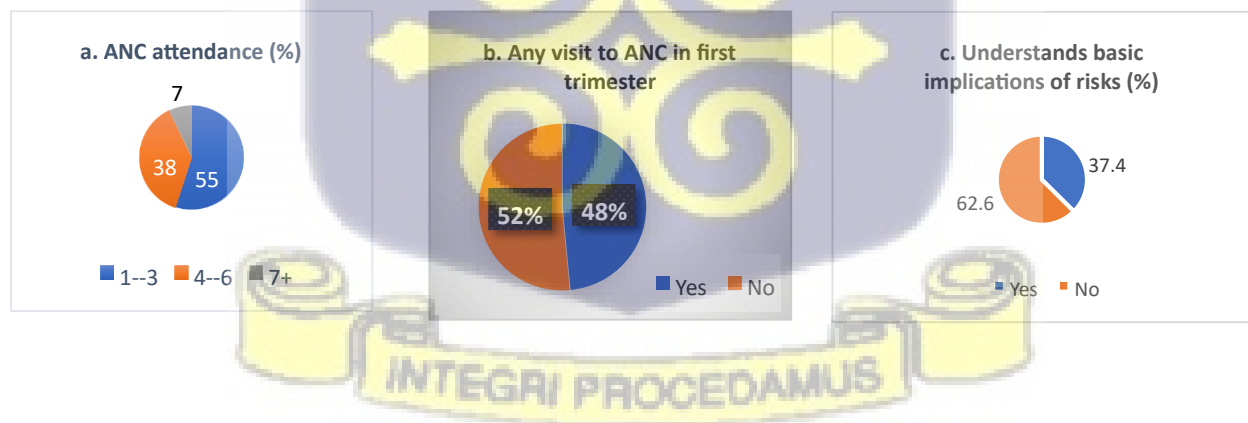


Figure 2: ANC attendance, ANC first visit and understanding of the implications of pregnancy risks

had their first ANC visit. Majority (89%) of the respondents had good knowledge of possible risks of pregnancy with most of them mentioning bleeding, hypertension, diabetes etc, and they mostly know the clinic (84%) as the place to seek care when these risks/complications occur. However, as Figure 4.1 shows above, about 63% of them did not know the basic implications that these risks can lead to when they were asked to describe their understanding of possible implications. Most of them stated, “I do not have any understanding”.

Table 4.2 below shows some variations and trends in the distribution of the three outcome variables across various demographic backgrounds of the respondents. On average, women in the study, with a gestational age of 12 weeks and above, had attended ANC about 3.3 times. Women between the ages of 18 and 30 years had lower average attendance of between 3.1 and 3.2 while those above 30 years had 3.6 visits on average. Respondents with a Christian background had the highest average attendance of 3.3, followed by Muslims with 3.2. Those with no religion or are traditionalists have a lower attendance of 3.0. The Ewes (3.9) and Akans (3.6) have much higher average ANC attendance than the Ga-Adangbe (2.8). Respondents who are married have a much higher average attendance (3.7) than those who are single (3.2) or cohabiting (2.8). Women with secondary or higher levels of education have much higher ANC attendance (3.9) than those with primary or no formal education (2.9). With regards to employment, there is not much difference between the average ANC attendance of the employed and unemployed women.

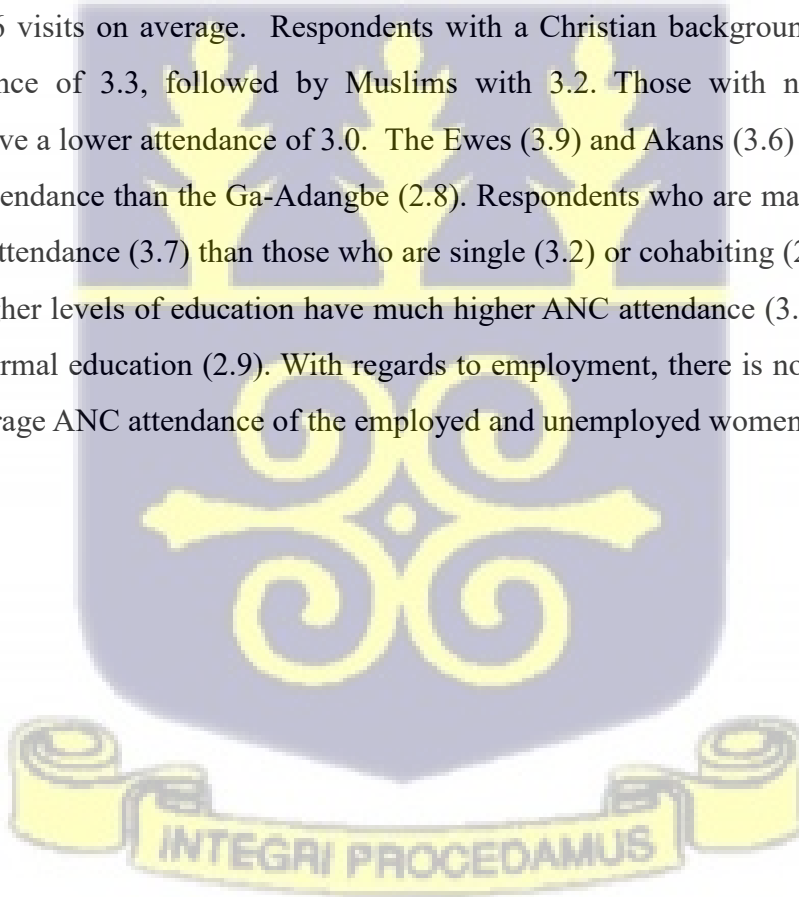


Table 4.2: *Demographic characteristics of respondents and outcome variables - results from the bivariate analyses*

Variable	Frequency (n=243)	Mean ANC attendance	ANC visit in 1st Trimester (% No)	Understanding basic implications of risk (% No)
Age group				
18-19	32	3.2	59.4	68.7
20-30	137	3.1	52.6	66.4
31+	74	3.6	47.3	52.7
All	243	3.3	51.8	62.6
Religion				
Christian	185	3.3	49.7	60.0
Muslim	37	3.2	48.6	73.0
Traditionalist/None	21	3.0	76.2	66.7
Ethnicity				
Akan	54	3.6	50	51.8
Ewe	63	3.9	39.7	63.5
Ga-Damgbe	105	2.8	60.9	68.6

Others	21	3.0	47.6	57.1
Marital status				
Single	31	3.2	58.1**	61.3
Cohabiting	106	2.9	61.3	64.2
Married	106	3.7	40.6	61.3
Educational level				
None/Primary	97	2.9	64.9**	71.1*
JHS	68	3.1	45.6	61.8
Secondary/higher	78	3.9	41.0	52.6
Occupation				
Unemployed	75	3.4	57.3	64.0
Trade/Salard/Farm	111	3.3	49.5	62.2
Others	57	3.1	49.1	61.4

It is important to note that respondents' gestational age at first ANC visit was verified from their ANC cards

"p<0.1, *p<0.05, **p<0.01

As mentioned earlier in Figure 4.1, with a gestation of 12 weeks and above, more than half of the women had no ANC visit in the first trimester of pregnancy. The proportion that had no visit in the first trimester decreases with age, as Table 4.2 shows. The majority (76%) of the traditionalists/no religious affiliation had no ANC visit in the first trimester compared to less than half of their counterparts with Christian and Muslim religious affiliations. About 61% of the Ga-Adangbe had no ANC visit in the first trimester compared to 40% of Ewe and 50% of Akans. It is highly significant from the chi-square test that most of the single women (58%) and those cohabiting

(61%) did not visit the ANC in the first trimester, compared to only 40% of married women. The chi-square test also shows that most (65%) of the women with primary or no educational background compared with only 41% of those with secondary or higher levels of education did not visit ANC in the first trimester.

On average, about 63% of the respondents had no understanding of the implications of pregnancy-related risks. As Table 4.2 shows, this increases with a decrease in age. Compared to Christians (66%), most Muslims (73%) and traditionalists (67%) did not understand the implications of these risks. In the same way, the understanding of Ga-Adangbe (69%) and Ewe (63%) of the implications of pregnancy-related risks was poorer than that of the Akans (50%). There seemed to be very little variation with marital status as just over 60% of both married and unmarried did not understand the implications of pregnancy-related risks. The poor understanding of the implications of pregnancy-related risks reduced with an increase in education. Most (71%) of the women with primary or no education compared with those with secondary or higher education (53%) did not understand the implications of these risks. Employment status did not show any variations.

Table 4.3 shows the bivariate analyses results of the outcome variables across various sociocultural indicators.

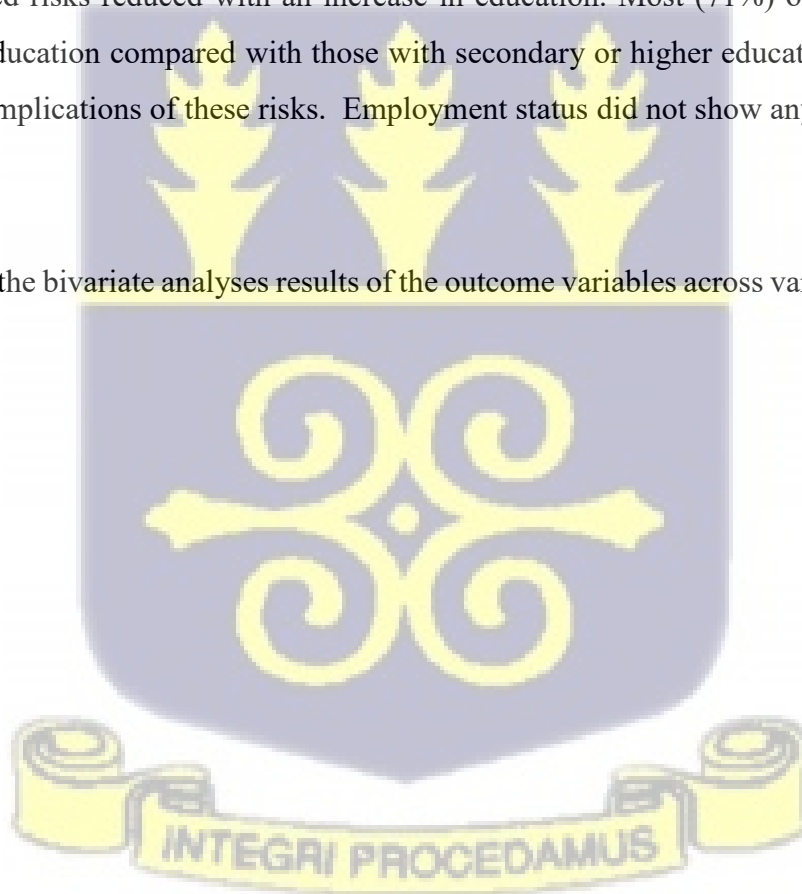


Table 4.3: *Sociocultural characteristics of respondents and outcome variables - results from the bivariate analyses*

Variable	Frequency (n=243)	Mean ANC attendance (Mean)	ANC visit in 1st Trimester (% No)	Understanding basic implications of risk (% No)
Existence of customs about pregnancy in the community				
I don't know	23	3.3	65.2	52.2
No	142	3.4	41.6	57.7
Yes	78	3.1	66.7**	74.4*
Beliefs of specific gestation for ANC visit				
No	200	3.4	46	57.5
Yes	43	2.7	79.1**	86.1**
Do you need partner's permission to visit ANC				
No	109	3.7	45.9	55.1
Yes	134	3.0	56.7**	68.7*
Does religion have guidelines on pregnancy?				
No	178	3.4	46.6	59
Yes	65	2.9	66.2**	72.3**
Do TBAs play a role in your pregnancy?				

No	179	3.4	45.8	57.5
Yes	64	2.9	68.8**	76.6**

Do feel pressure to follow cultural beliefs?

No	174	3.5	44.2	58.1
Yes	69	2.8	71.0**	73.9*

"p<0.1, *p<0.05, **p<0.01

On average, women who stated that there were some cultural customs around pregnancy in their communities had fewer ANC attendance (3.1) than those who said there is nothing like that (3.4). Also, women who believed in specific times for first ANC had much lower average attendance (2.7) than those who did have such beliefs (3.4). Women who needed partner's permission before they could attend ANC had lower average attendance (3.0) than their counterparts who did not need such permission (3.7). Women whose religion had some guidelines or teachings related to pregnancy had lower (2.9) average ANC attendance than those who had no such guidelines (3.4). Average ANC attendance was lower for women who had traditional birth attendants (TBAs) playing some role in their pregnancy than their counterparts who did not have TBAs playing any role. The lowest average ANC attendance was recorded by women who felt some pressure to follow cultural beliefs, scoring 2.8, while those who did not feel this pressure had a 3.5 average attendance.

Table 4.3 also shows that all the sociocultural indicators had a significant relationship with ANC visits in the first trimester. About 67% of women from communities where there are social norms and customary guidelines about pregnancy did not go for ANC visits in the first trimester, compared to only 42% of women from communities with no social norms or customs. Most of the women (200) did not have any specific beliefs about gestational age for ANC visits. Of the few (43) that had it, 79% did not attend ANC in the first trimester. Just over half (57%) of women

needing permission from their partners did not go for ANC visits in the first trimester, compared to 46% of those who did not need any permission. Sixty-six per cent of women who had religious guidelines and teachings about pregnancy did not go for ANC in the first trimester, compared to 47% of those who had nothing like that. Among women who had TBAs playing some role in their pregnancy, 69% of them did not go for ANC visits in the first trimester. A majority (71%) of women who felt pressured to follow sociocultural beliefs did not visit the ANC in the first trimester, compared with only 44% of those who did not feel such pressure.

Following the same pattern as the first ANC visit, Table 4.3 shows that all the sociocultural backgrounds of respondents had a significant association with a basic understanding of the implications of pregnancy risk. About 74% of women from communities having social norms and customary guidelines about pregnancy did not go for ANC visits in the first trimester, compared to only 52% of women from communities with no such guidelines. Also, of the 43 women that had specific beliefs about gestational age for ANC visits it, 86% did not understand the basic implications of the risks of pregnancy. About two-thirds (69%) of women needing permission from their partners for ANC visits did not understand basic complications of pregnancy-related risks, compared to 55% of those not needing such permission. Seventy-two per cent (72%) of women who had religious guidelines and teachings about pregnancy did not understand the basic implications of pregnancy-related risks, compared to 59% of those who had no religious guidelines. Among the 64 women who had TBAs playing some role in their pregnancy, 77% of them did not understand the basic implications of pregnancy-related risks. A majority (73%) of women who felt pressured to follow sociocultural beliefs also did not understand the basic implications of the risks, compared with 58% of those who did not feel such pressure.

Table 4.4 below shows results from the bivariate analyses of obstetric/gynaecological history of respondents and how they relate to the three outcome variables. There were some interesting variations worthy of comment. Most (67%) of the respondents were women who had been pregnant between two and four times. Interestingly, the mean attendance of ANC was highest (3.4) among those who were pregnant for the first time (primigravida) and lowest (3.1) among those who had been pregnant five or more times. In terms of the number of births (para), however,

women who had not yet had a child obtained the lowest (2.7) average ANC attendance expectedly. There were no major variations in average ANC attendance among women who had had a history of stillbirth and/or abortion and those who had

Table 4.4: *Obstetric/gynaecological history of respondents and outcome variables - results from the bivariate analyses*

Variable	Frequency (n=243)	Mean ANC attendance	ANC visit in 1st Trimester risk (% No)	Understanding of basic implications of (% No)
Number of pregnancies				
Primi gravida	41	3.4	51.2	63.4
Multi gravida	164	3.3	52.4	62.8
Grand gravida	38	3.1	50.0	60.5
Number of births				
Nulli para	12	2.7	75.0	58.3
Primi para	126	3.3	46.8	64.3
Multi para	91	3.3	57.1	61.5

Grand para	14	2.9	42.9	57.1
History of still births				
No	225	3.3	53.3	64"
Yes	18	3.2	33.3	44.4
History/ experience of abortion				
No	181	3.2	54.1	64.6
Yes	62	3.4	45.2	56.5
Outcome of last pregnancy				
Abortion	13	3.4	38.5	53.9
Live birth	172	3.3	53.5	63.9
Stillbirth	8	3.7	50.0	50.0

"p<0.1, *p<0.05, **p<0.01

not. About half of the women in all the categories of gravida did not attend ANC in the first trimester. There were no significant variations in ANC visits during the first trimester as those who had never given birth, 75% of them had not been to the ANC during their first trimester. Interestingly, greater proportions of those who had experienced stillbirth and abortion had been to the ANC during the first trimester compared with those who did not have any of these experiences.

Also, no significant differences were found among the respondents concerning gravida and parity with respect to understanding the basic implications of pregnancy-related risks. However, those with a history of stillbirths seemed to have a better understanding of the basic implication of pregnancy-related risks, as only 44% of them said they did not understand. Again, the understanding of the basic implications of pregnancy-related risks was better among women with

a history of abortion than those with no such history as 56% of them said they did not understand, compared with about 64% of those without such history.

Table 4.5 shows the results from bivariate analyses of the three indicators used to measure past ANC experience and their association with women's ANC attendance in general and ANC visits in the first trimester in particular. The results showed no significant variation in the number of ANC attendance and privacy of services received, be it open or private. However, quality of service showed some significant variation as women who rated past ANC services as good had an average attendance of 3.5, while those who rated it as bad had an average of just 2.5. As expected, women who would like to go back to the facility had an average attendance of 3.5 while those who were not sure had 2.9.

Past experience of ANC attendance had an association with visits to ANC in the first trimester from the chi-square tests. Even though they all have the same average number of attendances, most (81%) of women who were served in the open space would not go for ANC in the first trimester compared to only 50% of those who were served privately. Expectedly, the proportion of women who did not go for an ANC visit in the first trimester increases with the poor rating of past ANC services received. While only 37% of those who rate past service as good would not go for ANC in the first semester, more than 75% of their counterparts who rate past service as poor or somewhat good would do so. And most (62% or more) of those who are not willing to go back to the facility would also not go for ANC visits in the first trimester.

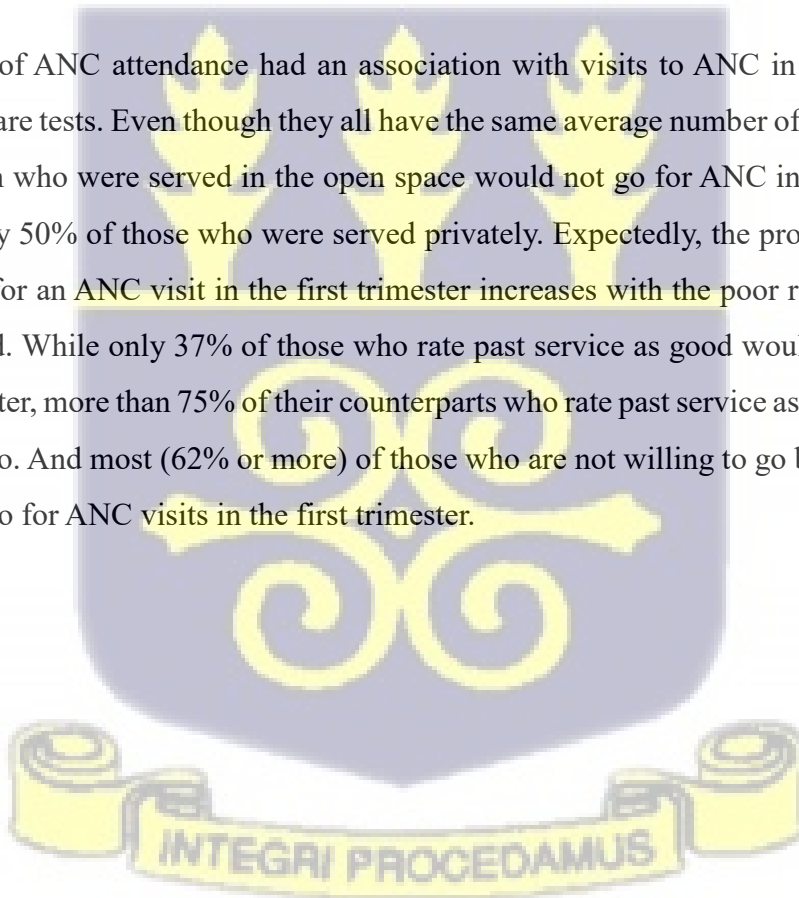


Table 4.5: ANC attendance history respondents and outcome variables - results from the bivariate analyses

Variable	Frequency (n=243)	Mean ANC attendance	ANC visit in 1st Trimester risk (% No)	Understanding basic implications of (% No)
Where were these services rendered?				
Open place	16	3.3	81.3*	37.5*
Private place	227	3.3	49.8	64.3
Rating of service received				
Good	132	3.5	37.7**	60.4
Somewhat good	78	3.0	75.3	64.2
Poor	8	2.5	87.5	87.5
Willingness to seek ANC service at the same clinic or hospital in future pregnancies				
No	8	2.9	62.5**	75.0
Maybe	70	2.9	76.7	68.5
Yes	140	3.5	40.1	59.3

"p<0.1, *p<0.05, **p<0.01

Unlike the association with ANC attendance in the first trimester, there were not much significant associations between these indicators of past ANC services and understanding of the basic implications of pregnancy-related risks. Most (64%) of those who were served in privacy said they did not understand the basic implications of pregnancy-related risks. As expected, the better the rating of past services, the higher the proportion of women who understood the basic implications of pregnancy-related risks.

4.4 Results from the multivariate regression analyses

From the presentation of results shown in Tables 4.2 to 4.5, it is clear that indicators used to measure the effects of demographic, sociocultural, gynaecological and past ANC services on the three outcome variables were many. To enter all of them into a regression without sieving them out would be too cumbersome to deal with. Hence, stepwise regression model that allows for the elimination of nonsignificant variables or indicators from the model were used, leaving the most important ones. For these models, the cut-off point was set at 0.2 significant level, dropping all variables with significant levels greater than or equal to 0.2. Tables 4.6, 4.7 and 4.8 present the results below.

Table 4.6 shows the results from the stepwise linear regression model estimating the effect of various factors on the number of ANC attendance. All the other variables or categories of variables dropped from the model are shown in Appendix 4A, with all the parameters also reported. Controlling for the effect of all possible indicators, Table 4.6 shows that being married and having secondary or higher education were demographic factors that had positive effects on ANC attendance. Two of the sociocultural indicators – the need for a partner's permission and belief in specific times of gestational age for ANC visits – had significant negative effects on the ANC visits. Gynaecological indicators such as parity and gestational age obviously and significantly had a positive effect on the number of ANC visits. Enjoying good ANC service was also quite a

significant predictor of ANC attendance, but the longer the journey time to the clinic, the less likely the woman would go for multiple ANC visits.

Table 4.6: *Results from multivariate stepwise linear regression showing key factors influencing ANC attendance*

	Coef	Std Error	P> t	95% lower	C.I upper
Needs partner's permission [yes]	-0.416	0.171	0.016	-0.754	0.079
Beliefs in specific gestation for ANC [yes]	-0.588	0.229	0.011	-1.039	0.136
Journey time to the clinic (min)	-0.007	0.003	0.046	-0.014	0.000
Current gestation (weeks)	0.131	0.011	0.000	0.109	0.153
Primi para	0.676	0.266	0.012	0.153	1.200
Multi para	0.513	0.276	0.065	-0.031	1.058
Marital status [married]	0.648	0.168	0.000	0.318	0.979
Good ANC service in the past [yes]	0.661	0.179	0.000	0.309	1.013
Secondary/tertiary education	0.494	0.186	0.008	0.128	0.860
Constant	-1.192	0.462	0.010	-2.103	0.282

Number of observations =240

F(9, 230) = 23.44
 Prob > F = 0.0000

Adj R-squared = 0.4580

Since ANC attendance in the first trimester is a binary outcome coded zero for Yes and one for No, stepwise logistic regression was used to determine the demographic, sociocultural, gynaecological and service delivery factors that influence no attendance of ANC in the first trimester of pregnancy. Again, the cut-off point for the elimination of insignificant factors was set at 0.2.

Table 4.7 below shows the results of the factors that were retained in the model. The factors that were removed are shown in Appendix 4B, with all the parameters also reported. From the demographic factors, marital status, religion and age between 20 to 30 years were retained in the model, but only marital status was a significant factor as married women compared with single women were less likely to have no ANC visit in the first trimester. Though they were quite significant at the bivariate level in Table 4.3, all the sociocultural factors were dropped from this model. The gynaecological factors and past ANC services were quite strong in determining ANC visits in the first trimester. Women with experience of stillbirth or abortion and live births were less likely to have no-ANC visit in the first trimester. For example, women with one live birth were about five times more likely to visit ANC in the first trimester compared with those with no history of live birth. Generally, a unit increase in gestational age within the first trimester was likely to increase the chance of not visiting ANC in the first trimester by about 7%. Having an experience of a good quality ANC service in the past was a major determinant as women who rated past ANC service as good were about six times less likely to ignore ANC visit in the first trimester compared with their counterparts who rated their past ANC experience as poor.



Table 4.7: Results from multivariate stepwise logistic regression showing key factors influencing no ANC visit in the first trimester

	Odds				
	Ratio	Std. Err.	P>z	[95% Conf.	Interval]
Stillbirth [No]	1.000				
Stillbirth [yes]	0.359	0.214	0.086	0.111	1.156
Abortion experience [no]	1.000				
Abortion experience [yes]	0.550	0.197	0.095	0.273	1.109
Christian	1.000				
Traditional rel/None	2.548	1.688	0.158	0.696	9.340
Age group: 16-18	1.000				
Age group: 20-30	1.524	0.500	0.200	0.801	2.900
Marital status: Single	1.000				
Marital status: Married	0.321	0.105	0.000	0.170	0.609
Nulli para	1.000				0.015
Primi para	0.156	0.119	0.015		
Multipara	0.293	0.227	0.113	0.064	1.339
Grand para	0.219	0.208	0.110	0.034	1.411

Good service [No]	1.000				
Good ANC service [Yes]	0.174	0.059	0.000	0.089	0.339
Current gestational age	1.069	0.024	0.003	1.023	1.116
Constant	4.155	4.198	0.159	0.573	30.103

Number of obs = 240

LR chi2(10) = 75.42

Prob > chi2 = 0.0000

Pseudo R2 = 0.2270

Table 4.8 also uses multivariate stepwise logistic regression to model determinants of understanding the basic implications of pregnancy related risks. Having a basic understanding of the implications was coded zero, and not having the basic understanding was coded one. Just as done in the previous two models. The cut-off point of dropping unimportant factors was set at 0.2 level of significance, keeping the ones that were lower than 0.2. As Table 4.8 shows, many more factors were dropped from this model than the previous two models in Tables 4.6 and 4.7. Among the demographic factors, age and religion were significant determinants. For example, older women were less likely than teenagers to not have a basic understanding of the implications of pregnancy-related risks. But women with Muslim religious backgrounds were about five times more likely than their Christian counterparts to have no basic understanding of the risk implications. Women who believed specific gestational age for ANC visit were significantly more likely to have no understanding of basic implications of pregnancy related risks.

Table 4.8: *Results from multivariate stepwise logistic regression showing key factors influencing poor understanding of the basic implications of pregnancy-related risks*

	Odds Ratio	Std. Err.	P>z	[95% Conf. Interval]
Privacy observed [Yes]				
Privacy observed [No]	5.824	3.559	0.004	1.758 19.290
Age group: 16-19	1.000			
Age group: 31+	0.598	0.182	0.091	0.330 1.086
Christian	1.000			
Muslim	2.677	1.196	0.028	1.115 6.427
TBA influences preg decisions [No]				
TBA influences preg decisions [Yes]	1.907	0.788	0.118	0.848 4.284
Cultural beliefs on timing of ANC [yes]				
Cultural beliefs on timing of ANC [No]	3.782	2.049	0.014	1.308 10.939
_cons	0.243	0.154	0.026	0.070 0.842
Number of obs = 240				
LR chi2(5)	= 30.40			
Prob > chi2 = 0.0000				
Pseudo R2	= 0.0961			

CHAPTER FIVE: DISCUSSION

5.1 Introduction

In this chapter, the implications of the findings of the present study are discussed. The chapter is sectioned according to the study's specific objectives. The limitations of the study are also presented here.

5.2 Demographic characteristics of respondents

Antenatal care (ANC) is one of the pillars of maternal and child health programs that prevent and reduce maternal and child morbidity and mortality (Badolo et al., 2022). Demographic factors have been found to influence its usage. Understanding these demographic associations is essential for designing targeted interventions to increase ANC attendance and improve maternal health outcomes, especially in low- and middle-income countries (LMICs).

The descriptive statistics results show that though most of the respondents had good knowledge about the possible risks or complications that can occur in pregnancy, most (55%) of them had attended ANC only between one and three times and only 7% of them had attended seven or more times at the time of data collection. Also, more than half of the respondents (52%) visited the antenatal clinic after the first trimester. These findings fall short of the recommendations by the WHO, which suggests that for a positive pregnancy experience, pregnant women should have had at least eight contacts with the first visit before the twelfth week of pregnancy (WHO, 2016).

The findings of this study are consistent with another study, which revealed that the majority (52%) of the participants started ANC after the first trimester (Wolde et al., 2019). In a similar study in South Africa, 84% of the respondents initiated antenatal visits after the first trimester (Mulondo, 2020). However, the findings contrast with those of studies in southern rural Ghana and the whole country, which showed that more than half of pregnant women start their first ANC visit within the first twelve weeks of gestation as recommended by the WHO (Manyeh et al., 2020),

One of the objectives of this study was to investigate the demographic and socio-cultural background of respondents. The findings suggest that demographic background, social attitudes,

and cultural norms are important motivators for ANC attendance. At the bivariate level of analysis, there were noticeable differences in ANC attendance among the age groups, with the results suggesting that younger and older mothers have different attitudes toward ANC attendance. Women between the ages of 18 and 30 had a lower average attendance of between 3.1 and 3.2, while those above 30 years had 3.6 visits on average. This outcome is consistent with several recent studies that identified significant associations between maternal age and ANC utilization. Omar et al (2020), for example, also observed that ANC attendance is more common among older women than younger ones (Omar et al., 2020).

This is not surprising as women of younger maternal age may not recognize pregnancy symptoms early, hence the late visits (Abuosi et al., 2024). Also, for fear of stigma from friends and family, young adolescent mothers may delay seeking care (Nyando et al., 2023). Lack of emotional and financial support also makes it difficult for young mothers to prioritize their health and seek early care (Shee et al., 2021). However, at the multivariate level of analysis, age was not a significant predictor of antenatal attendance in this study, suggesting that when other factors are taken into consideration, age is not an important factor in ANC attendance among this population. This finding is in contrast with results from some other studies. For example, Ngambi et al. (2022) found that women under 20-24 years were more likely to attend regular ANC sessions, compared to those aged 45-49 years. Also, previous studies found an association between age and ANC attendance (Pandey et al., 2014; Paul & Chouhan et al., 2020; Islam et al., 2022). But these studies did not consider factors such as past experience of ANC visit and belief in specific gestational age for ANC visit, which are found to be highly significant predictors of ANC visits in this study.

Like many studies, education was a very strong predictor of ANC attendance. For example, studies by Masanje and Ruweza (2023) found that educational level was a significant predictor of ANC attendance. Similarly, research by Mkhonta et al. (2022) highlighted that maternal education and medical history significantly impacted ANC utilisation. Again, Paul and Chouhan (2020) revealed that the educational attainment of women and household wealth status are the most significant predictors of maternal healthcare utilization. In Malawi, women who had completed secondary and tertiary education were significantly more likely to attend at least four ANC visits compared to those with no formal education (Ng'ambi et al., 2022). Similarly, a study in Ghana found that

women with upward attainment of formal education levels were more likely to initiate early ANC visits (Duodu et al., 2022).

Many other studies have found positive relationship between level of education and ANC attendance (Islam et al, 2022; Thakkar et al, 2023; Paul and Chouhan, 2020; Ziblim, 2018). ANC attendance was also found to be positively influenced by marital status, as most of the single women (58%) and those cohabiting (61%) did not visit the ANC in the first trimester, compared to only 40% of married women. Research by Basha (2019) found that factors such as marital status and level of education were associated with the utilisation of a minimum of four ANC visits. These findings are not surprising as educated or married women are generally in a better position to know the importance of ANC visits for safe pregnancy outcomes and also have the necessary support, financially and socially, to go for ANC visits.

The findings of the study also suggest that parity is a strong predictor of ANC attendance, especially in the first trimester, as well as the number of visits. This outcome is consistent with several recent studies that have identified significant associations between parity and antenatal care utilization (Alibhai et al., 2022; Abdo et al., 2023). Research by Omar et al. (2020) showed a significant relationship between parity and antenatal visits; in that research, parity was associated with fewer ANC visits. Similar studies in southern Ghana, however, found a strong relationship between parity and antenatal care (Manyeh et al., 2020). The disparities between the findings of this study and those of other studies can be attributed to contextual differences and measurement methods. This is because the demographic and sociocultural contexts of the current study's population may differ significantly from those of the cited studies.

5.3 Perceived susceptibility to pregnancy complications

This study also sought to investigate the relationship between perceived susceptibility to pregnancy-related complications and antenatal care (ANC) visits. The findings revealed that perceived susceptibility to pregnancy-related complications was in some way associated with ANC visits. Women who have had a history of some complications of pregnancy had a better understanding of their susceptibility to such complications and their implications, and this reflected

in their ANC visits. The majority (76%) visited in the first trimester as compared to their counterparts who had no such experience. This may be because such women might have learned from such experiences, hence a behaviour change. A study by Nyando et al. (2023) in Malawi also found that women who perceived themselves to be at higher risk of pregnancy complications were more likely to initiate ANC visits early and attend them regularly. Another study in Ghana also revealed that women attend ANC because of the fear of possible complications to the baby (Barbi et al., 2020). Similarly, research by Kuhnt and Vollmer (2017) in the Philippines highlighted that the perceived risk of complications was a strong motivator for seeking ANC services. Belay et al. (2022) found that knowledge of the danger signs of pregnancy significantly influences ANC visits

5.4 Sociocultural factors

Socio-cultural factors, such as norms regarding the timing of antenatal visits and the need for a husband's permission before attending antenatal, were found to significantly influence antenatal attendance. In some communities, norms or family expectations influence when and how frequently women seek medical attention during pregnancy. Regardless of personal risk perceptions, this social context may encourage or discourage regular ANC attendance. About 74% of women from communities where there are social norms and customary guidelines about pregnancy did not go for ANC visits in the first trimester, compared to their counterparts who had no such norms in their community.

The findings of the study also suggest that a pregnant woman's seeking behaviour is influenced by her husband's decision. About two-thirds (69%) of women needed permission from their partners for ANC visits. This is so because men are seen as the primary decision-makers in the family, hence the husband must approve a woman's health decision. Religious teachings and guidelines about pregnancy were also found to influence antenatal visits as Seventy-two percent of women who have religious guidelines and teachings about pregnancy do not understand the basic implications of pregnancy-related risks a lower ANC as compared to 59% of those who have nothing like that in their religions. It is important to note that among the population of this study, sociocultural factors are much stronger in predicting ANC attendance than the demographic factors as the results from the logistic models suggest.

A study in the savannah region of Ghana revealed that husbands had a major say in antenatal attendance (Ziblim et al., 2020). Kota et al. (2023) also found that indigenous beliefs, especially in rural areas, decreased odds of using healthcare services (ANC services) among pregnant women in Togo. Another study in South Sudan by Mzimhiri et al. (2024) also showed that limited decision-making space within households, as well as superstitions in rural settings, were identified as factors contributing to low ANC attendance among pregnant women, particularly in the first trimester.

5.5 Facility Related factors

To identify other factors that enable antenatal clinic visits, the study also sought to investigate the impact of facility-related factors on antenatal care (ANC) visits. The findings revealed that past experiences at ANC visits influenced ANC positively or negatively as 81% of women who were not provided privacy in their previous ANC visits did not show up in the first trimester as compared to those who were provided with privacy. As the stepwise regression models suggest, this is one of the most important factors, if not the most important one, determining ANC attendance, especially during the first trimester as women who had good past ANC service are about six times less likely to ignore attendance of ANC clinic in the first trimester.

Several studies have also identified significant associations between facility-related factors and ANC utilization. For instance, a study by Khatri et al. (2022) found that factors such as the availability of trained healthcare workers, adequate infrastructure, and the provision of essential commodities were crucial determinants of ANC attendance. Similarly, research by Alibhai et al. (2022) highlighted that poor quality of ANC services and lack of facility readiness were significant barriers to ANC utilization in conflict-affected regions. This is because having qualified medical professionals, such as obstetricians, nurses, and trained midwives, can positively impact the standard of care and give women greater confidence to attend ANC visits. A lack of qualified medical staff can result in lengthy wait times, poor counselling, and the possibility of missed diagnoses, all of which might deter expectant mothers from attending ANC or making additional visits. Also, for ANC to be effective, the availability of essential medical supplies and drugs, such as iron supplements, vaccinations, and prenatal vitamins, is critical. Women may feel that the

service is insufficient and be less likely to attend if these items are few or unavailable, hence few ANC clinic visits.

5.6 Implications of study

The study revealed that demographic characteristics, perceived susceptibility, socio-cultural factors and health facility-related factors are strong predictors of ANC attendance among pregnant women in the Ningo-Prampram district. ANC attendance was higher among the most educated as well as single individuals. Women who had a history of pregnancy-related complications were also more likely to attend ANC services in the future. Socio-cultural factors such as cultural and religious norms, needing partner's permission and access to TBA services were strong deterrents to ANC attendance. Similarly, lack of privacy at ANC clinics and poor care experience serve as deterrents of ANC attendance among pregnant women in the district. These findings present several implications for policy, practice and research. Policy implications include addressing indirect economic barriers such as transportation costs, carrying out mobile ANC initiatives, funding educational initiatives to educate pregnant women on the need for ANC and periodic staff training to improve ANC services. Implications for practice include continuous facility-level training for old and new staff, and collaboration with key community members who play major roles in influencing women's care decisions. Finally, further research may be conducted to understand the lived experiences of pregnant women who face challenges in seeking care. Insights from such a study would be vital in shaping intervention strategies for ANC promotion. Additionally, examining mental and emotional dimensions may lead to a more effective and personalized approach to maternal healthcare.

5.7 Summary

The chapter interprets the study's findings in relation to objectives, current literature and practical implications. The discussion was organized into four sections, namely, demographic factors, perceived susceptibility to complications, socio-cultural and facility-related factors influencing ANC attendance. Education, marital status and parity were strong demographic predictors of ANC

attendance, but good knowledge and age were not as influential. Women who had a history of complications demonstrated better understanding of those complications, as well as a higher likelihood to attend ANC. In contrast, socio-cultural norms, including norms about timing of ANC visits, presence of customary guidelines, religious teachings and partner permission were significant deterrents to ANC attendance, and this was high among the study participants. Finally, facility-related factors such as lack of privacy deterred pregnant women from attending ANC, whereas positive care was associated with a higher likelihood to attend ANC. Most of the results from the study align with current literature suggesting similar needs and behaviour patterns among pregnant women. Hence, interventions targeting ANC attendance promotion among pregnant women in the Prampram district must be culturally sensitive to address the religious and cultural barriers, provide education on complication risks and shape a positive care experience in ANC units. This would enable pregnant women to attendance ANC according to the recommendations by the World Health Organization.



CHAPTER SIX: SUMMARY, CONCLUSION, LIMITATION AND RECOMMENDATIONS

This chapter presents an overview of the research study, highlighting the key findings, limitations, and implications. Additionally, suggestions for future research are outlined to guide future research.

6.1 Summary

This study was conducted to identify the factors that influence Antenatal care visits among pregnant women in the Ningo-Prampram district. Guided by Andersen's Behavioral Model, the objectives were to assess socio-demographic backgrounds of pregnant women attending ANC, ascertain their knowledge on susceptibility to pregnancy-related complications and identify factors influencing their ANC visits. Because the goal of the study was to quantify these variables and provide an objective understanding of the pregnant women's behaviour towards ANC, a descriptive quantitative cross-sectional design was adopted. This allowed the researcher to collect data from 243 pregnant women in the Ningo-Prampram district over a period of two weeks using questionnaires. Descriptive and inferential statistics, including bivariate and multivariate analyses, were performed to test the relationships among the study's variables. The findings indicated that demographic factors, perceived susceptibility, socio-cultural and facility-related factors were all significant contributors to pregnant women's ANC attendance in both the first trimester and across the pregnancy duration. Pregnant women who had primary or no education and those who were single were more likely to miss first trimester visits, indicating that education and marital status were significant contributors to ANC attendance. Also, women who had previous pregnancy complications demonstrated better understanding of these complications and higher ANC attendance than those with no history of complications. Additionally, socio-cultural factors were strongly influential. Socio-cultural norms about ANC, religious teachings, customary guidelines and need partner's permission were significant deterrents of ANC attendance. Finally, facility-related factors were also instrumental, with lack of privacy during care inhibiting future ANC attendance and positive care experience promoting future visits. Many of these findings align with the current literature, suggesting that pregnant women's needs and factors influencing their ANC attendance follow a pattern. However, cultural factors play a significant role. Hence, it is

recommended that interventions aimed at improving ANC attendance among pregnant women in the Ningo-Prampram district are designed to be culturally sensitive. Further research into the cultural and religious dynamics of the population would provide the necessary information for a tailored intervention. Moreover, educational initiatives and positive care experiences for pregnant women would be instrumental in improving ANC attendance in the Ningo-Prampram district.

6.2 Conclusion

This study was aimed at identifying factors influencing antenatal visits among pregnant women in the Ningo-Prampram district. The findings indicated that several factors interact to promote or inhibit ANC visits of pregnant women across demographic, perceived susceptibility, socio-cultural and facility-related categories. Demographic factors such as education, marital status and parity emerged as significant predisposing factors for ANC attendance. Perceived susceptibility (need factor) to pregnancy complications was also prevalent among pregnant women who had a history of complications, and they were also more likely to attend ANC than their counterparts. Socio-cultural factors were the strongest predictors of ANC attendance. They included norms about timing of ANC attendance, religious and customary guidelines, needing partner's permission and accessing TBA services. These factors reduced the likelihood of pregnant women to attend ANC. Finally, health facility-related factors (enabling factors) such as privacy and care experience influenced visits. These results strongly align with current literature and have implications for intervention designs aimed at promoting ANC attendance in the Ningo-Prampram district.

6.3 Limitation of Study

The study was a facility-based study that surveyed women who had accessed the facility for ANC; women who had never received ANC were excluded from this survey. By this criterion, these women's perspectives which might have revealed reasons why women might not seek ANC healthcare services—were not included. This could have shed light on other barriers and perspectives that were not presented by those captured. Also, the self-report nature of the data collection process had the potential of eliciting inaccurate responses from participants.

Additionally, while the cross-sectional survey allows for collecting data at one point in time, cause and effect relationships cannot be established between the study's predictors and outcome variables. Due to this, the findings are interpreted with caution. Finally, while several factors were explored in this study, an in-depth analysis could have provided deeper understanding about pregnant women's experiences and how these experiences shape their ANC behaviours. Such in-depth understanding could have stronger benefits in intervention designs compared to the objective insights generated by this study.

6.4 Recommendations

Based on the findings of this study, these recommendations should be considered by relevant stakeholders as follows:

Ghana Health Service/Ministry of Health

1. Organize periodic training on customer-care and respectful maternity care to equip new staff and refresh older staff members
2. Support outreaches or mobile ANC to reduce transport barriers experienced by pregnant women in underserved locations
3. Fund research to uncover unexplored barriers to ANC attendance in communities where attendance is low

Community involvement

1. Community health workers, peer groups, and family involvement must be an integral component of ANC outreach efforts. By involving trusted community members, ANC programs can better align with social norms and strengthen support networks, encouraging regular ANC attendance.

Prampram Polyclinic

1. Hold regular, practical customer-care training for all ANC staff and measure improvement through client feedback

2. Maintain valuable records to track ANC attendance, reasons for missed visits and client complaints which can be used to adjust clinic hours and improve client flow
3. Organize educational outreaches for community members and offer mobile ANC to reduce access barriers



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APPENDICES

Appendix 1: Application for Ethical Clearance

University Of Ghana, College of Health Sciences
School of Nursing and Midwifery
6th July 2024

The Chairperson
Ghana Health Service Ethics Review Committee

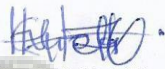
Dear Sir/Madam,

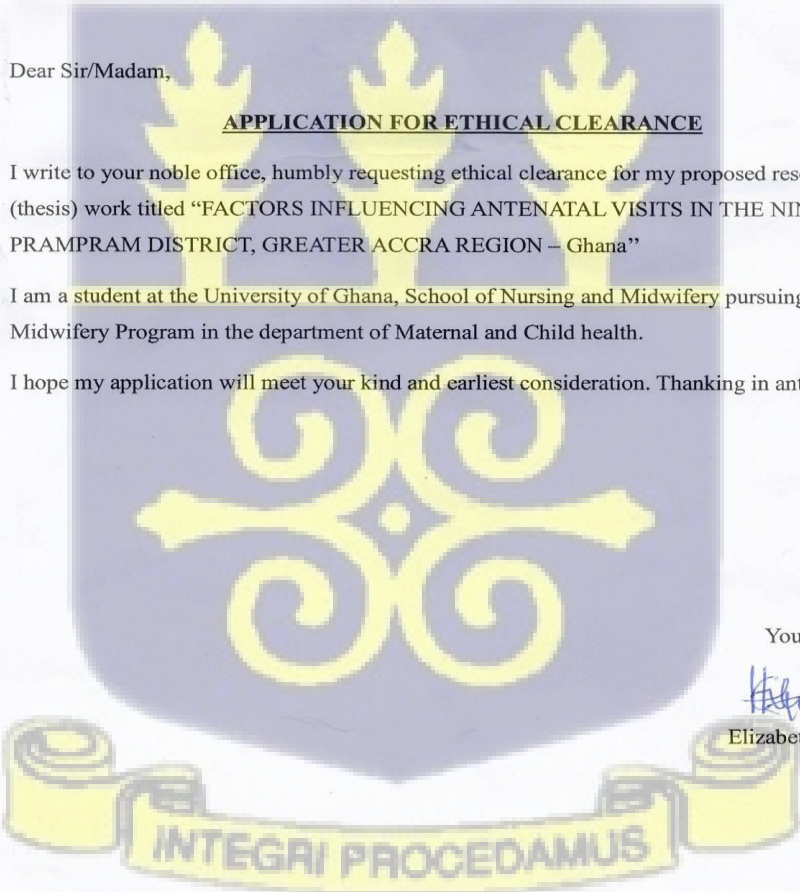
APPLICATION FOR ETHICAL CLEARANCE

I write to your noble office, humbly requesting ethical clearance for my proposed research (thesis) work titled "FACTORS INFLUENCING ANTENATAL VISITS IN THE NINGO - PRAMPARAM DISTRICT, GREATER ACCRA REGION – Ghana"

I am a student at the University of Ghana, School of Nursing and Midwifery pursuing an MPhil Midwifery Program in the department of Maternal and Child health.

I hope my application will meet your kind and earliest consideration. Thanking in anticipation.

Yours Faithfully

Elizabeth Hutchison



Appendix 2: Letter of introduction 1



**UNIVERSITY
OF GHANA**

**DEPARTMENT OF MATERNAL AND CHILD HEALTH
SCHOOL OF NURSING AND MIDWIFERY
COLLEGE OF HEALTH SCIENCES**

Ref: 11010802

6th August, 2024.

**Prampram Polyclinic
P.O. Box 37**

Dear Sir/Madam,

LETTER OF INTRODUCTION- ETHICAL CLEARANCE

I write to introduce to you Elizabeth Hutchison, an MPhil Midwifery student in the Department of Maternal and Child Health at the School of Nursing and Midwifery, University of Ghana, Legon.

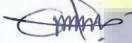
As part of the requirements for the MPhil Midwifery programme, the student is to undertake a study and she intends to use your facility as her study site.

The title of her research is **"Factors influencing antenatal visit among pregnant women in the Ningo Prampram district, Greater Accra Region, Ghana."**

I write to seek your permission to enable her undertake this study at the facility.

Thank you.

Yours faithfully,



Dr. Caroline Dinam Badzi
(Research Supervisor)

P. O. Box LG 43, Legon, Accra, Ghana | Tel: +233 (0) 30 251 3250
Email: mchsonm@ug.edu.gh | Website: www.nursing.ug.edu.gh



UG



INTEGRI PROCEDAMUS

Appendix 3: Letter of introduction 2



**UNIVERSITY
OF GHANA**

SCHOOL OF NURSING AND MIDWIFERY
COLLEGE OF HEALTH SCIENCES

Ref: 11010802

6th August, 2024.

**The Chairperson
Ghana Health Service
Ethics Review Committee**

Dear Sir/Madam,

LETTER OF INTRODUCTION- ETHICAL CLEARANCE

I write to introduce to you Elizabeth Hutcihson, an MPhil Midwifery student in the Department of Maternal and Child Health at the School of Nursing and Midwifery, University of Ghana, Legon.

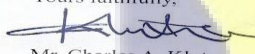
As part of the requirements for the MPhil Midwifery programme, the student is to undertake a study and she intends to use the Prampram Polyclinic as her study site.

The title of her research is **"Factors influencing antenatal visit among pregnant women in the Ningo Prampram district, Greater Accra Region, Ghana."**

I write to seek your permission to enable her undertake this study at the facility.

Thank you.

Yours faithfully,



Mr. Charles A. Klutse
(School Administrator)

P. O. Box LG 43, Legon, Accra, Ghana | Tel: +233 (0) 303 970 801
Email: nursing@ug.edu.gh | Website: www.nursing.ug.edu.gh



Appendix 4 : Letter of support



**UNIVERSITY
OF GHANA**

DEPARTMENT OF MATERNAL AND CHILD HEALTH
SCHOOL OF NURSING AND MIDWIFERY
COLLEGE OF HEALTH SCIENCES

Ref: 11010802

6th August, 2024.

The Chairperson
Ghana Health Service
Ethics Review Committee

Dear Sir/Madam,

LETTER OF SUPPORT- ETHICAL CLEARANCE

I write to support the application for ethical clearance of Elizabeth Hutchison, an MPhil Midwifery student in the Department of Maternal and Child Health at the School of Nursing and Midwifery, University of Ghana, Legon.

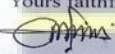
As part of the requirements for the MPhil Midwifery programme, the student is to undertake a study and she intends to use the Prampram Polyclinic as her study site.

The title of her research is **"Factors influencing antenatal visit among pregnant women in the Ningo Prampram district, Greater Accra Region, Ghana."**

I write to seek your permission to enable her undertake this study at the facility.

Thank you.

Yours faithfully,



Dr. Caroline Dinam Badzi
(Research Supervisor)

P. O. Box LG 43, Legon, Accra, Ghana | Tel: +233 (0) 30 251 3250
Email: mchsonm@ug.edu.gh | Website: www.nursing.ug.edu.gh



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Appendix 5: Ethical Clearance

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

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


Your Health. Our Concern.

My Ref. GHS/RDD/ERC/Admin/App / 24/482
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
Tel: +233-302-960628
Email: ethics.research@ghs.gov.gh
11th September 2024

Elizabeth Hutchison
Prampram Polyclinic
P.O. Box 37
Prampram

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

GHS-ERC Number	GHS-ERC: 043/08/24
Study Title	Factors Influencing Antenatal Visits Among Pregnant Women in the Ningo-Prampram District of the Greater Accra Region.
Approval Date	11 th September, 2024
Expiry Date	10 th September, 2025
GHS-ERC Decision	Approved

This approval requires the following from the Principal Investigator

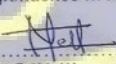
- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission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

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

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

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

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

SIGNED: 
Mr. Kofi Wellington
(GHS ERC Chairperson)

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

Appendix 6: Informed consent and questionnaire

Appendix 6 a: CONSENT FORM

Hello, my name is Elizabeth Hutchison. I am a student at the School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon, pursuing MPHIL Midwifery. I am carrying out a study on antenatal practices among pregnant women within this district. I will be glad to have you partake in this study. Your responses will remain private and confidential, only being seen by the survey staff members. While participation in the survey is not mandatory, I hope that you will consent to respond to the questions since your opinions matter. You can end the interview at any moment also Please let me know if there are any questions you would prefer not to answer, and I will move on to the next one.

INSTRUCTIONS TO THE DATA COLLECTOR: Please read the “Introduction and Consent” section to the client and obtain the client’s consent before beginning with the survey questions. Please ask all of the questions in the order that they appear on the form. If the client does not consent to be interviewed, thank her for her time and save this page to be turned into Ipas as documentation of client refusal.

INTRODUCTION AND CONSENT: Hello, my name is _____ and I would like to talk with you about participating in a research study today. I am collaborating with a student at the School of Nursing and Midwifery, College of Health Sciences, University of Ghana, to conduct a survey about antenatal practices among pregnant women within this district. The information we collect will help health care staff work with women to improve pregnancy outcomes. We are asking all pregnant women who come to this facility for services to complete the questionnaire. Completing the questions typically takes twenty minutes. I'll read the survey questions to you and record your responses if you choose to take part. Your responses will be kept private and confidential, and only our research team will be able to see them. I will not write your name or any information that could be used to identify you on the survey document. I will ask you to sign a separate consent form if you accept to be interviewed, and it will be safely maintained to ensure confidentiality. If you choose not to engage in the study, you are under no obligation to do so. Your service will not be impacted in any way if you decide to participate. I'll go on to the next question if you agree to participate and I ask you a question you don't want to answer. Even if you

decide to take part, you have the option to withdraw from the survey at any moment. This clinic will provide you with the exact same quality of care regardless of whether you choose to participate in this survey or not.

Do you have any questions about the study? Are you willing to participate in the study?

☐ RESPONDENT AGREES TO BE INTERVIEWED → GET SIGNATURE AND RECORD ID NUMBER BELOW

☐ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED → Interviewer, please end here and escort the woman back to the waiting area to continue her cycle of care.

RESPONDENT SIGNATURE: _____ DATE: _____

DATA COLLECTOR'S SIGNATURE: _____ DATE: _____

You can contact the following persons at any time if you should have any questions: Elizabeth Hutchison 059241 8342; Ethical Committee of UG

Appendix 6b: Data collection instrument

QUESTIONNAIRE ON FACTORS INFLUENCING ANTENATAL VISITS AMONG PREGNANT WOMEN IN THE NINGO PRAMPARAM DISTRICT

SECTION A

SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Age (at last birthday)years

<p>2. What is your religious affiliation?</p> <p>Muslim ☐ Christian ☐ Traditionalist ☐ No religion Others specify</p>
<p>3. Ethnicity</p>
<p>4. Marital status:</p> <p>Single ☐ Married ☐ Cohabiting ☐ Divorced ☐ Widowed ☐</p>
<p>5. Educational level.</p> <p>None ☐ Basic ☐ Senior High School ☐ Tertiary ☐</p>
<p>6. Residence.....</p>
<p>7. Occupation of respondent</p> <p>Student ☐ Farmer ☐ fish monger ☐ Trader ☐ salaried worker ☐</p> <p>Unemployed ☐ Others Specify.....</p>
<p>8. Occupation of partner</p> <p>Student ☐ Farmer ☐ fish monger ☐ Trader ☐ salaried worker ☐</p> <p>Unemployed ☐ Others Specify.....</p>

--

OBSTETRIC/ GYNEACOLOGICAL HISTORY

<p>9. Number of pregnancies</p> <p>One ☐ two ☐ three ☐ four ☐ five and above ☐</p>
<p>10. Number of births</p> <p>One ☐ two ☐ three ☐ four ☐ five and above ☐</p>
<p>11. History of stillbirth</p> <p>Yes ☐ No ☐</p>
<p>12. If yes to question 11, how many?</p> <p>One ☐ Two ☐ Three ☐ four and above ☐</p>
<p>13. History of abortion</p> <p>Yes ☐ No ☐</p>
<p>14. If yes to question 13 was it</p> <p>Spontaneous (miscarriage) ☐ Induced ☐</p>
<p>15. What was the outcome of the pregnancy before the current delivery?</p>

Live Birth ☐ Stillbirth ☐ Abortion ☐		
16. Gestational age on first ANC attendance in weeks by		
a.	scan	
B.	last menstrual period	

SECTION B

PERCEIVED SUSCEPTIBILITY

16. Are you aware of any potential complications that can arise during pregnancy?

Yes ☐ no ☐

17 If yes Can you name some complications that can occur during pregnancy

Bleeding ☐ High blood pressure ☐ Severe vomiting ☐ Preterm labor ☐ Others specify

18. Do you believe that certain women are more at risk for pregnancy complications than others?

Yes ☐ NO ☐

19. If yes why

20. Have you ever discussed any potential complications with your healthcare provider?

Yes ☐ No ☐

21. If yes why

22. How would you describe your understanding of the risks associated with pregnancy?

23. Do you think you are at risk of developing any complications during this pregnancy?

Yes []

No []

24. What steps should you take should you experience pregnancy complications

- a. Visit the clinic
- b. Take some herbal preparations
- c. See my pastor for prayers
- d. Visit the TBA

SECTION C

FACTORS INFLUENCING ANTENATAL VISITS

(I) Environmental Factors

25. Did you attend ANC during your previous pregnancy?			
Yes []		No []	
26. How was your experience at ANC?			
Satisfied []		Dissatisfied []	Neutral []
27. Why do you attend antenatal clinic? Tick as many as possible			
<div style="display: flex; justify-content: space-between;"> YES NO </div>			
a.	To monitor the progress of my pregnancy	0	1

b.	To monitor the progress of my pregnancy	0	1
c.	Because other pregnant women are visiting	0	1
d.	For immunization during pregnancy	0	1
e.	To receive education on health during pregnancy	0	1
f.	Others (specify)	0	1

28. Where were these services rendered?

Private place ☐ Open place ☐

29. How will you rate the service to the reason(s) for attendance?

Dissatisfied ☐ Satisfied ☐ Neutral ☐

30. Does unsatisfactory ANC services delay your initiation of ANC service?

Yes ☐ No ☐

31. Will you seek ANC services in subsequent pregnancies?

Yes ☐ No ☐

32. Does your culture support antenatal care services?

Yes ☐ No ☐

<p>33. Does your culture allow you to start antenatal early?</p> <p>Yes ☐ No ☐</p>
<p>34 . Which week of the pregnancy did you have your first ANC week?</p> <p>.....</p>

(II) Facility-Related Factors

<p>35. How long did it take for you to be attended to by a health worker upon arrival at the facility.....</p>
<p>36. How did the nurses/midwives address you on your visit?</p> <p>By your name ☐ By your dress ☐ By your color ☐ Others (specify)</p>
<p>37. What is your perception of the quality of ANC services?</p> <p>Good ☐ Bad ☐ Neutral ☐</p>
<p>38Where are your needs addressed?</p> <p>Yes ☐ No ☐</p>

[III] Access Factors

<p>39. how did you get to the ANC clinic?</p>

By foot ☐ By personal transport ☐ By public transport ☐	
40. What is the transport cost if you are not footing to ANC?	
41. How much will it cost you to attend the nearest ANC?	
42. How long did it take you to get to the ANC clinic?.....	
43. Do you perceive ANC service to be free? Yes ☐ No ☐	
44. Will the perceived cost of ANC service delay your initiation of ANC services in subsequent pregnancies? Yes ☐ No ☐	
45. Do you perceive ANC services to be accessible? Yes ☐ No ☐	
46. Which services do you perceive to be accessible? (Tick all that apply)	
	NO YES
a. Physical examination	0 1
b. Health education	0 1
c. Pharmacy services	0 1
d. Investigations	0 1

47. When is the right time for a pregnant woman to start ANC?

Immediately you notice you are pregnant []

When other people notice you are pregnant []

When your husband asks you to attend []

When you think it is time to deliver []

48. Why are you initiating ANC service now? Tick all that apply.

			NO	YES
a.	I didn't know I was pregnant	0	1	
b.	I didn't want people to know	0	1	
c.	I didn't have my partner's permission	0	1	
d.	I didn't have money	0	1	

THANK YOU FOR YOUR RESPONSE



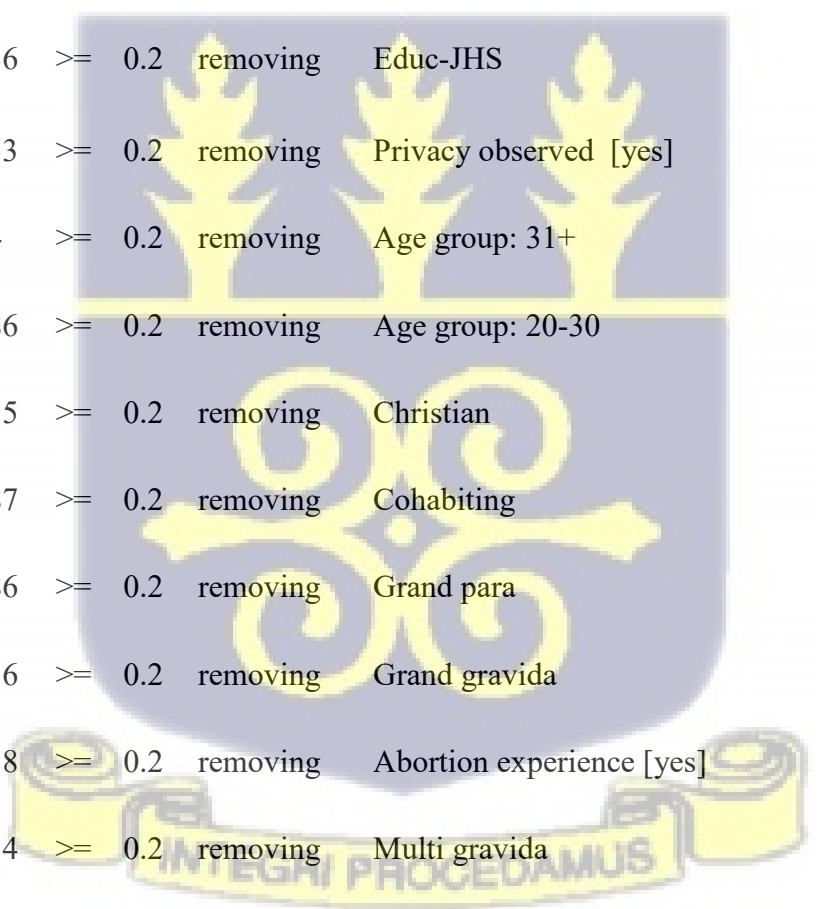
Appendix 7 Variables dropped

Appendix 7 A: Variables dropped from the Stepwise regression model determining factors that affect ANC attendance. The significance level for removal of variables from the model was set at $p(0.2)$

$p = 0.9373 \geq 0.2$ removing Stillbirth experience [yes] $p = 0.8678 \geq 0.2$ removing

Muslim $p = 0.8496 \geq 0.2$ removing Feel pressure to soc [yes] $p = 0.826 \geq 0.2$ removing

Traditional religion/None



p	$=$	0.7856	$\geq$	0.2	removing	Educ-JHS
p	$=$	0.7553	$\geq$	0.2	removing	Privacy observed [yes]
p	$=$	0.684	$\geq$	0.2	removing	Age group: 31+
p	$=$	0.6286	$\geq$	0.2	removing	Age group: 20-30
p	$=$	0.6215	$\geq$	0.2	removing	Christian
p	$=$	0.5287	$\geq$	0.2	removing	Cohabiting
p	$=$	0.4986	$\geq$	0.2	removing	Grand para
p	$=$	0.4916	$\geq$	0.2	removing	Grand gravida
p	$=$	0.4338	$\geq$	0.2	removing	Abortion experience [yes]
p	$=$	0.4034	$\geq$	0.2	removing	Multi gravida
p	$=$	0.3902	$\geq$	0.2	removing	Waiting time at the clinic [hours]
p	$=$	0.2407	$\geq$	0.2	removing	Do TBAs play a role in your pregnancy? [yes]

Appendix 7 B: Variables dropped from the Stepwise logistic regression model determining factors that affect No ANC visit in first trimester. The significance level for removal of variables from the model was set at $p(0.2)$

$p = 0.886 \geq 0.2$ removing Muslim

$p = 0.8138 \geq 0.2$ removing Feel pressure to soc [yes] $p =$

$0.7236 \geq 0.2$ removing Waiting time at the clinic [hours]

Do TBAs play a role in your pregnancy?

$p = 0.726 \geq 0.2$ removing [yes] $p = 0.8117 \geq 0.2$ removing Christian $p = 0.7171 \geq 0.2$

removing Age group: 31+ $p = 0.515 \geq 0.2$ removing Grand gravida $p = 0.5177 \geq 0.2$

removing Privacy observed [Yes] $p = 0.4776 \geq 0.2$ removing Multi gravida $p = 0.5761$

≥ 0.2 removing Cohabiting $p = 0.3732 \geq 0.2$ removing

Journey to the clinic (min)

Beliefs in gestational time for ANC visit

$p = 0.3101 \geq 0.2$ removing [Yes] $p = 0.358 \geq 0.2$ removing Need partner permission [yes]

$p = 0.2911 \geq 0.2$ removing Educ-JHS



p = 0.2758 >= 0.2 removing Educ-Secondary/tertiary

Appendix 7 C: Variables dropped from the Stepwise logistic regression model determining factors that affect understanding pregnancy complications. The significance level for removal of variables from the model was set at pr(0.2)

p = 0.970 >= 0.2 removing Multi gravida

p = 0.939 >= 0.2 removing Married

p = 0.909 >= 0.2 removing Multi para

p = 0.895 >= 0.2 removing Need partner permission [yes]

p = 0.878 >= 0.2 removing Primi para

p = 0.813 >= 0.2 removing Feel pressure to soc [yes]

p = 0.755 >= 0.2 removing Cohabiting

p = 0.713 >= 0.2 removing Age group: 20-30

p = 0.714 >= 0.2 removing Abortion experience [yes]

p = 0.647 >= 0.2 removing Good service [Yes]

p = 0.633 >= 0.2 removing Waiting time at the clinic [hours]

p = 0.648 >= 0.2 removing Journey to the clinic (min)

p	=	0.631	>=	0.2	removing	Traditional religion /None
p	=	0.585	>=	0.2	removing	Grand gravida
p	=	0.526	>=	0.2	removing	Educ-JHS
p	=	0.352	>=	0.2	removing	Christian
p	=	0.308	>=	0.2	removing	Educ-Secondary/tertiary
p	=	0.290	>=	0.2	removing	Grand para
p	=	0.202	>=	0.2	removing	Stillbirth experience [yes]

