SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

UTILIZATION OF MATERNAL HEALTH CARE SERVICES AMONG YOUNG WOMEN IN GHANA: EVIDENCE FROM THE 2014 GHANA DEMOGRAPHIC AND HEALTH SURVEY

BY

SANDRA KUNTU-ANAMAN
(10805642)

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DECLARATION

I, Sandra Kuntu-Anaman, hereby declare that this dissertation is the output of my original independent research I conducted using the 2014 GDHS raw datasets, under the supervision of Dr. Adom Manu. I affirm that this work has neither been published in whole or in part, nor submitted elsewhere for any academic award. All references made to other researchers' works have been duly acknowledged.

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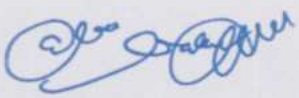
SANDRA KUNTU-ANAMAN

(STUDENT)

16/09/2021

DATE



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DR ADOM MANU

(SUPERVISOR)

16 September 2021

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DATE

DEDICATION

This write-up is dedicated to my husband- Mr. Francis Ackom-Boadu and my son Joel for their unflinching love, care and support in my academic pursuits.

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I want to thank the Almighty God for the grace and favour given me to attain Masters' level in academia.

I wish to sincerely thank my supervisor, Dr. Adom Manu, for the mentorship and Guidance. I would like to thank MEASURESDHS for granting me access to the DHS dataset.

To my family, colleagues, friends and everyone who helped and supported me throughout this project, I say God bless you.

ABSTRACT

Introduction: Though maternal health has been an important global public health concern, maternal mortality is still globally, especially in low-and middle-income countries like Ghana. Using Anderson and Newsman's framework, this study sought to examine the factors associated with maternal health service utilization among young women aged 15-24 in Ghana.

Methodology : The study analysed data on 920 young women aged 15-24. Data analysis was done using Stata version 14.2. Chi-square test and binary logistic regression models were used to measure association between maternal health service usage and some independent variables at significance level of p-value <0.05.

Results: Prevalence of antenatal care, health facility delivery and postnatal care were 83.3%, 72.7% and 69.0% respectively. Women in the Northern, Volta, Eastern and Western regions; as well as rural areas, women in the poor and middle wealth category had lower odds of antenatal attendance. Women aged 20-24, those with secondary/higher level of education, Christian and Moslem women, women with parity one and women who have subscribed to NHIS and young women who indicated that distance to health facility is not a big problem had higher odds of ANC attendance. With health facility delivery, women in the Northern region, Volta Region, Eastern region, and western region, women in rural areas, women in the poor and middle, wealth category had lower odds of health facility delivery. Women aged 20-24, those with secondary/higher level of education also had higher odds of health facility delivery compared to those with no education. Christian and Moslem women, women with parity one and women who have subscribed to NHIS had higher odds of health facility delivery. Finally, young women who indicated that

distance to health facility is not a big problem had higher odds of health facility delivery. In terms of PNC uptake young women in the Brong Ahafo region, Eastern region, Central Region and Western region had lower odds of PNC uptake and young women with parity one, had lower odds of PNC attendance compared to those with parity three or more. In terms of education, those with secondary/higher level of education also had higher odds of PNC attendance compared to those with no education. Finally, young women who are exposed to radio had higher odds of PNC attendance compared to those who are not exposed to radio.

Conclusion : There is relatively high utilization of ANC, skilled delivery and PNC among young women in Ghana. Both individual factors such as age, educational level, religion, parity, wealth status, NHIS subscription, exposure to family planning messages, pregnancy intentions and contextual factors such as region of residence and distance to health facility are associated with maternal health service utilization. Therefore, Ghana Health service, Non-Governmental organisations and all stakeholders seeking to improve the health of young women and women in general should consider educating women on the need to take up maternal health services. This will go a long way to reduce maternal mortality and also improve child health to achieve the Sustainable Development Goals on maternal and child health.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE(S)

LISTS OF ABBREVITIONS

DHS:	Demographic Health Survey
ERC:	Ethical Review Committee
GDHS:	Ghana Demographic Health Survey
GHS:	Ghana Health Services
GSS:	Ghana Statistical Services
IRB:	Institutional Review Board
LAC:	Latin America and Caribbean
MHS:	Maternal Health Survey
MOH:	Ministry of Health
PHC:	Population and Housing Census
UN:	United Nation

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Though maternal health has been an important global public health concern, maternal mortality remains too high, especially in low- and middle-income countries like Ghana. Maternal death is higher among younger women compared to older ones (WHO, 2019). It has been revealed that most maternal deaths can be avoided with the use of appropriate maternal healthcare services (Regan, 2018; WHO, 2012). The health of women, especially mothers, is very crucial because it affects the health of every member of the household, particularly children and the aged (Dominic et al., 2019). Because of this, the global development agenda have always emphasized women's health through initiatives that have greater potentials to improve women's health. Such initiatives include the International Motherhood Initiative (SMI), launched in 1987, in Kenya; the International Conference on Population and Development (ICPD), 1994, in Cairo, Egypt; the Fourth World Conference on Women in 1995, in Beijing, China; United Nations Millennium Development Goals 2000, and Sustainable Development Goals (SDGs) (Badiuzzaman et al., 2018; Dominic et al., 2019; WHO, 2019).

The current Sustainable Development Goals (SDGS), for instance, emphasize, among other things, a significant reduction of maternal mortality ratio to 70 deaths per 100,000 live births by 2030. More generally, the SDGs also emphasize women's universal access to sexual and reproductive health care services and the integration of reproductive health care into national strategies and programmes by 2030 (Badiuzzaman et al., 2018; WHO, 2019). These initiatives have led to some improvements in women's health. For instance, maternal mortality ratio worldwide dropped by

almost 50% between 1990 to 2010 (WHO 2014). Similarly, as part of the Millennium Development Goals, maternal mortality ratio worldwide dropped by 45% by the end of 2015 (Bhowmik, 2019).

Despite these improvements, a considerable number of women continue to die worldwide, especially in low- and middle-income countries. Each day, over 800 women die of preventable pregnancy and childbirth-related causes (WHO, 2014). Globally, around 303,000 women died of pregnancy and childbirth-related causes in 2016, of which 25% were adolescents (Regan, 2018). Besides, maternal mortality was the second leading cause of death among childbearing women all over the world in 2016, with 95% of such deaths occurring in low- and middle-income countries, of which Ghana is not an exception (WHO, 2019).

Over the years, Ghana has made a significant reduction in its maternal mortality ratio, from 740 per 100,000 live births in the 1990s (WHO, 2015) to 310 deaths per 100,000 live births (Ghana Statistical Service [GSS], Ghana Health Service [GHS], & ICF, 2018). However, young women comprised the majority (Ghana Statistical Service [GSS], Ghana Health Service [GHS], & ICF, 2018). The deaths are usually caused by medical conditions such as hemorrhage, abortion, hypertension, ectopic gestation, uterine rupture, genital tract sepsis, anemia, sickle cell disease, pulmonary embolism, and disseminated intravascular coagulation (Der et al., 2013).

While majority of these medical conditions can be addressed to avoid maternal deaths in Ghana, there seems to be a generally low use of maternal healthcare services in Ghana (Adu et al., 2018; Dalinjong et al., 2018; Tuncalp et al., 2014). Evidently, some studies have reported low use of antenatal care, skilled birth attendance, and postnatal care in Ghana (Baatiema et al., 2019; Boah et al., 2018; Ganle et al., 2019; Gudu & Addo, 2017; Nachinab et al., 2019), especially among

young women. For example, studies by Batiema et al. (2019) and Ganle et al. (2019) reported low use of Skilled delivery [SD] services among younger women (15-24 years) than older ones. This suggests that there is more to be done to improve the health of mothers in Ghana. Thus, for Ghana to achieve SDG 3, which aims at reducing maternal mortality ratio to as low as 70 per 1000,000 live births. Thus, examining and understanding the factors associated with maternal healthcare utilization is imperative, especially among young women since they are those who contribute to a greater extent of the maternal deaths. The key maternal health services include antenatal care, defined as the care women receive during pregnancy till birth. Skilled delivery, defined as a women being attended by a trained health professional such as a midwife, nurse or a doctor during delivery and postnatal care, a woman being attended to by a trained professional after delivery (GSS et al., 2015). Identification of those factors will aid health interventions aimed at improving maternal healthcare in Ghana, especially among young women.

1.2 Problem Statement

The improvement in health outcomes among women remains a major priority worldwide. For example, maternal mortality remains a challenging public health issue in Ghana. As a result, the Government of Ghana has, over the past two decades, implemented policies to improve the health of mothers. For instance, in 2002, the government introduced a waiver of delivery fees in public health centres (Anafi et al., 2018). This policy was later incorporated into the National Health Insurance Scheme (NHIS) upon its introduction in 2005. Among other things, the NHIS allows mothers who register under the scheme to have free access to maternal health services. This scheme has seen some improvement in maternal health care delivery across the nation. However, studies have revealed inadequate maternal healthcare services, low uptake of these services, and inadequate access to antenatal visits, facility-based delivery, and postnatal care (Tuncalp et al.,

2014), due to some financial and logistic constraints (Anafi et al., 2018). This situation has resulted in poor maternal health outcomes. Evidence shows that young women 15-24 years are disproportionately vulnerable and suffer maternal mortality compared to older women (GSS, 2014). Despite this, previous research on maternal healthcare utilization has focused mainly on fecund women in general (Adu et al., 2018). Such studies too focused on some specific geographical areas (Dalinjong et al., 2018; Dapaah & Nachinaab, 2019). A few other too have focused on specific types of maternal healthcare services such as antenatal care (Boah et al., 2018; Nachinab et al., 2019) and skilled birth delivery (Dickson & Amu, 2017; Gudu & Addo, 2017). Cognizant of this empirical gap in the literature, this present study, will focus on the factors associated with the use of maternal healthcare services, specifically antenatal care, skilled delivery, and post-natal care among young women aged 15-24 years since they are those who contribute a greater proportion of maternal deaths in Ghana (GSS et al., 2018).

1.3 Justifications of the Study

The research will show the factors that influence young women's use of maternal healthcare. Policy measures aiming at improving maternal health outcomes, such as reducing maternal mortality among young women, will benefit from a better understanding of such determinants. If maternal healthcare among young women is to be improved, the study's findings will identify the category of young women who should be targeted for such treatments.

The current study also adds to the body of knowledge on maternal healthcare, particularly among Ghanaian women. Previous research on this topic has primarily focused on the general public and people of specific geographic areas. As a result, less is known about the predictors of maternal healthcare usage among young women, despite evidence indicating that this group of women uses

less maternal healthcare. As a result, the current study adds to the body of knowledge by focusing on a subset of women who are more susceptible to maternal death.

Ghana, like the majority of low- and middle-income countries, aspires to achieve the SDGs.

One of these aims is to guarantee a significant reduction in maternal mortality (SDG 3.1) and universal access to healthcare for women (SDG 3.7) (Badiuzzaman et al., 2018; WHO, 2019).

As a result, it is critical that we focus study on women's health, as this research will help us achieve the SDGs.

1.4 Objectives of the Study

1.4.1 General objective

The general objective of this study is to examine the factors associated with maternal health service utilization among young women aged 15-24 in Ghana.

1.4.2 Specific objectives

The specific objectives of the study are as follows:

1. To estimate the prevalence of ANC, skilled delivery and post postnatal care service utilization among young women in Ghana
2. To determine the factors associated with antenatal healthcare services utilization among young women in Ghana.
3. To assess the factors associated with skilled delivery services uptake among young women in Ghana.
4. To assess the factors associated with postnatal care services uptake among young women in Ghana.

1.5 Research Questions

1. What is the prevalence of ANC, skilled delivery and post postnatal care service utilization among young women in Ghana?
2. What are the factors associated with the utilization of antenatal healthcare among young women in Ghana?
3. What are the factors associated with skilled delivery among young women in Ghana?
4. What are the factors associated with the utilization of postnatal care among young women in Ghana?

1.6 Conceptual Framework

Given the complex nature of healthcare utilization, it is better to situate the study within a theoretical framework. To this end, the present study is guided by Anderson's (1995) behavioral model of access to medical care. Originally developed in the 1960s, the model aims, among other things, to explain why families use health services; to define and measure equitable access to health care; and to assist in developing policies to promote equitable access to healthcare (Anderson, 1995).

The original version of the model focused on the family as a unit of analysis. This was because the medical care an individual received depends on the socio-demographic characteristics of that individual's family (Anderson, 1995). The model proposed that healthcare utilization depends on three categories of factors: predisposing factors, enabling factors, and need factors (Adewuyi et al., 2019). Among the predisposing factors biological factors such as age and gender, social structure (measured by education, occupation, and ethnicity), and health beliefs and attitudes. In terms of enabling factors, Anderson (1995) identified income, health insurance, a regular source of care, and availability of health personnel and facility. The need factors concern whether care is required/desired, both perceived and actual needs (Adewuyi et al., 2019).

The initial model has undergone some modifications. As a result, current versions of the model focus on the individual rather than the family, and the determining factors now include external environmental factors (Adewuyi et al., 2019). The present study also modifies the model to suit the purpose of the study. Thus, I selected independent variables for the present study following an extensive literature review with consideration for the available information in the 2014 GDHS. Figure 1 presents the conceptual framework used for the study.

Strength and weaknesses of the model

The model has been criticized for not taking cultural dimensions and social interactions into account (Law et al., 2005), although Andersen claims that this social structure is contained in the predisposing qualities component. Another point of contention was the overemphasis on need, which was done at the expense of health values and social structure. But, as Andersen (2008) points out, need is a social construct. This is why perceived and evaluated needs are separated. Another flaw in the approach is its focus on health-care utilization or the adoption of health outcomes as a binary component that might be present or absent. Other models of assistance-seeking take into account the type of aid source, such as informal sources. More recent research has expanded on help-seeking behaviors by using online and other non-face-to-face sources. Despite these flaws the model has been extensively used in the public health literature in various parts of the world to explain the factors associated with maternal healthcare utilization (Tolera, Gebre-Egziabher, & Kloos, (2020; Dankwah, Zeng , Feng , Kirychuk & Farag 2019; Neupane, Rijal, Gc, & Basnet, 2020), In addition, the model considers the factors that influence use of healthcare at different levels, thus, both at the individual as well as at the micro level (Seidu, 2018).

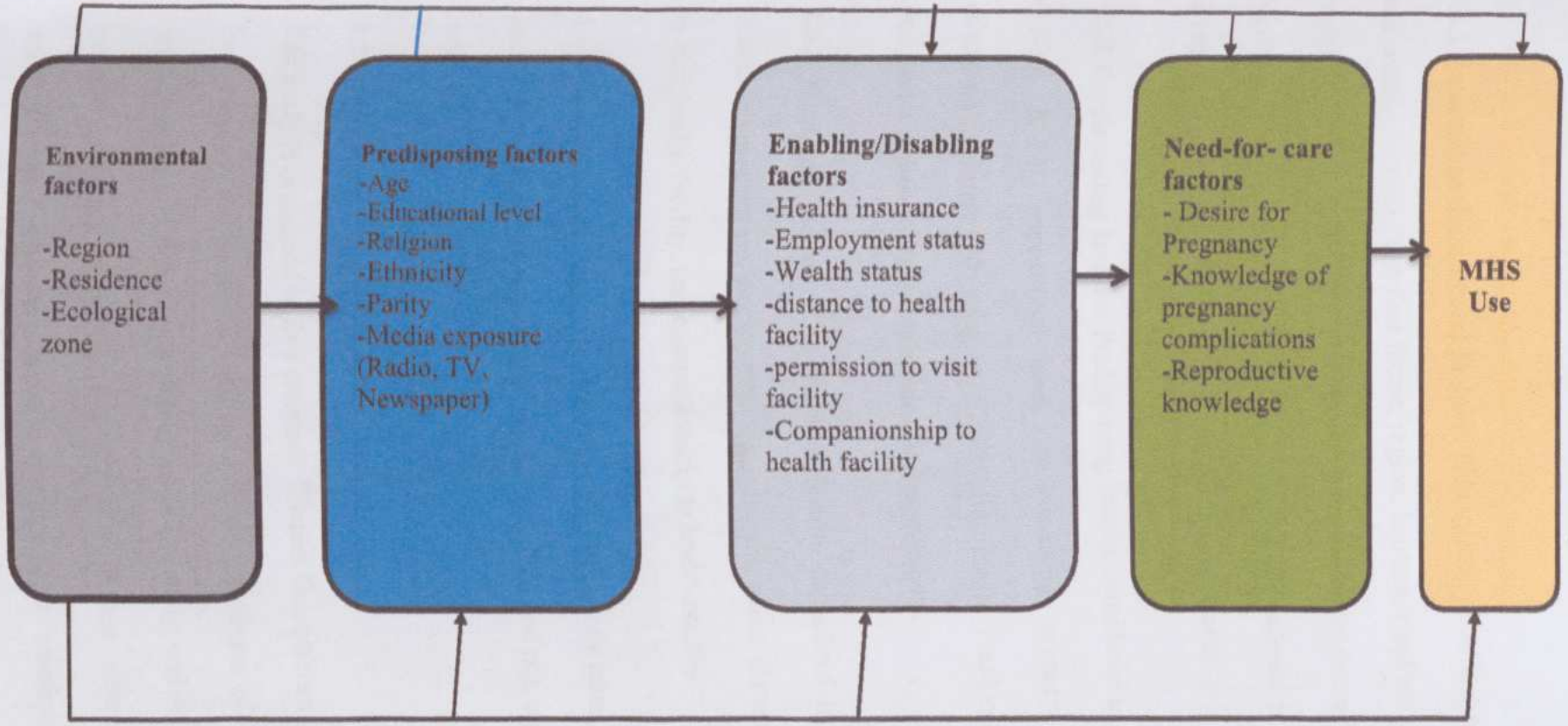

Figure 1: Conceptual framework

Source: Adapted from Anderson and Newman (1973)

1.6.1 External environmental factors: This include three factors: region, place of residence, and ecological zone. The first factor, region, is categorized using the then ten administrative regions of the country: Central, Western, Eastern, Greater Accra, Volta, Ashanti, Brong Ahafo, Northern, Upper West, and Upper East Regions. Residence is categorized into rural-urban divide, and ecological zone (coastal, middle, and northern).

1.6.2 Predisposing factors: Predisposing factors considered in the present study include age (15-19, 20-25), educational level (no education, primary education, secondary/higher education), religion (No religion, Christianity, Islam, Traditionalist, other), ethnicity, parity, and media exposure (radio, television and newspaper).

1.6.3 Enabling factors: The enabling factors considered in the present study are health insurance subscription, employment status, wealth status, distance to health facility, permission to visit health facility, and companionship to health facility.

1.6.4 Need factors: These include desire for pregnancy (then, at the time of pregnancy, and later), knowledge of pregnancy complications (yes and no), and reproductive knowledge (yes and no).

1.7 Organisation of the Study

The study is organized in five chapters. Chapter One offers a general introduction to the study by presenting the background to the research, statement of the problem, justification of the study, conceptual framework, objectives of the study, and research questions. Chapter Two is reviews pertinent literature related to the present study. Chapter Three discusses the methodological procedures used in conducting the research and Chapter Four presents the results. In Chapter 5, the results are discussed with respect to each research objective. Chapter Six concludes the study and offers some recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews pertinent literature related to the current study. Issues considered include free maternal healthcare policy of Ghana and the National Health Insurance Scheme (NHIS), prevalence of and factors associated with ANC, PNC, and skilled delivery utilization among women. The purpose of the review is to provide a context for the exploration of the data.

2.2 Maternal Healthcare in Ghana

Maternal healthcare includes antenatal care (ANC), skilled delivery (SD), and postnatal care (PNC) (Nuamah et al., 2019). Based on the recommendation by the World Health Organization, women are expected to attend a minimum of four antenatal visits, with the first visit made in the first trimester of pregnancy. Similarly, obstetricians generally recommend monthly antenatal visits up to the seventh month of pregnancy, bi-weekly visits up to the eighth month, and weekly visits thereafter (Lamarca et al., 2013; Owoo & Lambon-Quayefio, 2013).

In Ghana, until the early 1980s, health care was generally free (Abubakari et al., 2015). However, between 1983 to 1998, user-fees were introduced as part of economic reforms under the Structural Adjustment Programs (SAPs) supervised by the International Monetary Fund and World Bank (Anafi et al., 2018; Heidhues & Obare, 2011). The main aim of the SAPs was to stabilize the economy. The SAPs, thus, resulted in a reduction in government's expenditure on healthcare, which led to an introduction of healthcare user-fee into the Ghana health system (Koduah et al., 2015). There was some waiver of fees on antenatal and postnatal services, the cost of delivery care was increased, which made it inaccessible to women from poor socioeconomic backgrounds (Koduah et al., 2015). This resulted in a significant reduction in the use of maternal health services (Anafi et al., 2018).

In view of the challenges presented by the introduction of user-fees, in 1997, the government introduced a waiver on delivery fees. The aim was to reduce the financial burden of maternal care on pregnant women in order to mitigate the health consequences of the SAPs evident in the reduction in the use of maternal health services (Ministry of Health, 1996). However, there was significant underfunding of the free delivery care policy due to the negative impact of the SAPs, creating major financial obstacles impeding its implementation (Okiwelu et al., 2007). In addition, the maternal user fee exemption covered only four antenatal visits; additional antenatal visits, delivery services, and post- natal care had to be paid for. Consequently, although antenatal visits were as high as 86%, supervised delivery in health facilities was as low as 44% nationally, suggesting that almost half of the women who went for antenatal care did not use supervised delivery in health facilities (Anafi et al., 2018). Also, maternal mortality rate in this period was estimated to be 214 per 100,000 live births, a relatively high rate compared to other countries with comparable adjusted family income (Ministry of Health, 1996).

In 2001, the government embarked on a comprehensive poverty reduction strategy aimed at achieving the objectives of the Millennium Development Goals. As part of the poverty reduction strategy, there were efforts to reduce maternal mortality (Anafi et al., 2018). In view of this, the free maternal health policy was initiated in September 2003 in four (4) regions of Ghana (Central, Upper East, Upper West, Northern). The program was later extended to the remaining six (6) regions (Anafi et al., 2018; Dalinjong & Laar, 2012). However, the program faced a major setback, in the form of inadequate funding. Due to this, it was incorporated into the National Health Insurance Scheme (NHIS) in 2005. The government of Ghana adopted the National Health Insurance Scheme (NHIS) in 2003 and fully implemented it in 2005. This means that women were required to register with the NHIS in order to obtain access to the free maternal health care. The NHIS covers antenatal care, including free services, medicine, and

two ultrasounds, covering four to six clinic visits; (b) delivery services, which include services and medicines on normal and assisted deliveries, episiotomies, and caesarean section; (c) post-natal care, which covers free services and medicines for two postnatal visits; and (d) neonatal care comprising 3 months of services of the newborn under the mother's subscription. Since its implementation, the NHIS maternal healthcare fee exemption policy has positively affected the utilization of antenatal check-ups and supervised deliveries (Anafi et al., 2018).

2.3 Timing of ANC and Associated Factors

A study by Wolde et al. (2018) revealed a significant association between age and initiation of ANC services. The study specifically noted that in northern Ethiopia, women aged 25 and above were more likely to go for ANC services late, compared with those in other age brackets. Manyeh et al.'s (2020) study which was conducted confirms the study of Wolde et al. (2018). According to Manyeh et al. (2020), mothers aged 25–29 and 30+ years were more than twice likely to initiate ANC attendance in the first trimester, compared to those aged < 20 years. Maternal educational status has also been associated with initiation of ANC among women Ewunetie et al. (2018) reported late initiation of ANC among women who had not attained formal education in Debre Markos town, northwest Ethiopia. Similarly, in Axum town in Ethiopia, Gebresilassie et al. (2019) revealed that mothers with at least secondary level of education were twice as likely to use ANC timely, relative to mothers of at most primary education. Paudel et al. (2017), in their study in Nepal, also revealed higher likelihood of early ANC initiation among women with higher education, compared with women without formal education. Similar findings have been reported by Wolde et al. (2018) and Manyeh et al. (2020).

Another predisposing factor associated with timing of ANC utilization is mass media exposure. Studies generally associate early initiation of ANC visits with mass media exposure. Get and

Yallew (2017), for instance, revealed that, in Ethiopia, women with mass media (radio, TV, and newspaper) exposure initiated their ANC visits within the recommended period, relative to those who did not have mass media exposure.

Thus far, the review has focused on environmental and predisposing factors associated with the timing of ANC utilization. In this regard, research has shown a significant association between maternal employment status and timing of ANC utilization. Wolde et al. (2019) revealed that self-employed women were likely to initiate ANC visits late. In another study, Ebonwu et al. (2018) revealed that employed women in rural South Africa were less likely to initiate their ANC visits early. In explaining this, Ebonwu et al. (2018) noted the busy schedule associated with employment may have accounted for the late initiation of ANC visits among the women studied.

Another enabling factor associated with timing of ANC initiation is wealth status. A study by Paudel et al. (2017) noted higher likelihood of early initiation of ANC visits among women from wealthier households, compared with poorer women. In terms of ethnicity, Gross et al. (2012) reported that mothers in the Sukuma ethnic group, compared to ethnic groups such as the Pogoro, Mhehe, Mgindo and others, were more likely to initiate ANC visits late.

Distance has also been associated with timing of ANC visits. Alemu and Aragaw (2018), who focused their study on Northwest Ethiopia, revealed that women who lived close to health facilities were more likely to initiate their ANC visits early, compared with those who stay far away from health facilities.

Desire for pregnancy is a need-for-care factor associated with timing of ANC utilization. In Kenya, Ochako and Gichuhi (2016) reported that women with unwanted pregnancies were more likely to initiate ANC visits late, compared with those with wanted pregnancies.

2.4 ANC Utilization and Associated Factors

Concerning environmental factors, rural-urban residency has been identified as a determinant of ANC utilization. Generally, studies reveal higher likelihood of ANC utilization among urban residents, as compared with women living in rural areas. For instance, in Nigeria, Babalola (2014) found that rural women were less likely to utilize ANC services, compared with their counterparts in urban areas. Similarly, in Uganda, Bbaale (2011) noted that living in rural areas significantly reduces women's likelihood of utilizing ANC services. Ousman et al. (2019) also reported lower likelihood of ANC utilization among women in rural areas in Ethiopia, relative to their counterparts living in urban areas. Arthur (2012) also reported considerable differences among women living in rural areas and those living in urban areas in terms of ANC utilization. This association has been explained in the context of the health infrastructure deficit that characterizes most rural areas, as compared with urban areas (Arthur, 2012; Bbaale, 2011).

Region of residence has also been identified as an environmental factor that determines the utilization of ANC services. In Nigeria, Babalola (2014) reported lower odds of ANC utilization among women in north west, south east, south-south, and south-west regions, compared with their counterparts in the north-central region. Ousman et al. (2019) similarly reported significant differences in ANC utilization of women across the administrative regions of Ethiopia. In Ghana, Arthur (2012) reported that regional disparities in women's use of ANC services, with the highest likelihood recorded in Greater Accra region and the lowest in Northern Region. Arthur (2012) attributed this disparity to the inaccessibility and unavailability of ANC services in some regions of Ghana. Other studies have also reported use of ANC services in specific regions such as Benishangul Gumuz Region of Ethiopia (Tiruaynet & Muchie, 2019), Tigray Region of Ethiopia (Tsegay et al., 2013), and northern Ghana (Nachinab et al., 2019).

Aside from these environmental factors, certain predisposing factors have also been identified as predictors of ANC utilization. First among such predisposing factors is maternal age. In Babalona's (2018) study in Nigeria, she found that women aged 25 and above were more likely to use ANC services than their counterparts aged below 25 years of age. Arthur (2012) also reported higher odds of ANC services utilization among older women, relative to younger ones. This finding is supported by Akowuah et al.'s (2018) finding that increases in maternal age increases the likelihood of ANC utilization in peri-urban areas in Ghana. In Ethiopia, Ousman et al. (2019) similarly reported lower likelihood of ANC services utilization among women below 20 years of age. While all these studies suggest a higher use ANC services among older women, a study in the Mru community of Bangladesh reported a contrasting finding (Islam & Odland, 2011). In Islam and Odland's (2011) study, they found that women aged 25-35 years were less likely to utilize ANC services than those under 25 years.

Some studies have also drawn some association between utilization of ANC services and maternal level of education. Generally, previous studies have reported direct association between increasing levels of formal education attainment and utilization of ANC utilization among women. In Nigeria, Nwosu et al. (2012) and Babalola (2014) reported higher likelihood of ANC utilization among educated women, compared with uneducated ones. Similarly, studies in Ethiopia have associated higher use of ANC utilization with higher educational attainment (Ousman et al., 2019; Tiruaynet & Muchie, 2019; Tsegay et al., 2012). In Ghana, Arthur (2012) reported that women with secondary or higher levels of education were more likely to adequately utilize ANC services, compared to those with lower levels of education or no formal education. This higher likelihood of utilization of ANC services has also been reported in more advanced countries such as Belgium and Netherland (Broeck et al., 2016).

Another predisposing factor associated with uptake of ANC services is religion. In Nigeria other Christians displayed higher likelihoods of ANC utilization, followed by Catholics, Muslim women, and others which include traditionalists (Babalola, 2014). A study by Ousman et al. (2019) also revealed an association between women's religion and their uptake of ANC services. These findings seem to reveal that organized religion increases one's likelihood of ANC uptake. The differences in ANC uptake across various religious groups could also reflect differences in religious beliefs and practices with regard to ANC utilization.

Studies in both developing and developed countries have found as association between ANC utilization and ethnicity of women. As regards developing countries, Abor et al. (2011) found that Ga- Adangme women were less likely to use ANC as compared to the Asante women in 1993 and 2003. Similarly, a study in Ethiopia revealed that Amhara women were more likely to utilize ANC services, compared with Oromo women (Tiruaynet & Muchie, 2019). Concerning the developing world, Rowe and Garcia's (2003) research in UK revealed that women of Asian origin were less likely to use ANC than white British women. This disparities in ANC utilization across ethnic groups may reflect the different cultures, values, beliefs, and norms that characterize different ethnic groups (Tiruaynet & Muchie, 2019).

Parity has also been revealed as a predisposing factor for the utilization of ANC services. Regassa (2011), for instance, revealed has shown an inverse relationship between parity and utilization of ANC services in Ethiopia. Another study reported similar findings in Kenya (Ochako et al., 2011). In the context of Ghana, the findings of Adu et al. (2018) concurred that women with higher parity were less likely to utilize ANC services. A study by Tsegay et al. (2013), however, reported no association between parity and utilization of ANC services in Tigray region of Ethiopia.

Some studies have also examined the association between women's mass media exposure and uptake of ANC services. Bbaale's (2011) study in Uganda revealed that women having access to mass media at least once a week and those having access daily were more likely to use antenatal care content compared to counterparts who have no access at all. A study in Ethiopia similarly reported higher likelihood of ANC utilization among women with media exposure (Ousman et al., 2019). Similar findings have been reported even in non-African countries, such as Bangladesh (Islam & Odland, 2011). In general, these findings on the association between media exposure and ANC utilization seem to suggest that the more women get access to mass media, the more likely they are to utilize ANC services. Perhaps, mass media serves as a channel through which health information reaches women, including information on the need for the uptake of ANC services. Thus, access to such information encourages may positively influence women's uptake of ANC services.

Some studies have also explored the relationship between some enabling factors and utilization of ANC among women. In rural parts of northern Ghana, Nachinab et al. (2019) reported health insurance subscription as an enabling factor for the utilization of ANC services. Nachinab et al.'s (2019) finding confirms the finding of Arthur (2012), who reported that, in Ghana, women with health insurance were more likely to utilize ANC services than those without health insurance. Okedo-Alex (2019) reported that, in sub-Saharan Africa, women's health insurance subscription was positively associated with their uptake of ANC services. In Belgium and Netherland, Broeck et al. (2016) reported higher likelihood of ANC utilization among women with health insurance, compared with their counterparts without health insurance. In all, these studies have revealed the significant role played by health insurance in increasing the uptake of ANC in both the developing (Arhur, 2012; Nachinab et al., 2019; Okedo-Alex, 2019) and developed parts of the world (Broeck et al., 2016).

The relationship between women's employment status and utilization of ANC service has also been examined. Studies of this kind usually associate higher use of ANC among employed women. For instance, Babalola (2014) revealed higher likelihood of ANC utilization among employed women in Nigeria, relative to unemployed ones. Also, in Ethiopia, Ousman et al. (2019) reported higher likelihood of ANC uptake among women who were employed, compared with unemployed ones. A similar finding was reported in Netherland and Belgium (Broeck et al., 2016). A study in Ghana by Akowuah et al. (2018) similarly revealed a significant association between women's occupational status and use of ANC services. In the context of Ghana, where ANC is free is free, this disparity between employed and unemployed mothers in their use of ANC seems to suggest that unemployed mothers may be restricted by some additional indirect costs, such as transport fare to health facilities. Employed women, on the other hand, may be financially empowered to cater for such financial hurdles, hence their higher likelihood of utilizing ANC services.

In terms of socio-economic status, in sub-Saharan Africa, a systematic review s has revealed higher likelihood of ANC utilization among wealthier women, relative to those from poorer backgrounds (Okedo-Alex et al., 2019). Studies in specific sub-Saharan African countries such as Nigeria (Babalola, 2014; Nwosu et al., 2012), Ghana (Arthur, 2012), Ethiopia (Ousman et al., 2019; Tiruaeynet & Muchie, 2019), and Uganda (Bbaale, 2011) have similarly reported that women's likelihood to use ANC services increased with their wealth status. This association shows that wealthier people have financial autonomy that helps them to pay the financial charges that come with ANC utilization, including the cost of transportation to health centers. Poorer women, on the other hand, may be constrained by financial hardship, and that can militate against their uptake of health services, such as ANC.

Another enabling/disabling factor is distance to health facility. With regard to this, a study in Nigeria reported that women who did not consider distance as a hindrance to healthcare access were more likely to use antenatal care than women who considered distance as an obstruction to healthcare accessibility (Babalola, 2014). Akowuah et al. (2018) also reported a similar association between distance to health facility and utilization of ANC services among Ghanaian women. In Bangladesh, Islam and Odland (2011) reported that women who lived closer to health facilities were more likely to utilize ANC services, as compared with those who resided far from health facilities. Overall, these studies reveal that proximity to health facility influences women's use of ANC services.

Permission to attend ANC has also been found as an enabling factor associated with ANC utilization among women. In southwestern Ethiopia, Tewodros et al. (2009) revealed that women whose husbands approved their attendance of ANC visits were more likely to utilize ANC services, compared with women whose husbands disapproved. Similarly, utilization of ANC services was almost nice times more likely for women who reported that their husbands approved, compared with those who husbands did not approve ANC services in Holeta town, central Ethiopia (Birmeta et al., 2013). In a patriarchal society like Ghana, husbands approval or permission is likely to affect the use of ANC services among young women. However, previous studies in Ghana did not investigate that. This foregrounds the need for the present study. Having reviewed studies on the environmental, predisposing, and enabling factors of ANC utilization, I now review studies on need factors. As part of need factors, women whose pregnancies were planned and desired were significantly more likely to use ANC services at least four times compared with those with unplanned/undesired pregnancies (Tekelab et al., 2019).

2.5 Skilled delivery and Associated Factors

Studies the world over have revealed several factors associated with skilled delivery utilization. In the present section, I review those studies, focusing on the factors related to the present study. One important factor associated with skilled delivery utilization among women is age. Generally, previous studies reveal that women of different age brackets use skilled delivery to a different degree. A study by Dickson and Amu (2017), for instance, observed age as a predictor of skilled delivery utilization among women in northern Ghana. Specifically, the authors observed the lowest use of skilled delivery services among women aged 15-25 and the highest prevalence among women in the 25-29 age bracket. Similarly, a study by Dapaah and Nachinaab (2019) revealed age as a predictor of skilled delivery services among women in the Talensi District of the Upper East Region of Ghana.

Similarly, a study by Olakunde et al. (2019) revealed that age was a significant predictor of skilled delivery utilization among married adolescent girls in Nigeria. Specifically, Olakunde and his colleagues noted that adolescents aged 18 and below were as twice as likely to use skilled delivery services, compared to their counterparts who are above age 18. Aside Dickson and Amu (2017) and Olakunde et al. (2019), other scholars have also noted the association between maternal age and skilled delivery utilization. For instance, Mezmur et al. (2017), who studied the individual, household, and contextual factors associated with skilled delivery utilization in Ethiopia, observed that a higher likelihood of skilled delivery utilization among older mothers, compared to younger mothers.

Aside from age, level of education has also been revealed as a predictor of skilled delivery utilization among women. Gudu and Addo (2017), in their study of the predictors of skilled delivery utilization among women in northern Ghana, identified a strong association between women's educational attainment and use of skilled delivery services. In a similar vein, a study

in the northern parts of Ghana by Dickson and Amu (2017) also found that skilled delivery utilization among women is associated with women's educational attainment. Dickson and Amu specifically observed that women with no education had the highest probability of utilizing skilled delivery services, compared to those with highest educational attainment. This finding could be interpreted within the context that the majority of women who participated in the study were with no formal education.

Studies in other sub-Saharan African countries equally found a strong association between maternal education and skilled delivery utilization. In the context of Nigeria, Solanke and Rahman (2018), for instance, noted that women with higher education were almost six times more likely to use skilled delivery services, relative to their uneducated counterparts. Similar to the findings of Solanke and Rahman (2018), Nyongesa et al. (2018), who focused their study in Kenya, found that women with at least primary level of education were 6.6 times more likely to use skilled delivery than those with no formal education.

Studies in Ethiopia also reveal a significant association between level of education and skilled delivery utilization. For instance, a study in Ethiopia also observed that women with at least secondary level of education were four times more likely to use skilled delivery services than those with no formal education (Ayele et al., 2019). Another study by Fekadu et al. (2019) also in Ethiopia found that women who had least secondary education were almost three times more likely to use skilled delivery services, compared to women with no formal education.

Religion has also been revealed as a determinant of skilled delivery utilization among women. In Ghana, previous studies have revealed a higher likelihood of skilled delivery utilization among Christian women. For example, Dickson and Amu's (2017) study in northern Ghana revealed that Christians were more likely to use skilled delivery services, compared to adherents of other religions. Similarly, in their study on the predictors of skilled delivery

utilization among women in the Garu-Tempane District of Ghana, Ganle et al. (2019) revealed that women who were practitioners of Islam and traditional African religions recorded lower odds of skilled delivery utilization, compared with Christian women. A study in Nigeria also revealed a higher likelihood of skilled delivery utilization among Christian women, as compared to members of other faiths (Solanke & Rahman, 2018).

Another predisposing factor significantly associated with skilled delivery utilization among women is mass media exposure. Mezmur et al. (2017), for instance, observed that high media access was a factor that significantly influenced women's use of skilled delivery services in Ethiopia. Solanke and Rahman (2018) similarly revealed that increases in mass media exposure significantly predictors women's use of skilled delivery services in rural Nigeria. Findings from these studies on the relationship between media exposure and skilled delivery utilization suggests that the mass media can be effectively used to promote health programs, especially those focusing on skilled delivery.

Some studies have also revealed an association between parity and skilled delivery utilization. Dickson and Amu's (2017) study in northern Ghana revealed that women with one birth were more likely to use skilled delivery compared to those with more than one birth. In Nigeria, Solanke and Rahman (2018), and Olakunde et al. (2019) revealed a significant association between parity and skilled delivery utilization. Solanke and Rahman (2018) specifically observed that grand multiparous women were 48.2 percent less likely to use skilled delivery, compared to primiparous women. Mezmur et al.'s (2018) study in Ethiopia also revealed that women discontinue the use of skilled delivery services, as they join higher parity.

In terms of environmental factors, some studies have revealed an association between region of residence and skilled delivery utilization. Dickson and Amu (2017), for instance, revealed that skilled delivery utilization was higher in Upper East Region and lower in Northern and

Upper West Regions. Similarly, Solanke and Rahman (2018) revealed that, in Nigeria, women in southern Nigeria were more likely to utilize skilled delivery services, as compared with their counterparts from northern Nigeria. Olakunde et al. (2019) also observed differences in skilled delivery utilization across the geopolitical regions in Nigeria and attributed the finding to disparities in maternal care interventions across the regions. In Guinea Bissau, Yaya et al. (2019) revealed that women from the Sector Autónomo de Bissau region were more likely to utilize skilled delivery services, compared to women who resided in other regions.

Rural-urban differences in residence have also been noted among environmental factors that predict utilization of skilled delivery services. Dickson and Amu (2017), for instance, observed that, compared with women who live in urban areas, those living in rural areas were less likely to use skilled delivery services. Nigatu and Gelaye (2019) similarly revealed that urban residency increases women's likelihood of using skilled delivery services in Ethiopia. This association between rural-urban residency and utilization of skilled delivery services has been hinted also in studies in Nigeria (Olakunde et al., 2019; Solanke & Rahman, 2018). The low use of skilled delivery services in rural areas, as reported by these studies, could be attributed to the health infrastructure deficit that characterized many rural areas in Africa.

Thus far, the review has focused on predisposing and environmental factors. Meanwhile, some studies have also reported associations between skilled delivery utilization and enabling factors such as health insurance subscription, employment status, wealth status, and distance to health facility. With health insurance subscription, Gudu and Addo (2017) revealed a significant association between health insurance subscription and utilization of skilled delivery in northern Ghana. Similarly, Ganle et al. (2019) also revealed health insurance subscription as a significant predictor of utilization of skilled delivery services. These observations suggest that health insurance subscription removes the financial barrier that impede women's use of skilled

delivery services, resulting in an increase in skilled delivery utilization among women with health insurance. Aside from health insurance subscription, employment status also predicts the use of skilled delivery services among women. A study by Solanke and Rahman (2018) revealed that, in rural Nigeria, the use of skilled delivery services increases with the proportion of women working outside the agricultural sector. Ayele et al. (2019) similarly observed a significant association between occupation status and skilled delivery utilization among women in southeast Ethiopia.

Furthermore, wealth status is also significantly associated with skilled delivery utilization. This is so because women from richest wealth quantile are more likely to pay for skilled delivery service, even if it costly, compared with women from poorest wealth quantile. In line with this, Dickson and Amu (2017) revealed that women in the richer wealth quantile were more likely to use skilled delivery services than those in the poorest wealth quantile. In Nigeria, Solanke and Rahman (2018), and Olakunde et al. (2019) observed that improvement in wealth positively influences utilization of skilled delivery services. Nyongesa et al. (2018) also found that women who had enough money set aside for delivery were more likely to use skilled delivery services in Kenya.

In Guinea Bissau, Yaya et al. (2018) found that richer women were more likely to deliver at a health facility, compared to their poorer counterparts. Mezmur et al. (2017) similarly observed that household wealth was significantly associated with utilization of skilled delivery services. Specifically, women from wealthier households were more likely to use skilled delivery services than those from poorer households. In a similar vein, Fekadu et al. (2019) observed higher likelihood of skilled delivery utilization among women from the highest wealth quantile, compared to those from the lowest wealth quantile.

Distance to health facility has also been identified as a determinant of skilled delivery utilization among women. Dickson and Amu (2017) reported that those who saw distance to health facility as a barrier recorded lower likelihood of skilled delivery utilization in northern Ghana. Similarly, Ganle et al. (2019) found distance to health facility as a predictor of the uptake of skilled delivery services among women in the Garu-Tempane district of Ghana. In Nigeria, Solanke and Rahman (2018) observed higher likelihood of skilled delivery utilization among women who were closer to health facilities. Ayele et al. (2019) also found proximity to health facility as a significant factor that influences the uptake of skilled delivery services in Ethiopia. Permission to use SBD is also significantly associated with use of skilled delivery services. A study by Ganle et al. (2019) showed that women who reported that they needed their husband's permission before they could use skilled delivery services were less likely to use the services, compared with those who did not need their husband's approval before they use the services.

2.6 PNC and Associated Factors

In the previous section, I reviewed literature on the determinants of skilled delivery. The focus of this section is to review literature on the prevalence and determinants of PNC services among women. The focus is to provide context for the exploration of the fourth objective of the study. In terms of environmental factors, region of residence was found to be associated with PNC services utilization in Kenya (Akunga et al., 2014). In Nigeria, Somefun and Ibisomi (2016) revealed that the odds of utilizing PNC were higher among residents of the South West, compared with residents of other regions. Sisay et al. (2019) also reported region of residence as a significant determinant of the utilization of PNC services in Ethiopia. Specifically, Sisay et al. (2019) identified three regions with low rates of PNC services utilization: southwestern Ethiopia, southeast Ethiopia, and eastern Ethiopia. A study in Ghana has also reported that residents of Central Region are highly likely to use PNC services, compared with women from

Greater Accra, Volta, Eastern, Brong Ahafo, Upper East, and Upper West Regions (Abor et al., 2011).

Rural-urban differences have also been reported to be significantly associated with uptake of PNC services. Akunga et al. (2014), for instance, identified a significant association between urban residency and utilization of PNC services in Kenya. In a similar vein Agho et al. (2016) reported that women in rural areas were less likely to utilize PNC services in Nigeria. A study in Ethiopia also revealed higher likelihoods of PNC uptake among urban residents (Berhe et al., 2019). Studies in Uganda (Ndugga et al., 2020), Zambia (Bwalya et al., 2017), and Nepal (Khanal et al., 2014) have similarly reported higher odds of PNC utilization among urban residents.

Previous studies on utilization of PNC services among women have identified several predisposing factors significantly associated with PNC utilization. One of those factors is maternal age. Islam and Odland (2011) observed that, in Bangladesh, women aged 25-35 were less likely to utilize PNC services, compared to those aged 36 and above. Similarly, a study in Kenya by Akunga et al. (2014) also found that women aged 30-39 were more likely to use PNC services than younger women. In Ghana, Abor et al. (2011) reported a significant association between maternal age and utilization of PNC services. The findings of Abor et al. (2011) were supported by findings in the Builsa and West Mamprusi districts in rural Ghana, where Sakeah et al. (2018) observed that older women were associated with at least 3 PNC visits.

Aside Bangladesh, Kenya, and Ghana, the association between maternal age and PNC utilization has been reported in other low- and middle-income countries. In Nigeria, Somefun and Ibisome (2016) observed higher likelihood of non-use of PNC services among women aged 15-25 years, relative to older women. This finding is supported by the findings of Sisay et al (2019), who reported that, in Ethiopia, women aged 35-49 were more likely to utilize PNC

services than younger women. While the studies reviewed thus far suggest lower use of PNC services among younger women, a study by Rwabufigiri et al. (2016) contrarily revealed old age as a barrier to the utilization of PNC services among women in Rwanda.

Another predisposing factor that predicts the utilization of PNC services is maternal level of education. Generally, studies reveal that utilization of PNC services increases with attainment of higher levels of education. Islam and Odland (2011), for instance, revealed a significant association between maternal education and utilization of PNC services in the Mru community in Bangladesh. Akundga et al. (2014) also found that lack of formal education was associated with low use of PNC services. Their finding is supported findings of a study by Agho et al. (2016), who revealed that, in Nigeria, mothers with low level of formal education were less likely to utilize PNC services. Somefun and Ibisome (2016) corroborates the findings of Agho et al. (2016) that 61% of women who did not use PNC services had no formal education.

In Ethiopia, Sisay et al. (2016) reported that women with no education were less likely to utilize PNC services. In a similar vein, Wudineh et al. (2018) revealed that women with at least secondary education were highly likely to utilize PNC services in Ethiopia. This finding is supported by Akibu et al. (2018) and Berhe et al. (2019), who reported that, in Ethiopia, women who had higher education were more likely to utilize PNC services, compared with those with secondary and lower education. Similarly, in Nyanmar, Mon et al. (2018) reported higher likelihood of PNC services utilization among women who had attained secondary of higher levels of education, relative to their counterparts of lower levels of formal education. Studies in Napal (Khanal et al., 2014), Zambia (Bwalya et al., 2017), and Uganda (Ndugga et al., 2020) reported similar findings.

Literature on the association between religion and PNC utilization has been largely inconclusive. While some studies (e.g., Akunga et al., 2014; Berhe et al., 2019) did not find

religion as a predictor of the use of PNC services, other researchers revealed a significant association between maternal religion and utilization of PNC services. In their study in rural Tanzania, Kanté et al. (2015) found a significant association between maternal religion and utilization of PNC services. Similarly, in Nigeria Solanke et al. (2015) found that Muslim women have higher likelihood of utilizing PNC services. This finding of Solanke et al. (2015) was partly supported by Somefun and Ibisome (2016), who similarly found that, in Nigeria, Christian and Muslim women were more likely to utilize PNC services, compared with women who practiced other religions. In Uganda, Ndugga et al. (2020) found a significant association between women's religion and utilization of PNC services. Abor et al.'s (2011) study in Ghana also revealed religion as a predictor of the utilization of PNC services.

Like religion, studies on the relationship between ethnicity and utilization of PNC services have produced conflicting results. On the one hand are those who found no association between religion and the use of PNC services. A case in point is the study by Berhe et al. (2019), who found no association between ethnicity and utilization of PNC services in northern Ethiopia. On the converse, Abor et al. (2011), in their study of the predictors of maternal healthcare utilization among women in Ghana, revealed that ethnicity was a determinant of PNC utilization. Similarly, Kanté et al. (2015) found ethnicity as a significant predictor of utilization of PNC services in rural districts of Tanzania.

Some studies have also reported on the links between parity and use of PNC services among women. A study by Akunga et al. (2014) in Kenya reported a significant association between parity and PNC utilization. This finding is supported by the finding of Wudineh et al. (2018), who reported a significant association between parity and use of PNC services among women in northwest Ethiopia. Similarly, Akibu et al. (2018) found that primiparity was a determinant for attendance of full postnatal care service among women in Northern Shoa, Ethiopia. A study

in Nigeria also reported a significant association between parity and utilization of PNC services (Dahiru & Oche, 2015). On the converse, Sakeah et al. (2018) reported that parity was not associated with utilization of PNC services among women in the Builsa and West Mamprusi districts of Ghana. Also, Appiah et al (2021) did not find statistically significant association between parity and use of PNC when they analysed data from the 2014 GDHS among women aged 15-49.

Another predisposing factor that have featured in previous studies of this kind is mass media exposure. In Bangladesh, Islam and Odland (2011) reported that more than half of women who had mass media exposure received PNC, compared to 3.9% of those without mass media exposure. Agho et al. (2016) also noted that non-use of PNC services in Nigeria was associated with women with limited or no access to mass media. In a similar vein, Berhe et al. (2019) found that exposure to mass media (radio, television, and newspaper) was positively associated with the utilization of PNC services in Northern Ethiopia. In Uganda, Ndugga et al. (2020) reported that access to media messages was significantly associated with PNC utilization. Bwalya et al. (2017) similarly noted that mothers' exposure to mass media significantly predicted their use of PNC services.

The association between utilization of PNC services and enabling factors such as health insurance subscription, maternal occupation, etc. has also been explore. With health insurance coverage, in Nigeria, Dahiru and Oche (2013) reported that health insurance subscription increases the likelihood of the utilization of PNC services among women. Browne et al. (2016) revealed that utilization of PNC services among women with health insurance in Ghana increased by 61%. Rwabufigiri et al. (2016) similarly revealed that health insurance subscription is likely to increase the utilization of PNC services in Rwanda. Together, all these

studies have shown a positive association between health insurance subscription and utilization of PNC services.

Some studies have also revealed some association between maternal employment and utilization of PNC services. Berhe et al. (2019), for instance, revealed that employment in mothers was significantly associated with utilization of PNC services among women in Ethiopia. Similarly, Ngugga et al. (2020) identified mothers' employment status as a determinant of the utilization of PNC services in Uganda. Overall, these studies reveal that being employed increases women's likelihood of using PNC services. This suggests that employment gives women some form of financial autonomy that helps them overcome financial barriers that are likely to obstruct utilization of PNC services.

Further, some studies have revealed that wealth status of women is likely to predict their use of PNC services. In Ethiopia, studies by Sisay et al. (2019) and Adane et al. (2020) revealed that women in the middle wealth quintile were three times more likely to utilize PNC services, compared with their counterparts in the poorest wealth quintile. Akunga et al.'s (2014) study in Kenya similarly revealed low use of PNC services among women from poor households. In a similar study by Agho et al. (2016), it was revealed that mothers from the lowest wealth quintile were less likely to utilize PNC services in Nigeria. The findings of Agho et al. (2016) were further confirmed by Somefun and Ibisome (2016) who also reported lower likelihoods of PNC services utilization among women from poor backgrounds. Studies in other low- and middle-income countries such as Uganda (Ndugga et al., 2020), Zambia (Bwalya et al., 2017), Nepal (Khanal et al., 2014), and Rwanda (Rwabufigiri et al., 2016) revealed similar findings. On the converse, some previous studies did not find any significance association between women's wealth and their uptake of PNC services (Kanté et al., 2015; Mohan et al., 2015).

Another enabling factor that have been explored by previous studies is distance to health facility. In this regard, Islam and Odland (2011) reported that distance to health facility was a major barrier that prevented women from utilizing PNC services in Bangladesh. Phiri et al. (2014) also revealed an association between distance to health facility and utilization of PNC services in rural Malawi. A study in Ghana has similarly revealed that distance to health facility is a significant predictor of utilization of PNC services (Sakeah et al., 2018). A similar association has been revealed in Nigeria (Somefun & Ibisome, 2016) and Uganda (Ndugga et al., 2020). Other previous studies in Tanzania (Kanté et al., 2015; Mohan et al., 2015) and Rwanda (Rwabufigiri et al., 2016), however, did not find a significant association between distance to health facility and utilization of PNC services.

2.7 Chapter Summary

The present chapter has reviewed previous literature pertinent to the current study. Firstly, the chapter discussed maternal healthcare in Ghana, paying particular attention to the free maternal healthcare policy and the NHIS. Secondly, I reviewed literature on timing of ANC. I also reviewed previous studies conducted on determinants of antenatal care, skilled birth attendance, and postnatal care. In the next chapter, I discuss the methodology of the study employed.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter of the thesis presents the methods employed to conduct the study. Specifically, it includes the study design, sampling of the participants, sample size, the variables used and how the data will be analysed.

3.2 Study design

This study was a secondary data analysis using the 2014 Ghana Demographic and Health Survey (GDHS) dataset.

3.3 Brief about the Ghana Demographic and Health Survey

The 2014 GDHS is the sixth round of the Demographic and Health Survey (DHS) series in Ghana. The DHS is a nationally representative surveys conducted every five years. The first DHS was conducted in 1988; and since then five others have been conducted in 1993, 1998, 2003, 2008, and 2014. The DHS is conducted to measure trends of key health and demographic indicators such as maternal and child health, infant and child mortality, nutrition, and family planning. Detailed description of the DHS methodology and procedures have been reported in the final report which is available online at https://dhsprogram.com/publications/publication-fr307-dhs-final reports. cfm?cssearch=125917_1.

3.4 Summary of the 2014 GDHS survey procedures

The 2014 GDHS was a nationally representative cross-sectional survey coving the sociodemographic and health status of Ghanaians. The survey gathered information on fertility, family planning, infant and child mortality, maternal and child health, and nutrition. The GDHS focused on child and maternal health and is designed to provide adequate data to monitor the population and health situation in Ghana. The survey adopted a two-stage sampling design.

The first stage was characterized by the selection of clusters across urban and rural locations from the entire nation. These made up enumeration areas for the study. The second stage involved the selection of households from the predefined clusters. The 2014 GDHS involved a multi-stage sampling procedure. At the initial stage, independent systematic sampling of the Enumeration Areas (EA) in then ten (10) regions of the country was done. The EA were derived from the updated sampling frame for the 2010 Population and Housing Census of Ghana. The second stage involved independent sampling of the households in each EA. The 2014 GDHS interviewed 4,388 men aged 15 to 59 years and 9,396 women aged 15 to 49 years selected from and 11,835 households (GSS et al., 2015). Overall, 12,810 houses were surveyed; comprising 6,480 urban, and 6,330 rural areas. During the survey, three sets of questionnaires (Household, Men, and Women questionnaires) were administered. Overall, the response rate was almost universal (96%). The information collected included background characteristics (such as age, gender, place of residence and education) as well as information on maternal healthcare utilization such as antenatal care, skilled birth delivery and postnatal care. Specifically, the women's' file (IR) was used for the study.

3.5 Data source and access

The 2014 GDHS raw datasets was obtained from the DHS Programs. After registering at the DHS website, a concept note was drafted indicating the title of my project, objectives and proposed analyses to be used. This was then submitted requesting for access to download the data. The approval was granted on the 20th of April 2020 and the Stata version of the dataset was downloaded and extracted for analysis using Stata version 14.2.

3.6 Study sample and data extraction procedures

The sample size for the 2014 GDHS comprised 9,396 women aged 15-49 years and 4,388 men aged 15-59 years making a total of 13,784 participants. However, for the purposes of this study,

only the women data was used. Data extraction was carried out based on the study population comprising young women aged 15-24 years. Thus, data on 920 young women aged 15-24 years who have given birth five years prior to the survey and had complete information on all the variables of interest were extracted from the women data. All analyses in this study were based on this sample of 920 participants.

3.7 Inclusion and exclusion criteria

All young women aged 15-24 years, who had delivered 5 years prior to the survey were eligible for the study. Of this those with incomplete information on the variables of interest were excluded.

3.8 Study Variables and their measurement

The variables below were used for the study. Some of the variables were used as presented in the original datasets, whereas others were derived or created to facilitate study analysis and easy interpretation of results.

3.8.1 Outcome variables

The study considered three outcome variables. These variables were termed as maternal healthcare services utilisation. These were (1) antenatal care utilisation (2) skilled delivery, and (3) postnatal care utilisation. These variables were measured as follows.

1. Skilled delivery was derived from a question that asked women where they delivered their most recent child. The responses were dichotomized in the following way: (0) health facility (for deliveries occurring at government hospital, government health center/clinic, government health post /CHPS and private hospital, clinic) and (1) home (for deliveries occurring at respondents' or relatives' homes, or in other non-professional facilities).

2. With ANC, women were asked about the number of antenatal visits they made during their recent pregnancy. Utilisation of ANC visits was coded as 0-3= No and 4 and above= Yes. Although the number of ANC visits depends on the risk status of the expectant mother, WHO recommends at least four visits for the entire period of pregnancy. A visit during the first trimester is recommended for the purposes of screening and identifying infections.
3. In the DHS Women's Questionnaire, all women who had a birth in the 5 years preceding the survey were asked about the checks on their health 2 months after delivery while at the health facility or at home. Women were also asked about the timing of their first postnatal checkup after delivery and the provider of the health check. With regard to the provider, this analysis focused on skilled health providers (doctors, nurses, midwives, and medical assistants/clinical officers) because skilled care immediately after delivery is a key strategy in reducing the risk of maternal morbidity and mortality (WHO, 2013; GSS et al., 2015). Therefore, "postnatal care attendance," defined as having received a postnatal checkup from a skilled health provider 2 months after childbirth. It was coded into a binary variable representing having attended postnatal care within after delivery: Women who had a postnatal checkup by a skilled provider after delivery were coded 1. Women who did not attend postnatal care within 2 months at all after delivery were coded 0.

3.8.2 Independent variables

The independent variables for the study were grouped on the premise of the conceptual framework that was adapted to guide this work (see Figure 1). Health services utilisation is a complex phenomenon, hence the need for a proven theoretical framework for a better assessment and clearer understanding of the health service in question in the context of its associated factors. Andersen and Newmans's healthcare utilization model (Anderson &

Newman, 1973) readily comes handy in this respect given its relevance and practicality in demonstrating associations between risk factors and maternal healthcare services utilization in the present instance. A number of studies studies (Tolera, Gebre-Egziabher, & Kloos, (2020; Dankwah, Zeng , Feng , Kirychuk & Farag 2019; Neupane, Rijal, Gc, & Basnet, 2020) have used this model in assessing maternal healthcare services utilisation including antenatal attendance and health facility delivery. The selection of the independent variables for the study will be informed by two principal reasons. Thus, the conclusions drawn on these studies from the extensive literature review that was done as well as the availability of the variables in the dataset since this study is a secondary data analysis of an existing data. The variables will be classified into four categories using Andersen's model (Figure 1) as follows:

1. **External environmental factors:** These consist of the 'region of residence' (categorised using the existing regions and 'rural-urban residence' (categorised into rural and urban residences).
2. **Predisposing factors:** These include maternal and husband's education level (none, primary and secondary/higher), maternal age (15–19 years and 20–24 years), and maternal occupation (unemployed (not working or engaged in domestic/housewives jobs), agriculture (self-employed and employee), employed (professional/tech/managerial, sales, services, clerical, skilled and unskilled manual).Other predisposing factors examined were maternal marital status (never married, currently married/living with a man, formerly married/lived with a man), parity (1, 2–3, ≥4), maternal religion (Christianity, Islam, traditional/other) and wealth index. Wealth index is an aggregate function of socioeconomic status derived through the principal component analysis of respondents' households' assets (recategorised as poor (lower 40%), middle (middle 40%) and rich (upper 20%)).Factors related to media exposure—frequency of reading newspaper/magazine, frequency of listening to radio and

frequency of watching television (all categorised as 'not at all','<once a week, ≥once a week)—were similarly assessed as predisposing factors.

3. **Enabling factors:** These include 'health insurance coverage' (yes and no), companionship to health facility, distance to health facility (all categorised as 'a big problem' and 'not a big problem').
4. **Need factors:** Desire for pregnancy (then (at the time of conception), later (sometimes after conception) and 'no more') and knowledge of pregnancy complication (yes and no) were used as need factors in this study.

3.9 Data Analyses

Stata SE version 14.2 (Stata Corp, College Station TX) was used to perform all the statistical analyses. Sampling weights were applied to each of the categories analysed to ensure accurate estimates of proportions at the national level. Both descriptive and inferential statistics were used for the analysis of the data. Data were summarised in the form of frequency and percentages for categorical variables. Binary logistic regression test were used to test associations between the independent variables and the outcome variables. The binary logistic regression models were fitted because the outcome variables were captured on a dichotomous scale (Yes/No). The respondents were also sampled using probability sampling approach. There was also independence of observations among the respondents considered. In all the analysis statistical significance was set at p-value of less than 0.05. Four models were built hierarchically to help explain the relationship among the variables based on the conceptual framework, which was grouped in four factors: environmental factors, predisposing factors, enabling factors, and the need factors. Model I contained the environmental factors, in Model II, predisposing factors, Model III contained need factors while the final Model was a full model that controlled for all the variables. Adjusted Odds Ratios (AOR) and their corresponding 95% confidence intervals (CI) were estimated from the binary logistic

regression analysis to assess the strength association. The choice of reference categories were determined by a priori and those with the smallest sample as well as the previous studies on the factors associated with maternal healthcare utilization.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents the results of the study. The chapter entails the socio-demographic characteristics of participants, the prevalence of ANC attendance across-demographic characteristics, multivariate analysis of factors influencing ANC attendance among young women in Ghana, Prevalence of skilled delivery among young women in Ghana, multivariate analysis of factors influencing skilled delivery among young women in Ghana, prevalence of PNC attendance across demographic characteristics among young women in Ghana and multivariate analysis of factors influencing PNC among young women in Ghana.

4.2 Socio-demographic characteristics of participants

Table 4.1 presents the socio-demographic characteristics of participants. Approximately, fifteen percent of the respondents are from the Ashanti region (14.5%) whereas 2.7% are from the Upper east region. About 60.6% are in rural areas, and 48.8% are in the middle ecological zone. About 79 out of every 100% young people are aged 20-24. More than half (58.9%) have secondary or higher level of education while 17.9% have no formal education. In terms of religious affiliation, the majority (77.2%) are Christians while 7.0% belong to other religions. Almost half (48.1) are Akans. Approximately 59% have parity 1 whiles 12.5% have parity three or more. In terms of mass media exposure, 10.5% are exposed to newspaper/magazine, 81.3% are exposed to radio, and 72.9% are exposed to television. The study further showed that 65.0% are employed, 46.5% are in the poor wealth status and 25.8% are in the middle wealth status. It was also found that 93.5% do not have a problem getting permission to seek healthcare. It was also found that 47.6%, 28.9% and 14.3% respectively have problems getting money needed for treatment, and not wanting to go alone respectively. Also, 35.2% have correct knowledge on ovulatory cycle, 53.9% have ever heard of family planning on radio, 45.5% on TV and 3.0% on newspaper. Finally, 53.6% indicated that their pregnancies were unintended.

Table 4.1: Background Characteristics of respondents(N=920)

Variables	Weighted Frequency	Weighted Percentage
Region		
Western	104	11.3
Central	107	11.7
Greater Accra	120	13.1
Volta	77	8.3
Eastern	110	11.9
Ashanti	134	14.5
Brong Ahafo	102	11.1
Northern	101	10.9
Upper East	42	4.5
Upper West	25	2.7
Residence		
Urban	362	39.4
Rural	558	60.6
Ecological zone		
Northern	168	18.2
Middle	449	48.8
Coastal	304	33.0
Age		
15-19	191	20.7
20-24	729	79.3
Education		
No education	165	17.8
Primary	221	24.1
Secondary/higher	534	58.1
Religion		
Christian	710	77.2
Islam	146	15.8
Traditional/spiritual/other/no religion	64	7.0
Ethnicity		
Akan	443	48.1
Ga/Ewe	172	18.7
Other	305	33.2
Parity		
1	542	58.9
2	263	28.5
3 or more	115	12.6
Newspaper/ magazine		
No	824	89.6
Yes	96	10.4
Radio		
No	172	18.7
Yes	748	81.3
TV		
No	249	27.1

Yes	671	72.9
Health Insurance		
No	351	38.2
Yes	569	61.8
Employment		
Not employed	322	35.0
Employed	598	65.0
Wealth status		
Poor	428	46.5
Middle	237	25.8
Rich	255	27.7
Permission		
Big problem	60	6.4
Not a big problem	860	93.5
Money needed for treatment		
Big problem	438	47.6
Not a big problem	482	52.4
Distance to health facility		
Big problem	266	28.9
Not a big problem	654	71.1
Not wanting to go alone		
Big problem	131	14.3
Not a big problem	789	85.7
Knowledge of ovulatory cycle		
Incorrect	597	64.9
Correct	323	35.1
Heard family planning on radio		
No	424	46.1
Yes	496	53.9
Heard family planning on TV		
No	502	54.6
Yes	418	45.4
Heard family planning on Newspaper		
No	893	97.0
Yes	27	3.0
Pregnancy intention		
Unintended	493	53.6
Intended	427	46.4

4.3 Prevalence of ANC attendance across-demographic characteristics

Table 4.2 shows the prevalence of ANC attendance across-demographic characteristics. The prevalence of ANC attendance was 83.3%. Across the socio-demographic characteristics, 93.5% of those in the Brong-Ahafo Region, 87.0% in the urban areas, 84.5% of those in middle zone, 83.6% of those aged 20-24 had the highest prevalence of ANC attendance. It was also found that 88.5 of Muslims, 86.4% of Akans and 86.7% of those with parity 1 had accessed ANC. With media exposure, 88.8%, 85.2% and 85.5% of those who are exposed to newspaper or magazine, radio and TV respectively had the highest prevalence of ANC attendance. The chi-square analyses showed that the factors associated with ANC attendance are Region($p<0.001$), place of residence ($p=0.026$), education($p=0.01$), religion($p<0.001$), ethnicity ($p<0.001$), parity ($p=0.026$), exposure to radio($p<0.012$), TV ($p=0.016$) and health insurance(($p<0.001$), wealth status(<0.001), money needed for treatment (<0.001), distance to health facility($p=0.03$), heard family planning on TV($p=0.019$) and pregnancy intention ($p=0.003$).

Table 4.2: Prevalence of ANC attendance across-demographic characteristics

Variables	ANC		$\chi 2$	P value
Prevalence	No 153(16.7%)	Yes 767(83.3%)		
Region			58.8	<0.001
Western	12.8	87.2		
Central	13.0	87.0		
Greater Accra	15.7	84.3		
Volta	29.1	70.9		
Eastern	34.0	66.0		
Ashanti	9.2	90.8		
Brong Ahafo	6.5	93.5		
Northern	23.6	76.4		
Upper east	7.7	92.3		
Upper west	8.3	91.7		
Residence			4.9	0.026
Urban	13.0	87.0		
Rural	19.1	80.9		
Ecological zone			1.9	0.392
Northern	17.3	82.7		
Middle	15.5	84.5		
Coastal	18.1	81.9		
Age			2.8	0.093
15-19	17.9	82.1		
20-24	16.4	83.6		
Education			9.2	0.01
No education	23.0	77.0		
Primary	22.4	77.6		
Secondary/higher	12.4	87.6		
Religion			15.9	<0.001
Christian	16.1	83.9		
Islam	11.5	88.5		
traditional/spiritual/other/no religion	34.8	65.2		
Ethnicity			18.9	<0.001
Akan	13.7	86.4		
Ga/Ewe	25.9	74.1		
Other	15.9	84.1		
Parity			7.3	0.026
1	13.3	86.7		
2	18.6	81.4		
3 or more	28.3	71.7		
Newspaper/ magazine			0.8	0.361
No	17.3	82.7		
Yes	11.2	88.8		
Radio			6.3	0.012
No	24.7	75.3		

Yes	14.8	85.2		
TV			5.9	0.016
No	22.5	77.5		
Yes	14.5	85.5		
Health Insurance			14.9	<0.001
No	23.7	76.3		
Yes	12.3	87.7		
Employment			2.1	0.15
Not employed	17.0	83.0		
Employed	16.5	83.5		
Wealth status			13.3	<0.001
Poor	20.4	79.6		
Middle	20.7	79.3		
Rich	6.6	93.4		
Permission to visit hospital			0.4	0.542
Big problem	21.2	78.8		
Not a big problem	16.4	83.6		
Money needed for treatment			13.0	<0.001
Big problem	21.3	78.7		
Not a big problem	12.5	87.6		
Distance to health facility			4.7	0.03
Big problem	21.4	78.6		
Not a big problem	14.8	85.2		
Not wanting to go alone			2.5	0.111
Big problem	23.5	76.5		
Not a big problem	15.5	84.5		
Knowledge of ovulatory cycle			0.4	0.523
Incorrect	18.2	81.9		
Correct	14.0	86.0		
Heard family planning on radio			1.7	0.194
No	18.4	81.6		
Yes	15.2	84.8		
Heard family planning on TV			5.5	0.019
No	20.4	79.6		
Yes	12.3	87.8		
Heard family planning on Newspaper			3.0	0.085
No	16.2	83.8		
Yes	31.8	68.2		
Pregnancy intention			8.5	0.003
Unintended	19.8	80.2		
Intended	13.1	86.9		

4.4 Factors associated with ANC attendance

Table 4.3 shows the factors associated with ANC attendance among young women in Ghana. Compared to women in the Upper West region, women in the Northern region [AOR=0.165, 95% CI=0.0762,0.356], Volta Region [AOR=0.310,95%CI=0.110,0.871], Eastern region [AOR=0.320,95% CI=[0.126,0.811], and western region[AOR=0.372,95% CI=0.149,0.931] had lower odds of ANC attendance. Women in rural areas[AOR=0.456, 95%CI=0.288,0.723] also had lower odds of ANC attendance compared to women in urban centers. Women in the poor [AOR=0.313,95%CI=0.156,0.629] and middle[AOR=0.449,95%CI=0.233,0.867] wealth category had lower odds of ANC attendance compared to those in the rich category. Women aged 20-24[AOR=1.648,95% CI=[1.070,2.537] had higher odds of ANC attendance compared to those aged 15-19. In terms of education, those with secondary/higher level of education [AOR=1.865,95%CI=[1.089,3.196] also had higher odds of ANC attendance compared to those with no education. Christian and Muslim women had higher odds of ANC attendance compared to those belonging to the traditionalist religion. Young women with parity1[AOR=2.51, 95%CI=1.524,4.118] had higher odds of ANC attendance compared to those with parity three or more. In relation to NHIS subscription, young women who have subscribed to NHIS [AOR=1.53, 95%CI=1.075,2.187] have higher odds of ANC attendance. Finally, young women who indicated that distance to health facility is not a big problem had higher odds of ANC attendance compared with those who see distance as a big problem.

Table 4.3: Multiple logistic regression analysis of factors influencing ANC attendance among young women in Ghana

Variable	Model I	Model II	Model III	Model IV
	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]
Region				
Western	0.726[0.275,1.915]	0.78[0.249,2.422]	0.80[0.235,2.727]	0.74[0.212,2.615]
Central	0.810[0.293,2.219]	0.909[0.270,3.066]	1.111[0.305,4.045]	1.202[0.321,4.498]
Greater Accra	0.382[0.135,1.079]	0.487[0.147,1.616]	0.473[0.128,1.746]	0.499[0.132,1.890]
Volta	0.275**[0.108,0.699]	0.365[0.115,1.164]	0.522[0.154,1.770]	0.622[0.178,2.179]
Eastern	0.20***[0.0838,0.498]	0.24*[0.0819,0.726]	0.326[0.103,1.032]	0.366[0.112,1.194]
Ashanti	0.852[0.288,2.526]	0.884[0.237,3.298]	0.905[0.227,3.601]	1.028[0.248,4.254]
Brong Ahafo	1.323[0.466,3.757]	1.449[0.456,4.598]	1.666[0.509,5.450]	1.708[0.511,5.715]
Northern	0.338*[0.138,0.830]	0.43[0.164,1.123]	0.507[0.185,1.395]	0.465[0.164,1.320]
Upper East	1.746[0.557,5.474]	1.831[0.544,6.161]	2.361[0.666,8.366]	2.354[0.648,8.544]
Upper West	Ref	Ref	Ref	Ref
Residence				
Urban	Ref	Ref	Ref	Ref
Rural	0.606*[0.402,0.916]	0.78[0.495,1.228]	0.908[0.539,1.529]	0.92[0.548,1.546]
Age				
15-19		Ref	Ref	Ref
20-24		1.568[0.957,2.570]	1.499[0.900,2.497]	1.371[0.817,2.301]
Education				
No education		Ref	Ref	Ref
Primary		1.17[0.681,2.011]	1.191[0.677,2.093]	1.265[0.713,2.245]
Secondary/Higher		1.674[0.926,3.026]	1.759[0.940,3.289]	1.972*[1.045,3.719]
Religion				
Christian		1.817[0.973,3.391]	1.816[0.973,3.390]	1.786[0.961,3.319]
Islam		2.806**[1.289,6.108]	3.055**[1.375,6.788]	3.147**[1.409,7.030]
Traditional/spiritual/other/no religion		Ref	Ref	Ref
Ethnicity				
Akan		1.268[0.670,2.401]	1.418[0.747,2.692]	1.413[0.742,2.689]
Ga/Ewe		Ref	Ref	Ref
Other		1.39[0.660,2.928]	1.296[0.591,2.843]	1.175[0.531,2.602]
Parity				
1		1.698[0.986,2.924]	1.816*[1.030,3.202]	1.816*[1.025,3.216]
2		1.304[0.747,2.276]	1.383[0.777,2.462]	1.361[0.758,2.446]
3 or more		Ref	Ref	Ref
Newspaper/ Magazine				
No		Ref	Ref	Ref
Yes		1.139[0.538,2.413]	1.425[0.626,3.242]	1.472[0.639,3.391]
Radio				
No		Ref	Ref	Ref

Yes		1.327[0.849,2.072]	1.148[0.716,1.841]	1.118[0.696,1.798]
TV				
No		Ref	Ref	Ref
Yes		1.114[0.717,1.732]	1.069[0.648,1.763]	1.141[0.688,1.893]
NHIS subscription				
No			Ref	Ref
Yes			1.89**[1.280,2.782]	1.90**[1.288,2.812]
Employment				
Not employed			Ref	Ref
Employed			1.417[0.922,2.177]	1.419[0.919,2.190]
Wealth				
Poor			0.509[0.223,1.164]	0.545[0.240,1.238]
Middle			0.35**[0.169,0.737]	0.364**[0.174,0.761]
Rich			Ref	Ref
Permission to visit hospital				
Big problem			Ref	Ref
Not a big problem			1.034[0.506,2.116]	1.051[0.513,2.152]
Money needed for treatment				
Big problem			Ref	Ref
Not a big problem			1.414[0.884,2.263]	1.441[0.895,2.318]
Distance to health facility				
Big problem			Ref	Ref
Not a big problem			0.868[0.536,1.405]	0.898[0.553,1.457]
Not wanting to go alone				
Big problem			Ref	Ref
Not a big problem			0.924[0.529,1.613]	0.912[0.521,1.594]
Heard family planning on radio				
No			0.91[0.564,1.458]	0.94[0.585,1.520]
Yes			Ref	Ref
Heard family planning on TV				
No			0.802[0.460,1.400]	0.809[0.462,1.418]
Yes			Ref	Ref
Heard family planning on Newspaper				
No			3.84**[1.447,10.20]	3.780**[1.408,10.15]
Yes			Ref	Ref
Pregnancy intention				
Unintended				Ref
Intended				1.759*[1.139,2.719]
N	920	920	920	920
pseudo R^2	0.076	0.107	0.145	0.152

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Ref=Reference

4.5 Skilled birth delivery

Table 4.4 shows the prevalence of Skilled birth delivery across-demographic characteristics. The prevalence of skilled birth delivery was 72.7%. Across the socio-demographic characteristics, 88.9% of those in the Upper East Region, 86.6.0% in the urban areas, 77.8% of those in the coastal zone, 72.8% of those aged 20-24 had the highest prevalence of skilled delivery. It was also found that 74.8% of Christians, 79.0% of Ga/Ewe and 80.9% of those with parity 1 had delivered in a health facility. With media exposure, 88.2%, 74.8% and 75.6% of those who are exposed to newspaper or magazine, radio and TV respectively had the highest prevalence of health facility delivery. The chi-square analyses showed that the factors associated with health facility delivery are region ($p<0.001$), place of residence ($p<0.001$), education($p<0.001$), religion($p<0.001$), parity ($p<0.001$), exposure to newspaper($p=0.004$) radio($p=0.013$), TV ($p<0.001$), health insurance($p=0.003$), wealth status($p<0.001$), distance to health facility ($p<0.001$), heard family planning on TV($p=0.008$) and pregnancy intention ($p=0.09$).

Table 4.4: Prevalence of skilled delivery among young women in Ghana

Variables	Health Facility Delivery		$\chi 2$	P-value
	No	Yes		
Prevalence	251(27.3%)	669(72.7%)		
Region			84.0	<0.001
Western	28.3	71.7		
Central	30.0	70.0		
Greater Accra	11.8	88.2		
Volta	27.4	72.6		
Eastern	34.9	65.1		
Ashanti	12.6	87.4		
Brong Ahafo	27.2	72.8		
Northern	60.2	39.8		
Upper east	11.1	88.9		
Upper west	25.0	75.0		
Residence			45.1	<0.001
Urban	13.4	86.6		
Rural	36.3	63.7		
Ecological zone			3.9	0.139
Northern	42.7	57.3		
Middle	25.0	75.0		
Coastal	22.2	77.8		
Age			0.6	0.43
15-19	27.7	72.3		
20-24	27.2	72.8		
Education			51.1	<0.001
No education	46.2	53.8		
Primary	35.0	65.0		
Secondary/higher	18.3	81.7		
Religion			24.4	<0.001
Christian	25.2	74.8		
Islam	26.9	73.1		
traditional/spiritual/other/no religion	51.6	48.4		
Ethnicity			3.7	0.157
Akan	24.8	75.2		
Ga/Ewe	21.0	79.0		
Other	34.5	65.5		
Parity			34.3	<0.001
1	19.1	80.9		
2	36.0	64.0		
3 or more	46.1	54.0		
Newspaper/ magazine			8.3	0.004
No	29.1	70.9		
Yes	11.8	88.2		
Radio			6.2	0.013
No	36.1	63.9		
Yes	25.3	74.8		
TV			10.9	<0.001

No	35.1	64.9		
Yes	24.4	75.6		
Health Insurance			8.7	0.003
No	31.3	68.7		
Yes	24.8	75.2		
Employment			3.6	0.057
Not employed	26.3	73.7		
Employed	27.8	72.2		
Wealth status			52.2	<0.001
Poor	40.8	59.2		
Middle	25.2	74.8		
Rich	6.6	93.4		
Permission			0.4	0.543
Big problem	22.9	77.1		
Not a big problem	27.6	72.4		
Money needed for treatment			1.6	0.207
Big problem	28.4	71.6		
Not a big problem	26.2	73.8		
Distance to health facility			13.6	<0.001
Big problem	34.5	65.5		
Not a big problem	24.3	75.7		
Not wanting to go alone			0.5	0.493
Big problem	32.0	68.1		
Not a big problem	26.5	73.5		
Knowledge of ovulatory cycle			0.0	0.873
Incorrect	27.8	72.2		
Correct	26.4	73.6		
Heard family planning on radio			0.8	0.36
No	27.2	72.8		
Yes	27.4	72.6		
Heard family planning on TV			7.0	0.008
No	30.7	69.3		
Yes	23.2	76.8		
Heard family planning on Newspaper			2.6	0.107
No	27.7	72.3		
Yes	14.9	85.1		
Pregnancy intention			2.9	0.09
Unintended	23.9	76.1		
Intended	31.2	68.8		

4.6 Multiple logistics regression analysis of factors influencing skilled birth delivery among young women in Ghana

Table 4.5 shows the factors associated with skilled birth delivery among young women in Ghana. Compared to women in the Upper West region, women in the Northern region [AOR=0.165, 95% CI=0.0762,0.356], Volta Region [AOR=0.310,95%CI=0.110,0.871], Eastern region [AOR=0.320,95% CI=[0.126,0.811], and western region[AOR=0.372,95% CI=0.149,0.931] had lower odds of skilled birth delivery . Women in rural areas [AOR=0.456, 95%CI=0.288,0.723] also had lower odds of skilled birth delivery compared to women in urban centers. Women in the poor [AOR=0.313,95%CI=0.156,0.629] and middle [AOR=0.449,95% CI=0.233,0.867] wealth category had lower odds of skilled delivery compared to those in the rich category. Women aged 20-24[AOR=1.648,95% CI=1.070,2.537] had higher odds of skilled delivery compared to those aged 15-19. In terms of education, those with secondary/higher level of education [AOR=1.865,95%CI=1.089,3.196] also had higher odds of skilled delivery compared to those with no education. Christian and Muslim women had higher odds of health facility delivery compared to those belonging to the traditionalist religion. Young women with parity 1 [AOR=2.51, 95%CI=1.524,4.118] had higher odds of skilled delivery compared to those with parity three or more. In relation to NHIS subscription, young women who have subscribed to NHIS [AOR=1.53, 95%CI=1.075,2.187] have higher odds of skilled delivery. Finally, young women who indicated that distance to health facility is not a big problem had higher odds of skilled delivery compared with those who see distance as a big problem.

Table 4.5: Multiple logistic regression analysis of factors influencing skilled delivery among young women in Ghana

Variable	Model I	Model II	Model III	Model IV
	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]
Region				
Western	0.53[0.25,1.087]	0.448[0.185,1.086]	0.372*[0.149,0.933]	0.372*[0.149,0.931]
Central	0.524[0.248,1.105]	0.415[0.161,1.074]	0.38[0.143,1.007]	0.381[0.143,1.014]
Greater Accra	0.665[0.270,1.642]	0.561[0.191,1.644]	0.438[0.142,1.358]	0.44[0.141,1.372]
Volta	0.507[0.233,1.101]	0.341*[0.125,0.928]	0.308*[0.11,0.852]	0.310*[0.110,0.871]
Eastern	0.437*[0.21,0.902]	0.312*[0.126,0.772]	0.319*[0.13,0.801]	0.320*[0.13,0.811]
Ashanti	1.4[0.560,3.500]	1.127[0.413,3.081]	0.95[0.334,2.697]	0.955[0.335,2.725]
Brong Ahafo	0.69[0.330,1.442]	0.625[0.273,1.426]	0.647[0.284,1.474]	0.648[0.284,1.476]
Northern	0.15***[0.07,0.30]	0.16***[0.0719,0.337]	0.17***[0.07,0.356]	0.17***[0.0762,0.36]
Upper East	2.172[0.891,5.297]	1.949[0.729,5.212]	2.012[0.757,5.351]	2.011[0.756,5.345]
Upper West	Ref	Ref	Ref	Ref
Residence				
Urban	Ref	Ref	Ref	Ref
Rural	0.29***[0.197,0.423]	0.31***[0.206,0.474]	0.46***[0.288,0.723]	0.46***[0.288,0.723]
Age				
15-19		Ref	Ref	Ref
20-24		1.774**[1.152,2.732]	1.653*[1.076,2.540]	1.648*[1.070,2.537]
Education				
No education		Ref	Ref	Ref
Primary		1.216[0.747,1.978]	1.215[0.739,1.997]	1.218[0.740,2.005]
Secondary/higher		1.975*[1.169,3.338]	1.859*[1.087,3.180]	1.865*[1.089,3.196]
Religion				
Christian		2.343**[1.296,4.237]	2.306**[1.250,4.255]	2.306**[1.251,4.251]
Islam		2.765**[1.382,5.531]	2.818**[1.380,5.757]	2.821**[1.381,5.759]
Traditional/spiritual/other/no religion		Ref	Ref	Ref
Ethnicity				
Akan		0.823[0.421,1.607]	0.78[0.392,1.553]	0.78[0.391,1.552]
Ga/Ewe				
Other		Ref	Ref	Ref
Ethnicity		0.771[0.373,1.594]	0.690.327,1.454]	0.687[0.33,1.45]
Parity				
1		2.66***[1.647,4.301]	2.50***[1.524,4.116]	2.51***[1.524,4.118]
2		1.154[0.710,1.876]	1.0860.651,1.814]	1.086[0.650,1.813]
3		Ref	Ref	Ref
Newspaper/ Magazine				
No		Ref	Ref	Ref
Yes		1.251[0.620,2.523]	1.109[0.547,2.248]	1.110[0.548,2.250]
Radio				
No		Ref	Ref	Ref
Yes		1.173[0.778,1.770]	1.162[0.760,1.776]	1.161[0.759,1.776]
TV				
No		Ref	Ref	Ref
Yes		0.775[0.518,1.158]	0.702[0.454,1.087]	0.703[0.453,1.092]
NHIS				
No			Ref	Ref
Yes			1.533*[1.074,2.187]	1.533*[1.075,2.187]
Employment				
Not employed			Ref	Ref
Employed			1.075[0.735,1.572]	1.074[0.734,1.571]
Wealth				
Poor			0.312**[0.155,0.629]	0.313**[0.156,0.629]
Middle			0.448*[0.232,0.867]	0.449*[0.233,0.867]
Rich			Ref	Ref
Permission to visit hospital				
Big problem			Ref	Ref
Not a big problem			0.958[0.474,1.936]	0.959[0.475,1.936]
Money needed for treatment				
Big problem			Ref	Ref
Not a big problem			0.72[0.492,1.055]	0.72[0.492,1.056]
Distance to health facility				
Big problem			Ref	Ref

Not a big problem			1.667*[1.085,2.561]	1.670*[1.085,2.570]
Not wanting to go alone				
Big problem			Ref	Ref
Not a big problem			0.663[0.389,1.132]	0.663[0.389,1.130]
Heard family planning on radio				
No			0.908[0.604,1.365]	0.91[0.605,1.367]
Yes			Ref	Ref
Heard family planning on TV				
No			1.121[0.690,1.821]	1.121[0.690,1.822]
Yes			Ref	Ref
Heard family planning on Newspaper				
No			0.836[0.230,3.040]	0.834[0.227,3.062]
Yes			Ref	Ref
Pregnancy intention				
Unintended				Ref
Intended				1.021[0.693,1.502]
N	920	920	920	920
pseudo R2	0.12	0.175	0.197	0.197

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Ref=Reference

4.7 PNC attendance among young women in Ghana

Table 4.6 shows the prevalence of PNC attendance across-demographic characteristics. The prevalence of PNC attendance was 69.0%. Across the socio-demographic characteristics, 91.2% of those in the Upper East Region, 71.8% in the urban areas, 77.8% of those in the coastal zone, 69.4% of those aged 20-24 had the highest prevalence of PNC attendance. It was also found that 76.7% of Muslims, and 72.6% of those with parity 3 or more had accessed PNC services. The chi-square analyses showed that the factors associated with health facility delivery are Region (p<0.001), ecological zone (p<0.001), religion (p=0.011), ethnicity (p<0.001), exposure to radio (p=0.007), TV (p<0.001), employment (p<0.028), wealth status(p<0.001), and Pregnancy intentions (p=0.002).

Table 4.6: Prevalence of PNC attendance across demographic characteristics among young women in Ghana

Variables	PNC		$\chi 2$	P-value
	No	Yes		
Prevalence	285(31.0%)	635(69.0%)		
Region			126.6	<0.001
Western	34.9	65.1		
Central	31.0	69.1		
Greater Accra	20.7	79.3		
Volta	16.8	83.3		
Eastern	67.1	32.9		
Ashanti	31.4	68.6		
Brong Ahafo	38.1	61.9		
Northern	14.7	85.3		
Upper east	8.8	91.2		
Upper west	20.9	79.1		
Residence			0.2	0.675
Urban	28.2	71.8		
Rural	32.8	67.2		
Ecological zone			72.6	<0.001
Northern	14.2	85.8		
Middle	42.5	57.5		
Coastal	23.3	76.7		
Age			1.0	0.307
15-19	32.3	67.7		
20-24	30.7	69.4		
Education			2.2	0.34
No education	26.4	73.6		
Primary	29.6	70.4		
Secondary/higher	33.0	67.0		
Religion			9.1	0.011
Christian	32.3	67.7		
Islam	23.3	76.7		
Traditional/spiritual/other/no religion	34.5	65.5		
Ethnicity			26.3	<0.001
Akan	31.5	68.5		
Ga/Ewe	38.7	61.4		
Other	26.0	74.0		
Parity			0.7	0.711
1	31.7	68.3		
2	31.2	68.8		
3 or more	27.4	72.6		
Newspaper/ magazine			2.3	0.127
No	30.4	69.7		
Yes	36.6	63.4		
Radio			7.3	0.007
No	42.5	57.5		
Yes	28.3	71.7		

TV			0.1	0.796
No	33.8	66.2		
Yes	30.0	70.0		
Health Insurance			0.6	0.441
No	31.1	68.9		
Yes	30.9	69.1		
Employment			4.8	0.028
Not employed	35.5	64.5		
Employed	28.6	71.4		
Wealth status			8.3	0.016
Poor	28.9	71.2		
Middle	40.7	59.3		
Rich	25.6	74.4		
Permission			0.0	0.886
Big problem	31.4	68.6		
Not a big problem	31.0	69.0		
Money needed for treatment			2.2	0.139
Big problem	34.0	66.1		
Not a big problem	28.3	71.7		
Distance to health facility			3.0	0.084
Big problem	34.1	65.9		
Not a big problem	29.8	70.3		
Not wanting to go alone			0.4	0.524
Big problem	30.7	69.3		
Not a big problem	31.1	69.0		
Knowledge of ovulatory cycle			0.1	0.737
Incorrect	31.1	68.9		
Correct	30.8	69.2		
Heard family planning on radio			3.3	0.069
No	34.6	65.4		
Yes	28.0	72.0		
Heard family planning on TV			0.2	0.664
No	32.1	67.9		
Yes	29.7	70.3		
Heard family planning on Newspaper			1.0	0.321
No	30.9	69.1		
Yes	33.8	66.2		
Pregnancy intention			9.9	0.002
Unintended	34.5	65.5		
Intended	26.9	73.1		

Source: 2014 GDHS

4.8 Multiple logistic regression analysis of factors influencing PNC uptake among young women in Ghana

Table 4.7 shows the factors associated with PNC uptake among young women in Ghana. Compared to women in the Upper West region, women in the Brong Ahafo region [AOR=0.180, 95% CI=0.0785,0.413],Eastern Region [AOR=0.0835,95%CI=0.0331,0.211], Central Region [AOR=0.221,95%CI=[0.0874,0.561]], Western region [AOR=0.255,95% CI=0.104,0.624] had lower odds of PNC uptake. In terms of education, those with secondary/higher level of education [AOR=1.773,95%CI=1.028,3.058] also had higher odds of PNC attendance compared to those with no education. Akans had higher odds of PNC attendance compared to those belonging to Ga/Ewe ethnic groups. Young women with parity1 [AOR=0.549, 95% CI=0.312,0.968] had lower odds of PNC attendance compared to those with parity three or more. Finally, young women who are exposed to radio [AOR=1.902,95% CI=1.236,2.926] had higher odds of PNC attendance compared to those who are not exposed to radio.

Table 4.7: Multiple logistic regression analysis of factors influencing PNC among young women in Ghana

Variable	Model I	Model II	Model III	Model IV
	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]	AOR[95%CI]
Region				
Western	0.40*[0.19,0.85]	0.241**[0.10,0.577]	0.26**[0.11,0.63]	0.26**[0.104,0.624]
Central	0.35**[0.16,0.739]	0.21***[0.0822,0.516]	0.22**[0.09,0.55]	0.22**[0.0874,0.561]
Greater Accra	0.828[0.344,1.994]	0.947[0.326,2.751]	1.07[0.363,3.157]	1.076[0.362,3.197]
Volta	0.864[0.375,1.991]	1.329 [0.454,3.890]	1.59[0.540,4.713]	1.654[0.556,4.923]
Eastern	0.10***[0.05,0.20]	0.1***[0.03,0.19]	0.08***[0.03,0.2]	0.08***[0.0331,0.211]
Ashanti	0.53[0.24,1.198]	0.339*[0.134,0.860]	0.36*[0.14,0.947]	0.375*[0.143,0.984]
Brong Ahafo	0.32**[0.16,0.666]	0.20***[0.0881,0.461]	0.18***[0.08,0.4]	0.18***[0.0785,0.413]
Northern	1.112[0.500,2.472]	1.421[0.615,3.286]	1.43[0.615,3.316]	1.398[0.599,3.262]
Upper East	2.51[0.965,6.533]	2.64[0.957,7.283]	2.42[0.896,6.528]	2.411[0.890,6.529]
Upper West	Ref	Ref	Ref	Ref
Residence				
Urban	Ref	Ref	Ref	Ref
Rural	0.945[0.689,1.296]	0.99[0.696,1.407]	0.81[0.543,1.212]	0.807[0.540,1.206]
Age				
15-19		Ref	Ref	Ref
20-24		0.959[0.641,1.433]	0.971[0.64,1.474]	0.943[0.617,1.442]
Education				
No education		Ref	Ref	Ref
Primary		1.700*[1.00,2.888]	1.68[0.98,2.873]	1.715[0.998,2.947]
Secondary/higher		1.567[0.929,2.641]	1.73*[1.01,2.969]	1.773*[1.028,3.058]
Religion				
Christian		1.37[0.721,2.587]	1.47[0.772,2.813]	1.469[0.768,2.811]
Islam		1.568[0.749,3.280]	1.68[0.787,3.565]	1.662[0.779,3.546]
Traditional/spiritual/other/no religion		Ref	Ref	Ref
Ethnicity				
Akan		2.698**[1.49,4.9]	2.8***[1.52,5.033]	2.75***[1.51,5.00]
Ga/Ewe		Ref	Ref	Ref
Other		1.753[0.881,3.488]	1.75[0.872,3.519]	1.694[0.839,3.420]
Parity				
1		0.523*[0.300,0.911]	0.55*[0.31,0.964]	0.55*[0.312,0.968]
2		0.58[0.330,1.032]	0.63[0.351,1.120]	0.62[0.349,1.115]
3		Ref	Ref	Ref
Newspaper/ Magazine				
No		Ref	Ref	Ref
Yes		0.56*[0.325,0.980]	0.61[0.349,1.059]	0.614[0.353,1.070]
Radio				
No		Ref	Ref	Ref
Yes		2.01***[1.333,3.025]	1.92**[1.25,2.95]	1.902**[1.236,2.926]
TV				
No		Ref	Ref	Ref
Yes		1.175[0.802,1.723]	1.44[0.941,2.209]	1.465[0.952,2.252]
NHIS Coverage				
No			Ref	Ref
Yes			0.95[0.675,1.325]	0.95[0.676,1.326]
Employment status				
Not employed			Ref	Ref
Employed			1.17[0.821,1.654]	1.16[0.820,1.653]
Wealth status				
Poor			1.59[0.904,2.805]	1.636[0.924,2.897]

Middle			0.93[0.566,1.514]	0.939[0.572,1.540]
Rich			Ref	Ref
Permission to visit hospital				
Big problem			Ref	Ref
Not a big problem			0.84[0.456,1.550]	0.84[0.455,1.551]
Money needed for treatment				
Big problem			Ref	Ref
Not a big problem			1.356[0.95,1.935]	1.356[0.949,1.938]
Distance to health facility				
Big problem			Ref	Ref
Not a big problem			1.24[0.834,1.835]	1.252[0.845,1.856]
Not wanting to go alone				
Big problem			Ref	Ref
Not a big problem			0.83[0.501,1.381]	0.829[0.500,1.374]
Heard family planning on radio				
No			0.81[0.543,1.193]	0.816[0.550,1.210]
Yes			Ref	Ref
Heard family planning on TV				
No			1.38[0.887,2.150]	1.383[0.887,2.155]
Yes			Ref	Ref
Heard family planning on Newspaper				
No			1.33[0.508,3.463]	1.307[0.495,3.452]
Yes			Ref	Ref
Pregnancy wontedness				
Unintended				Ref
Intended				1.178[0.823,1.687]
N	920	920	920	920
pseudo R2	0.113	0.148	0.161	0.161

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$; Ref=Reference

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This section of the dissertation discusses the findings in light of previous findings. Specifically, this section discusses the findings in terms of prevalence and factors associated with ANC uptake, factors associated with facility delivery and factors associated with postnatal care delivery.

5.2 Factors associated with ANC attendance

The study revealed that region of residence is which is an environmental factor as shown in the conceptual framework is associated with ANC utilization among young women in Ghana with the highest prevalence recorded in Brong Ahafo Region. This finding resonates with findings of some previous studies in Ghana (Arthur, 2012; Nachinab et al., 2019) and other low- and middle-income countries (Babalola, 2014; Ousman et al., 2019; Tiruaynet & Muchie, 2019). A previous study in Ghana by Arthur (2012), for instance, reported regional differences in women's use of ANC services, with the highest likelihood recorded in Greater Accra Region and the lowest in Northern Region. Arthur (2012) attributed this disparity to the inaccessibility and unavailability of ANC services in some regions of Ghana. This is also in line with Anderson and Newman's (1973) model of healthcare utilization as shown in Figure 1. Similarly, in Nigeria, Babalola (2014) reported lower odds of ANC utilization among women in North-West, South-East, South-South, and South-West Regions, compared with their counterparts in the North-Central Region. Aside from Ghana and Nigeria, the regional disparities in the utilization of ANC were also reported in Ethiopia by Ousman et al. (2019), Tiruaynet and Muchie (2019), and Tsegay et al. (2013). Such regional level disparities might reflect the differences in the levels of socio-economic development in the various region within Ghana. Given that regional differences are reflected in the use of ANC services among young

women in Ghana, health promotion programs focusing on ANC utilization among young women in Ghana need to be sensitive to such differences. In particular, such programs need to focus attention on regions that record lower odds of ANC utilization such as Northern region, Volta Region, and Eastern Region.

Another environmental factors that was associated with ANC update is place of residence. This finding agrees with findings of some previous studies that reveal higher likelihood of ANC utilization among urban residents, as compared with women living in rural areas, in Ghana (Arthur, 2012) and other sub-Saharan African countries such as Nigeria (Babalola, 2014), Uganda (Bbaale, 2011), and Ethiopia (Ousman et al., 2019). For instance, in Nigeria, Babalola (2014) found that rural women were less likely to utilize ANC services, compared with their counterparts in urban areas. Similarly, in Uganda, Bbaale (2011) noted that rural residency significantly reduces women's likelihood of utilizing ANC services. Ousman et al. (2019) also reported lower likelihood of ANC utilization among women in rural areas in Ethiopia. Particularly related to the present study is Arthur (2012) study that reported remarkable differences among women living in rural areas and those living in urban areas in terms of ANC utilization. As noted by Bbaale (2011) and Arthur (2012), this finding may be as a result of the health infrastructure deficit that characterizes most rural areas, as compared with urban areas. This finding, therefore, highlights the need for the government of Ghana to implement policies to extend ANC services to rural areas which lack such services.

The study also reveals an association with young women's education and utilization of ANC services. This is also congruent with the conceptual framework that was adapted for the study. Similar findings have been reported by previous studies in Ghana (Arthur, 2012), other low- and middle-income countries such as Nigeria (Babalola, 2014; Nwosu et al., 2012), and Ethiopia (Ousman et al., 2019; Tiruaynet & Muchie, 2019; Tsegay et al., 2012), as well as

high-income countries such as Belgium and Netherland (Broeck et al., 2016). In Ghana, Arthur (2012) reported that women with secondary or higher levels of education were more likely to utilize ANC services, compared to those with lower levels of education or no formal education. Education exposes young women to all kinds of information including information on the need to pay attention to one's health. This may explain why young women with formal education are more likely to utilize ANC services, compared to their counterparts who do not have formal education. It is therefore important for young women to be encouraged to be educated, as this is likely to increase their utilization of ANC services. Relatedly, wealth status of young women showed an association with ANC utilization among young women in Ghana. A previous research in Ghana by Arthur (2012) revealed similar associations. Other previous studies in sub-Saharan Africa as a whole (Okedo-Alex et al., 2019) and in specific countries such as Nigeria (Babalola, 2014; Nwosu et al., 2012), Ethiopia (Ousman et al., 2019; Tiruaeynet & Muchie, 2019), and Uganda (Bbaale, 2011) have reported similar findings. This suggests that wealthier young women have financial autonomy that helps them to pay the financial charges that come with ANC utilization, including the cost of transportation to health centers. Poorer women, on the other hand, may be constrained by financial hardship, and that can militate against their uptake of health services, such as ANC.

The study also revealed ethnicity as a determinant of ANC utilization among young women in Ghana. Some previous studies in both high-income countries and low- and middle-income countries have revealed similar associations. In a previous study in Ghana, a low- and middle-income country, Abor et al. (2011) found that Ga-Adangme women were less likely to use ANC, as compared to the Asante women in 1993 and 2003. Similarly, a study in Ethiopia revealed that Amhara women were more likely to utilize ANC services, compared with Oromo women (Tiruaynet & Muchie, 2019). Concerning high-income countries, in the United Kingdom, Rowe and Garcia (2003) revealed that women of Asian origin were less likely to use

ANC than White British women. This disparities in ANC utilization across ethnic groups may reflect the different cultures, values, beliefs, and norms that characterize different ethnic groups (Tiruaynet & Muchie, 2019). In the light of this finding, it becomes imperative for health programs and interventions aimed at improving the use of ANC utilization among young women in Ghana to take ethnic differences into account. Specifically, it will be necessary for such programs to pay particular attention to such ethnic groups that are less likely to utilize ANC services as revealed in the present study.

The present study also revealed religion and parity (predisposing factors) to be associated with ANC utilization among young women. With regard to religion, a previous study in Nigeria revealed that other Christians displayed higher likelihoods of ANC utilization, followed by Catholics, Muslim women, and others which include traditionalists (Babalola, 2014). A study by Ousman et al. (2019) also revealed an association between women's religion and their uptake of ANC services. In general, this association seems to suggest that organized religion increases young women's likelihood of ANC uptake. The differences in ANC uptake across various religious groups could also reflect differences in religious beliefs and practices with regard to ANC utilization. Concerning parity, a previous study in Ghana by Adu et al. (2018) concurred that women with higher parity were less likely to utilize ANC services. Some other previous studies have also revealed an association between parity and ANC utilization in other SSA countries such as Ethiopia (Regassa, 2011) and Kenya (Ochako et al., 2011). There are a number of different mechanisms that have been identified in studies to illustrate this association. For example, Dangal (2007) found that if the first pregnancy and birth were uneventful, subsequent pregnancies may have a lower chance of problems. Women who had no complications during a previous pregnancy, according to Pallikadavath, Foss, and Stones (2004), may not feel the need for early ANC during their current pregnancy. Furthermore, Simkhada et al. (2008) and Pallikadavath, Foss, and Stones (2004) highlighted that some

women with other children may be preoccupied with the tasks of caring for them, making early ANC difficult. Moreover, Pell et al. (2013) argued that high-parity women who have had previous successful pregnancies may assume they are well-'experienced' and are now acclimated to the routine care offered during ANC and, as a result, may postpone the start of ANC. Lack of resources and unfavorable experiences with ANC providers in past pregnancies, according to Simkhada et al. (2008), may make women reluctant to seek early ANC in current pregnancies.

In the present study, young women's exposure to mass media (enabling factor), specifically radio and television, was associated with ANC utilization. Bbaale's (2011) study in Uganda also revealed that women having access to mass media at least once a week and those having access daily were more likely to use antenatal care, compared to counterparts who have no access at all. A study in Ethiopia similarly reported higher likelihood of ANC utilization among women with media exposure (Ousman et al., 2019). Similar findings have been reported even in non-African countries, such as Bangladesh (Islam & Odland, 2011). In general, these findings suggest that the more women get access to mass media, the more likely they are to utilize ANC services. Perhaps, mass media serves as a channel through which health information reaches women, including information on the need for the uptake of ANC services. Thus, access to such information may positively influence young women's uptake of ANC services. It is, therefore, important to encourage young women in Ghana to use mass media, especially radio and television, as that can boost their utilization of ANC services. More importantly, mass media in Ghana should be used as a channel to send information concerning ANC utilization to young women. This is especially necessary given that the present study also reveals that women who heard about family planning on television were more likely to use ANC services.

The present study also revealed health insurance subscription, an enabling factor as a determinant of ANC utilization among young women in Ghana. This finding agrees with findings from some previous studies in Ghana. For instance, Arthur (2012) reported that, in Ghana, women with health insurance were more likely to utilize ANC services than those without health insurance. Similarly, in rural parts of northern Ghana, Nachinab et al. (2019) reported health insurance subscription as an enabling factor for the utilization of ANC services. Similar findings have been revealed in other geographical areas such as SSA as a whole (Okedo-Alex, 2019) as well as Belgium and Netherland (Broeck et al., 2016). In all, these studies have revealed the significant role played by health insurance in increasing the uptake of ANC services. It is, therefore, important for young women in Ghana to get enrolled on National Health Insurance Scheme (NHIS) for them to get free access to ANC services.

Additionally, the present study revealed that distance to health facility was associated with ANC utilization among young women in Ghana. This finding concurs with findings of some previous studies in Ghana (Akowuah et al., 2018) and other SSA countries such as Nigeria (Babalola, 2014), as well as non-African countries such as Bangladesh (Islam & Odland, 2011). In Ghana, Akowuah et al. (2018) reported that women who were closer to health facilities were more likely to utilize ANC services, compared to those who were not close to health facilities. Similarly, in Nigeria, it was reported that women who did not consider distance as a hindrance to healthcare access were more likely to use antenatal care than women who considered distance as an obstruction to healthcare accessibility (Babalola, 2014). Overall, these studies reveal that proximity to health facility influences women's use of ANC services. This has also been confirmed by the conceptual framework that was adapted to guide this study. Finally, it was also revealed in the present study that pregnancy intentions was associated with ANC utilization among young women in Ghana. This finding agrees with the finding of Tekelab et al. (2019), who reported that women whose pregnancies were planned and desired were

significantly more likely to use ANC services at least four times, compared with those with unplanned/undesired pregnancies. The reason for this finding could be that women who want pregnancy make the necessary psychological and resource-related preparations for the pregnancy. Such women are therefore more likely to skip any financial hurdles to access ANC services, which may not be the case of women without the desire for pregnancy.

5.3 Factors associated with skilled delivery

In the present study, region of residence (environmental factor) was significantly associated with the utilization of skilled delivery services among young women in Ghana. Specifically, compared to women in the Upper West Region, women in the Northern Region, Volta Region, Eastern, and Western Region had lower odds of facility delivery. Some previous studies have similarly revealed an association between region of residence and skilled delivery utilization. Dickson and Amu (2017), for instance, revealed that skilled delivery utilization was higher in Upper East Region and lower in Northern and Upper West Regions. Similarly, Solanke and Rahman (2018) revealed that, in Nigeria, women in southern Nigeria were more likely to utilize skilled delivery services, as compared with their counterparts from northern Nigeria. Olakunde et al. (2019) also observed differences in skilled delivery utilization across the geopolitical regions in Nigeria and attributed the finding to disparities in maternal care interventions across the regions. In Guinea Bissau, Yaya et al. (2019) revealed that women from the Sector Autónomo de Bissau region were more likely to utilize skilled delivery services, compared to women who resided in other regions.

Type of place of residence (environmental factor) was also associated with utilization of skilled delivery services among young women in Ghana. Specifically, women in rural areas had lower odds of health facility delivery, relative to women in urban centres. Similar associations were revealed in some previous studies. Dickson and Amu (2017), for instance,

observed that, compared with women who live in urban areas, those living in rural areas were less likely to use skilled delivery services. Nigatu and Gelaye (2019) similarly revealed that urban residency increases women's likelihood of using skilled delivery services in Ethiopia. This association between rural-urban residency and utilization of skilled delivery services has been hinted also in studies in Nigeria (Olakunde et al., 2019; Solanke & Rahman, 2018). The low use of skilled delivery services in rural areas, as reported by these studies, could be attributed to the health infrastructure deficit that characterized many rural areas in Africa.

Also, women in the poor and middle wealth categories had lower odds of skilled delivery, compared to those in the rich category. This is so because women from richest wealth quantile are more likely to pay for skilled delivery service, even if it costly, compared with women from poorest wealth quantile. Anderson and Newman (1973) also explained in their framework that women in the rich category are more likely to easily access healthcare compared to those who are in the poor wealth category. In this sense the poor wealth status is a disabling factor to access health facility delivery. In line with this, Dickson and Amu (2017) revealed that women in the richer wealth quantile were more likely to use skilled delivery services than those in the poorest wealth quantile. In Nigeria, Solanke and Rahman (2018), and Olakunde et al. (2019) observed that improvement in wealth positively influences utilization of skilled delivery services. Nyongesa et al. (2018) also found that women who had enough money set aside for delivery were more likely to use skilled delivery services in Kenya. In Guinea Bissau, Yaya et al. (2018) found that richer women were more likely to deliver at a health facility, compared to their poorer counterparts. Mezmur et al. (2017) similarly observed that household wealth was significantly associated with utilization of skilled delivery services. Specifically, women from wealthier households were more likely to use skilled delivery services than those from poorer households. In a similar vein, Fekadu et al. (2019) observed higher likelihood of

skilled delivery utilization among women from the highest wealth quantile, compared to those from the lowest wealth quantile.

The present study also revealed age (predisposing factor) as a determinant of skilled delivery among young women in Ghana. Specifically, women aged 20-24 had higher odds of skilled delivery compared to those aged 15-19. This finding agrees with the findings of previous studies which reported higher odds of facility delivery among older women, compared to younger ones in Ghana (Dapaah & Nachinaab, 2019; Dickson & Amu, 2017) and elsewhere (Mezmur et al., 2017). This finding could be explained with the fact that as women grow, they become gain more experience and become aware of the need for facility delivery. The reason for this finding may also be that women aged 15-19 may give birth out of teenage pregnancy, suggesting that they may not have adequately prepared for the pregnancy. As such, they may face some resource-related difficulties that could prevent them from giving birth in health facilities. However, the finding runs contrary to the finding of Olakunde et al. (2019) that adolescents aged 18 and below were as twice as likely to use skilled delivery services, compared to their counterparts who are above age 18. The differences in study findings could reflect the differences in study settings, as well as methodological differences.

The present study also revealed level of education (predisposing factor) as a determinant of skilled delivery utilization. Specifically, young women with secondary/higher level of education had higher odds of health facility delivery, compared to those with no education. Similar previous studies in Ghana, including Gudu and Addo (2017) also identified a significant association between women's educational attainment and use of skilled delivery services. Studies in other sub-Saharan African countries equally found a significant association between maternal education and skilled delivery utilization. In the context of Nigeria, Solanke and Rahman (2018), for instance, noted that women with higher education were almost six

times more likely to use skilled delivery services, relative to those without formal education. Similar to the findings of Solanke and Rahman (2018), Nyongesa et al. (2018), who focused their study in Kenya, found that women with at least primary level of education were 6.6 times more likely to use skilled delivery than those with no formal education. Similar associations have been revealed in the context of Ethiopia (Ayele et al., 2019; Fekadu et al., 2019).

Also, Christian and Moslem women had higher odds of health facility delivery, compared to those belonging to the traditionalist religion. In Ghana, previous studies have revealed a higher likelihood of skilled delivery utilization among Christian women. For example, Dickson and Amu's (2017) study in northern Ghana revealed that Christians were more likely to use skilled delivery services, compared to adherents of other religions. Similarly, in their study on the predictors of skilled delivery utilization among women in the Garu-Tempane District of Ghana, Ganle et al. (2019) revealed that women who were practitioners of traditional African religion recorded lower odds of skilled delivery utilization, compared with Christian women. A study in Nigeria also revealed a higher likelihood of skilled delivery utilization among Christian women, as compared to members of other faiths (Solanke & Rahman, 2018). The probable reasons for this observation in Ghana is the conservative norms or cultural practices upheld by those belong to the traditionalist religion.

Also, young women with one parity (predisposing factor) had higher odds of health facility delivery, compared to those with parity three or more. This finding is in tandem with the findings of Dickson and Amu's (2017), who reported higher likelihood of skilled delivery utilization among women with parity 1, compared to those with more than one parity. Similar findings have been reported in other SSA countries. For instance, in Nigeria, Solanke and Rahman (2018) and Olakunde et al. (2019) revealed a significant association between parity and skilled delivery utilization. Solanke and Rahman (2018) specifically observed that grand

multiparous women were 48.2 percent less likely to use skilled delivery, compared to primiparous women. Mezmur et al.'s (2018) study in Ethiopia also revealed that women discontinue the use of skilled delivery services, as they join higher parity. The possible reasons for this observation is that women with parity 1 might not have gained enough experience as far as delivery is concerned compared with those who have parity 3 or 4 (Pell et al., 2013).

In relation to NHIS subscription (enabling factor), young women who have subscribed to recorded higher odds of health facility delivery. Some previous studies have also revealed health insurance prescription as a determinant of skilled delivery utilization. Gudu and Addo (2017), for instance, revealed a significant association between health insurance subscription and utilization of skilled delivery in northern Ghana. Similarly, Ganle et al. (2019) revealed health insurance subscription as a significant predictor of utilization of skilled delivery services. These observations suggest that health insurance subscription removes the financial barrier that impede women's use of skilled delivery services, resulting in an increase in skilled delivery utilization among women with health insurance. Thus, it is important to encourage young women in Ghana to enroll on NHIS to enable them use facility delivery.

Finally, young women who indicated that distance to health facility (disabling factor) is not a big problem had higher odds of skilled delivery, compared with those who saw distance as a big problem. In a previous study in northern Ghana by Dickson and Amu (2017), they also revealed that women who saw distance to health facility as a barrier recorded lower likelihood of skilled delivery utilization. Similarly, Ganle et al. (2019) found distance to health facility as a predictor of the uptake of skilled delivery services among women in the Garu-Tempane district of Ghana. In Nigeria and Ethiopia, Solanke and Rahman (2018) and Ayele et al. (2019) observed higher likelihood of skilled delivery utilization among women who were closer to health facilities, compared to their counterparts who were far from health facilities. This

finding suggests the need for attempts to be made to extend skilled delivery services to women living in remote areas which are far from health facilities. This will go a long way to increase the utilization of skilled delivery services among young women in Ghana. This postulation has also been confirmed in the adapted conceptual framework (Figure 1).

5.4 Factors associated with PNC attendance

Compared to women in the Upper West region, women in the Brong Ahafo region, Eastern Region, Central Region, and Western region had lower odds of PNC uptake. Region of residence (environmental factor) was found to be associated with PNC services utilization in Kenya (Akunga et al., 2014). In Nigeria, Somefun and Ibisomi (2016) revealed that the odds of utilizing PNC were higher among residents of the South West, compared with residents of other regions. Sisay et al. (2019) also reported region of residence as a significant determinant of the utilization of PNC services in Ethiopia. Specifically, Sisay et al. (2019) identified three regions with low rates of PNC services utilization: southwestern Ethiopia, southeast Ethiopia, and eastern Ethiopia. A study in Ghana has also reported that residents of Central Region are highly likely to use PNC services, compared with women from Greater Accra, Volta, Eastern, Brong Ahafo, Upper East, and Upper West Regions (Abor et al., 2011). Another study in Ghana (Appiah et al. 2021) also found women in the Central and Greater Accra to have higher odds of PNC utilisaton compared to those in the Western Region.

In terms of education (predisposing factor), those with secondary/higher level of education also had higher odds of PNC attendance compared to those with no education. Generally, previous studies reveal that utilization of PNC services increases with attainment of higher levels of education. Islam and Odland (2011), for instance, revealed a significant association between maternal education and utilization of PNC services in the Mru community in Bangladesh. Akundga et al. (2014) also found that lack of formal education was associated with low use of

PNC services. Their finding is supported findings of a study by Agho et al. (2016), who revealed that, in Nigeria, mothers with low level of formal education were less likely to utilize PNC services. Somefun and Ibisome (2016) corroborates the findings of Agho et al. (2016) that 61% of women who did not use PNC services had no formal education. In Ethiopia, Sisay et al. (2016) reported that women with no education were less likely to utilize PNC services. In a similar vein, Wudineh et al. (2018) revealed that women with at least secondary education were highly likely to utilize PNC services in Ethiopia. This finding is supported by Akibu et al. (2018) and Berhe et al. (2019), who reported that, in Ethiopia, women who had higher education were more likely to utilize PNC services, compared with those with secondary and lower education. Similarly, in Nyanmar, Mon et al. (2018) reported higher likelihood of PNC services utilization among women who had attained secondary of higher levels of education, relative to their counterparts of lower levels of formal education. Studies in Napal (Khanal et al., 2014), Zambia (Bwalya et al., 2017), and Uganda (Ndugga et al., 2020) reported similar findings.

Ethnicity, a predisposing factor is associated with PNC attendance. Specifically, Akans had higher odds of PNC attendance compared to those belonging to Ga/Ewe ethnic groups. Like religion, studies on the relationship between ethnicity and utilization of PNC services have produced conflicting results. On the one hand are those who found no association between religion and the use of PNC services. A case in point is the study by Berhe et al. (2019), who found no association between ethnicity and utilization of PNC services in northern Ethiopia. On the converse, Abor et al. (2011), in their study of the predictors of maternal healthcare utilization among women in Ghana, revealed that ethnicity was a determinant of PNC utilization. Appiah et al. (2021) also found that PNC use was associated with ethnicity. Similarly, Kanté et al. (2015) found ethnicity as a significant predictor of utilization of PNC services in rural districts of Tanzania.

Young women with parity 1 had lower odds of PNC attendance compared to those with parity three or more. Some studies have also reported on the links between parity and use of PNC services among women. A study by Akunga et al. (2014) in Kenya reported a significant association between parity and PNC utilization. This finding is supported by the finding of Wudineh et al. (2018), who reported a significant association between parity and use of PNC services among women in northwest Ethiopia. Similarly, Akibu et al. (2018) found that primiparity was a determinant for attendance of full postnatal care service among women in Northern Shoa, Ethiopia. A study in Nigeria also reported a significant association between parity and utilization of PNC services (Dahiru & Oche, 2015). On the contrary, Sakeah et al. (2018) reported that parity was not associated with utilization of PNC services among women in the Builsa and West Mamprusi districts of Ghana. In addition, Appiah et al., (2021) also did not find statistically significant association between parity and use of PNC services. The possible reasons for the differences in study findings could be the differences in study settings, the study population and the times the studies were conducted. For instance the study by both Appiah et al., (2021) and Sakea eta al.(2018) considered women in their reproductive age while the present study considered only young (15-24years) women.

Finally, young women who are exposed to radio had higher odds of PNC attendance, compared to those who are not exposed to radio. Given that radio is an aspect of mass media, this finding agrees with findings of previous studies and the conceptual framework (Figure 1) that established associations between mass media exposure and PNC services utilization. For instance, in Bangladesh, Islam and Odland (2011) reported that more than half of women who had mass media exposure received PNC, compared to 3.9% of those without mass media exposure. Agho et al. (2016) also noted that non-use of PNC services in Nigeria was associated with women with limited or no access to mass media. In a similar vein, Berhe et al. (2019) found that exposure to mass media (radio, television, and newspaper) was positively associated

with the utilization of PNC services in Northern Ethiopia. In Uganda, Ndugga et al. (2020) reported that access to media messages was significantly associated with PNC utilization. Bwalya et al. (2017) similarly noted that mothers' exposure to mass media significantly predicted their use of PNC services. The results are also contrary to what Appiah et al.,(2021) found on the association between exposure to mass media and PNC. The probable reason for the differences in study findings might be how mass media was captured or measured. For example in Appiah et al's (2021) study, mass media was a composite variable that was created from exposure to either radio, newspaper or Television while this current study considered them separately.

5.5 Strengths and Limitations of the Study

The main strength of the study is the use of relatively large sample. This made it possible to run rigorous statistical analysis. The sample is also nationally representative; therefore, the findings can be generalized to all young women in Ghana. The study also assessed all the three main indicators of maternal health service utilization, thus antenatal care, skilled delivery, and postnatal care. Despite these strengths, some key limitations are not far-fetched. The cross-sectional nature of the data does not allow the drawing of causal interpretations but only associations can be made. The minimum number of ANC visit has been increased to 8 in 2016 by the WHO. However, as of the time the 2014 GDHS was conducted the minimum number was 4 visits. There is also the possibility of social desirability biases and also recall biases. Since this was also a secondary data analysis, only the variables in the dataset were considered.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The findings of this study have led to the following conclusions in relations to the study objectives.

- The study found that there is relatively high utilisation of maternal health services (ANC, skilled delivery and PNC) among young women in Ghana.
- The factors associated with ANC uptake are region of residence, place of residence, wealth status, age, educational level, religion, parity, and distance to health facility.
- The factors associated with health facility delivery are region of residence, place of residence, age, educational level, parity, NHIS subscription, , wealth status, and distance to health facility.
- The factors associated with PNC attendance are region of residence, wealth status, ethnicity, parity and exposure to radio.

6.2 Recommendations

These findings and conclusion have policy and program implications to various stakeholder's health and international organizations in the area of maternal health.

1. Therefore, Ghana Health service, Non-Governmental organisations and all stakeholders seeking to improve the health of young women and women in general should consider educating women on the need to take up maternal health services. This will go a long way to reduce maternal mortality and also improve child health. For example, there is the need for more efforts to educate women in the Western, Central, Eastern , Ashanti, and Brong Ahafo Region on the need to seek PNC services.

2. Also as education was associated with all indices of maternal healthcare, there is the need for investment in female education. This could go a long way to improve maternal health which can also reduce maternal mortality in Ghana.
3. Since distance to health facility was also associated with maternal health service utilization (ANC), it is important that the government of Ghana scale up the CHPS project to various localities and regions which have fewer health facilities.
4. Since wealth status has a strong association with maternal health, there is also the need for empowerment programs for young people to help them afford the basic cost that are associated with maternal health services usage.
5. It is also imperative to conduct further qualitative studies on the challenges young women face in accessing maternal health services. This will provide deeper understanding to the 'whys.

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