Factors influencing utilization of Antenatal care among women of childbearing age in Zimbabwe

A mini-dissertation submitted to the Faculty of Human and Social Sciences in partial fulfilment of the requirements of the degree of Masters of Science in Population Studies, North-West University (Mafikeng Campus)

By

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Declaration

I hereby declare that this mini-dissertation is the result of my own research work towards the award of the Master Social Science in Population studies degree, and that to the best of my knowledge, it contains no material previously published by another person, nor material which had been accepted for the award of any other degree in the university, except where due acknowledgement has been made in the text.

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Dedication

This thesis is dedicated to my daughters Remoneilwe and Kgalalelo.

Acknowledgements

I would like to give all the glory and all the praise to the almighty God who made all this possible. My sincere gratitude to my supervisor, Prof M.E. Palamuleni, for supervising this thesis and for offering direction and encouragement during the entire duration of the research work. You made this journey worthwhile.

I would also like to acknowledge the woman who made me who I am, and who is my role model, my mom. Not forgetting my number one fan, my dad, thank you.

Abstract

Background: maternal, household and institutional factors influencing women's use of antenatal care services in Zimbabwe. This result in women dying to causes related to child birth due to inadequate use of maternal health care service, antenatal care service in particular.

Objectives: The study investigates maternal, household and institutional factors associated with antenatal care service utilization among women in Zimbabwe with the aim of determining the policies which can be advocated in order to improve reproductive public health challenge still causing increased mortality among women during pregnancy and child birth.

Methods: The study used the 2011 Zimbabwe Demographic and Health Survey (ZDHS) in order to achieve the study objective. The study population consists of 9171 women who participated in the study, out of which 4397 of them had an ANC visits. The study used univariate, bivariate and logistic regression to estimate the women's use of ANC in Zimbabwe.

Results: The study found that about 64.9% had at least 4 ANC visits. The study also found that at individual maternal factor, timing of ANC service utilization predicted significantly the reduction of women ANC service utilization in the country (OR=0.03; 95% CI [0.2-0.06], $p < 0.001$). At household level the richest household increased the likelihood of utilizing ANC services (OR=1.45; 95% CI [0.88-1.86], $p < 0.05$), and high quality of health care service delivery was associated with increased likelihood of women's use of ANC services facilities after pregnancy (OR=2.24; 95% CI [1.39-3.61], $p< 0.05$).

Conclusion: Evidence suggests that in order to improve antenatal care service utilization in Zimbabwe, there is a need to implement individual, household and institutional based interventions that would be best to improve maternal health outcome and subsequently improve the state of health among women in the country.

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Acronyms

AI	:	Amnesty International
AIDS	:	Acquired Immunodeficiency Syndrome
ANC	:	Antenatal Care
CI	:	Confidence Interval
DHO	:	District Health Office
DHS	:	Demographic Health Survey
HIV	:	Human Immunodeficiency Virus
ICPD	:	International Conference on Population and Development
MMR	:	Maternal Mortality Ratio
MoHP	:	Ministry of Health and Population
OR	:	Odds Ratio
SSA	:	Sub Saharan Africa
UNICEF	:	United Nations Children Funds
USA	:	United States of America
WHO	:	World Health Organization
ZDHS	:	Zimbabwe Demographic and Health Survey
ZIMSTAT	:	Zimbabwe Statistics

Chapter 1: Introduction

1.0 Background

In recent years, maternal health has become a global priority more especially in developing countries due to increased number of maternal and child mortality during pregnancy, childbirth and after giving birth to life (World Health Organization[WHO], 2015). For instance, in 2015 alone, over 349,000 women died and their global life time risk of dying to causes related to pregnancy and child birth was 1 in every 180 women (WHO, 2015). According to Global Observatory data (2015), majority of the women at risk of dying could have been on the decrease if and only if majority of them were served in health care facilities with skilled health care services at prenatal, childbirth and postnatal facilities (Global Observatory, 2016). Yet in most developing countries, recent reports indicate that the challenges of unmet antenatal care services which prevent women from using such facilities to reduce the risk of dying during this process of giving birth to life exist (World Bank, 2016).

At the regional level, sub Saharan African region is reported to have the higher risk of dying among women. In 2015, about 201,000 (66%) of the global maternal death was from the region (World Health Organization, 2015). It is important to note that within the region substantial differences exist in as far as health care investment is concerned which affect maternal health outcome (Borghi et al.,2006; Fillipi et al., 2006). With this development, some countries have been reported to be on the remarkable progress based on 2015 maternal mortality audit, with others reported to be making no remarkable progress in reducing maternal mortality level (World Health Organization, 2015).

The countries that have made a remarkable progress include Mozambique, Morocco, Tanzania, and Zambia whereas Zimbabwe, Swaziland and Malawi have not made progress (World Health Organization, 2015). Yet over time, different initiatives have been suggested to be implemented in order to enhance quality of maternal health outcome through health care institutions. For example, in 1994 the International Conference on Population and Development (ICPD) and the 1995 World Women Conference –Beijing Conference- advocated for countries to promote and equip primary health care services in order to ensure that women's reproductive health is well supported to reduce the worst maternal health outcome affecting most developing countries, Zimbabwe included.

In view of the maternal health challenge, more supportive initiatives were made in the Abuja Declaration which requested every country to allocate at most 15% of the national annual budget to support health care initiatives (World Health Organization, 2010).

Yet, little is known as to how much of this investment was appropriated to support reproductive health. It is therefore sad to say that the majority of the women who are dying of pregnancy and childbirth related conditions, with direct causes such as hypertensive disorder, haemorrhage, bold pressure and other chronic heart diseases can be prevented if the initial record of women's health is noted at primary health care facilities, during antenatal care services facilities.

For example, in Zimbabwe, the rate of death of women to causes related to child birth has been moving at the slow pace and has remained high over the past decades. According to the World Health Organization (WHO), the country's Maternal Mortality Ratio (MMR) stood at 443 deaths per 1000 000 live births in 2015 from 440 in 1990 (World Health Organization, 2015). This implies that the country has stagnated for a long period and women are continuing to die as reproductive health remains a major public health challenge in the

country. As a signatory of many international declarations such as ICPD 1994, Beijing Women Conference 1995 and Abuja health care financial investments 2002, the country's maternal health outcome would have been improved from the present case if and only if the health care facilities were equipped from the primary health care to the referrals to meet all maternal health needs and maternal health to reap the dividends thereof.

Studies that have tried to explore women issues only concentrated on maternal mortality causes and took a general approach on the subject matter instead of investigating the facility based factors that influence women use of maternal health care facilities and their subsequent effect on maternal mortality in general (Zahr et al., 2004; Hogan et al., 2010;Koblinsky et al., 2003). As such, afresh call to investigate the determinants of antenatal care services in order to understand the maternal, household and institutional factors affecting women use of the health care services is paramount if and only if we can try to suggest better maternal, household and institutional based factors aimed at reducing Zimbabwean maternal public health challenges.

It is therefore imperative to note that despite many initiatives and interventions aimed at improving reproductive health statuses of women, maternal mortality is still high in Zimbabwe. It is because of this background that this present study anticipated to explore determinants of antenatal care service facilities from maternal, household and institutional perspectives in order to identify which factors are affecting women and increase their vulnerability and risk of dying due to their association with antenatal care service delivery. As such the study is paramount because it would assist to understand some of factors influencing women use of antenatal care services in the country. Such information is significant in redirecting health care policies and important to enhance maternal health

welfare in the country in general in a quest of reducing maternal mortality rate to as low as 100 deaths per 100 000 live births.

As the study adopts a secondary approach, ethical clearance and issues of consent agreement was sort at the time the data were collected by ICF and Macro International and the Zimbabwe Statistics (ZIMSTAT). Therefore, it is important to note the data that was used for the analysis was requested from the ICF and Macro International who provided authenticity to allow the researcher to download the data from their website (www.measuredhs.com) upon the researcher's agreeing to some ethical requirements.

1.1 Problem Statement

Maternal Mortality rate is one of the highest causes of deaths among women and this could have been controlled if and only if women do use health care facilities during their pregnancy period wholesomely. For instance, the maternal mortality ratio for the rural setting was 168 per 100 000 live births and that for the urban setting was 85 per 100 000 live births. For the rural setting, the major direct causes of death were haemorrhage (24.8%), abortion complications (15.2%), puerperal sepsis (13.3%), and eclampsia (4.8%). For the urban setting they were eclampsia (26.2%), abortion complications (23.0%), puerperal sepsis (14.8%) and haemorrhage (9.8%).These consequently affect society and family as the women who die are withdrawn participating in the socio-economic development of the country. It is therefore imperative to study which maternal, household and health care factors are associated with women ANC service utilization and in the long term provide a better solution that would improve maternal mortality challenge in the country.

Appropriate and timely antenatal care plays an important role in improving maternal and child health, and preventing maternal deaths (Amnesty International, 2014). Antenatal care aims to detect and treat existing health problems and to screen for complications that may develop in the pregnancy (Amnesty International, 2014). The World Health Organization (WHO) recommends a minimum of four antenatal care visits, starting in the first 12 weeks of

pregnancy (WHO, 2008). Antenatal care is also an opportunity to provide vital health information to women and girls relating to lifestyle risks and to offer social support and counselling. It connects them with the health system, leading to an increased likelihood of delivery with a skilled birth attendant and continuing care after the baby is born. Therefore an understanding of the underlying factors affecting women use of antenatal care is imperative and requires further scrutiny if health care service use among women is to improvement.

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1.3 Study Objectives

1.3.1 General Objective

The study's main objective is to explore the factors influencing utilization of Antenatal care/services among women of childbearing age in Zimbabwe.

1.3.2 Specific objectives

The following are the specific objectives;

a) To investigate maternal factors influencing women use of antenatal care (ANC) in Zimbabwe.

b) To explore which household factors related to women use of ANC service utilization in Zimbabwe.
c) To examine institutional determinants associated with women use of ANC service in Zimbabwe.

1.4 Research questions

In order to achieve the aforementioned specific objectives, the following research questions will apply:

a) What maternal factors do influence women's use of antenatal care (ANC) in Zimbabwe?
b) Which household factors are related to women's use of ANC service utilization in Zimbabwe?
c) To what extent is the institutional factors associated with women's use of ANC service in Zimbabwe?

1.5. Significance of the Study

The study focused on the utilization of antenatal care services by child bearing women in Zimbabwe. This assisted in identifying factors affecting women use of maternal health care services in Zimbabwe. It is hoped the findings are significant in suggesting the best feasible interventions aimed at improving maternal health care services, more specifically, antenatal care services from the perspective of maternal, household and institutional factors. From the findings of this study, some of the hidden factors that are causing problems regarding maternal health care services to increase in Zimbabwe despite the country reported to have an improvement in women use of health care service are known.

Additionally, knowledge that is to acquired following the study may assist significantly in redirecting health planners in Zimbabwe to address others factors affecting women use of

ANC services in the country and thus devise mechanisms that would improve women's and children health status in the district and beyond. For instance, the District Health Office (DHO) might acquire insights with regard to the utilization of health care services by mothers and children in the district and using support from the Ministry of Health (MoHP) initiate further health care research in order scale-up health challenges associated with mothers and child health in the country.

1.6 Layout of the dissertation

The mini-dissertation is divided into five chapters. Chapter 1 deals with the introduction: background of the study, the statement of the problem, rationale of the study, objectives and hypothesis. Chapter 2 presents the literature review and conceptual framework. Chapter 3 describes the setting of the study and the methodology used in the study. Chapter 4 is the presentation of the findings of the study. Lastly, chapter 5 discusses the findings before presenting the conclusion and recommendation.

Chapter Two: Literature Review

2.1 Introduction

This chapter presents literature review of the antenatal care service utilization across countries around the world, Zimbabwe included. Additionally, the chapter systematically presents scholarly debates/discussions on the determinants of ANC around the world from individual, household and institutional based perspectives.

2.1 Antenatal Care Utilization

Around the world, despite reported increase in the rate of antenatal care service utilization among the women before childbirth, disparities due to the lifetime risk of dying due to pregnancy and child birth across regions still exists. For instance, as the world women use of skilled antenatal care service stood at 85% in 2015, still 1 in 180 women are still experiencing a risk of maternal death to causes related to pregnancy and childbirths (UNICEF, 2016; WHO, 2016).

However, the problem is reported to be great in sub-Saharan Africa. Recent reports indicated that despite improvement in ANC service utilization at a global scale, only 49% of the women have skilled prenatal care service access yet majority of the women are still exposed and are at the risk of maternal death as in every 1 in 36 pregnant woman are still dying to causes related to pregnancy and childbirth.

In Zimbabwe, recent studies reported the country's skilled ANC utilization rate among the women at 61.9% (ZIMSTAT & ICF Macro, 2011). This implies that over 50% of the women try to seek maternal health care in a quest of improving their reproductive health well-being (ZIMSTAT & ICF Macro, 2011). Yet, despite this development, the country's maternal

mortality levels remained as high as 443 deaths per 100 000 live births in 2015. This means that there might be a missing link between the quality of ANC service delivery across the country's health care facilities and the quality of maternal health outcome, because of this inverse relationship between improved ANC service utilization among women and worst maternal health outcome experience. Therefore the study anticipates to explore determinants of ANC service from Individual, household and institutional based perspective cannot be overemphasized.

2.2 Individual factors and ANC utilization

There are many factors that are associated with ANC utilisation. Some of these factors can be categorised as timing of maternal services and demographic and socio-economic characteristics of the individual.

2.2.1 Timing of maternal service and ANC service use

ANC timing initiation among women has been shown to be one of the perspectives to have affected the quality of maternal health care among women in most developing countries. Agha and Tappis (2016) argued that the delay initiating the timing of ANC service utilization among women disadvantages them in the content of ANC care that they are meant to receive, a development which contribute negatively to the quality of maternal health outcome in Pakistan.

It is important to note that despite the call to encourage women to timely initiate ANC service utilization immediately after conception, previous studies indicate that women delay towards early initiation of ANC after conceptions are attributed to inadequate informed knowledge regarding the significance of early ANC initiation, inability to access health care facilities and

other individual factors (Andrew et al., 2014; Manzi et al., 2014; Finlayson et al., 2013). It is therefore important to explore in the context of Zimbabwe the effect of timing choices among women, once conceived, on ANC service use in the country.

2.2.2 Maternal age and ANC service use among women

Studies around the world have postulated that Maternal age has a direct effect in increased maternal morbidity and mortality, a factor that is catalysed by the age at which the woman conceive and gives birth. For instance, Creanga et al. (2015) study investigated pregnancy-related mortality among women using Pregnancy Mortality Surveillance systems. The study found that pregnancy related mortality got worse and increased among women the higher the age.

Previous studies argued that as the women are becoming of age and desire to continue to give birth, their lifetime maternal death risk increases due to pregnancy induced diseases such as diabetes (Albrecht et al., 2010), hypertensive disorder (Andrees et al., 2014; Kuklina et al., 2009), chronic heart diseases and severe obstetric morbidity and pregnancy related obesity (Andrees et al., 2014).

In another systematic review of inequalities on preventive measures that affect women use of maternal health care services in developing countries, Say et al. (2007) and Simkanda et al. (2008) echoed that maternal age is the major predictor influencing maternal health care services in most developing countries. According to Manzi et al. (2014) individual related factors such as inadequate knowledge among women about when to use the services, other individual challenges affecting either the women in general do exist (Simkanda et al., 2014).

It is therefore imperative to explore the influence of age and envisage its extent to determine ANC service utilization among women in Zimbabwe.

2.2.3 Maternal Education and ANC service utilization

Studies in developing countries have observed and reiterated that women education is significant in making them understand their health condition and thereby foster them to seek maternal health services, more importantly during pregnancy and child birth (Ahmed et al., 2010). A study by the World Health organization (2007) indicated that adequate education to women provide a competitive advantage among them to understand the significance of health care services in general. It is through education that women get to know some of the physiological changes that are taking place in their body during pregnancy take precautionary actions to either self-treat themselves or seek skilled institutional base health care services outside their homestead (Campbell et al., 2006; Koblinsky et al., 2006). In another aspect, when women are education their choice of health care service choices improve due to the availability of not only the information about their health, but also an empowerment that can acquire improved and quality of maternal care than their counterparts without no education (Ahmed et al.,2010; Borghi et al., 2006). In Zimbabwe, a study found that educated women up to secondary education have the likelihood of increasing their maternal health care service utilization (Manzambani et al., 2012).

However, such studies failed to account for the status of use of maternal health care services, more specifically antenatal care services among women with incomplete primary and secondary school education in order to suggest mechanisms and intervention aimed at promoting their health care outcome through antenatal care service facilities. It is therefore important that there be a for the continued exploration of the effect of education on maternal

health care services even using the same data set, that is, Zimbabwe Demographic and Health survey.

2.3 Household Factors and ANC utilization

There are household factors that are associated with the utilisation of antenatal care. Some of these household factors are wealth status, permission to seek health care and exposure to media

2.3.1 Wealth and ANC service utilization

Kumar Rai et al. (2008) observed that wealth quintile is the major predictor of maternal health care services utilization in Nigeria. The study found that women that were financial stable they were likely to use modern health care facilities regardless of the cost and other quality barriers. According Simkanda and Gabrysch et al. (2009) financial stability among women despite of their place of residence motivate them to seek their own health and in the long term realize a stable and health dividends from their socio-health perspectives. Therefore, in the current study anticipate to hypothesis the wealth quintile, a household indicator, and its relationship in influencing women use of antenatal care services in Zimbabwe after controlling for other factors such as institutional factors.

2.3.2 Permission to seek health care

Autonomy has been defined as the capacity to manipulate one's personal environment through control over resources and information in order to make decisions about one's own concerns or about close family members. Women's autonomy thus can be conceptualized as their ability to determine events in their lives, even though men and other women may be opposed to their wishes (Bloom et.al 2001, p. 68). The influence of women's autonomy on the use of health care appears to be as important as other known determinants such as education. Dimensions of autonomy such as freedom of movement, decision making power and control over finance can exert a strong influence over service use and service choice in South Asian setting (Bloom et. al 2006). In a North Indian City, women's autonomy, as measured by the extent of a women's freedom of movement, appears to be a major determinant of maternal health care utilization among the poor to middle income women (Bloom et.al, 2001).

2.3.3 Exposure to media and antenatal care service utilization

Grey et al. (2005) highlighted that early exposure to wide range of maternal information among women regardless of the channel, have an impetus to affect positive the health seeking practice among women. According to World Health Organization (2007), women exposure to all sorts of media in lieu of improving reproductive health style provide a bridge communicate, more especially among women who have never heard anything about modern health seeking practice. This is because it is through the media that other health campaigns are advocated and provide educative programmes among women that are significant to ensure that their reproductive health in general is improved. Therefore the study of the effect on media and its influence on reproductive health behaviours cannot be

overstated. This is going to be paramount to assess the quality of health information that the media disseminates and its consequences' on women use of antenatal care services during pregnancy period in Zimbabwe.

2.4 Institutional factors and ANC utilization

2.4.1 Distance to health facility

Place of residence (rural/urban) may also affect the utilization of ANC services. According to Abor and Abekah Nkrumah et al. (2011) urban dwellers may be relatively closer to healthcare facilities than rural dwellers in most developing countries Abor and Abekah-Nkrumah et al. (2011). Overbosch et al. (2004), reports that "*currently, more than a third of the rural women have to travel more than 5 km to the modern provider of ANC*" in Ghana. Thus, accessibility to health care services may be much easier for the urban dwellers than the rural dwellers, thereby increasing the probability of an expectant mother in the urban centre using ANC compared to her rural counterpart.

Celik and Hotchkiss 2000, Navaneetham and Dharmalingam 2006 and Abor and Abekah-Nkrumah (2011) are some studies that have concluded that differential access to health care facilities between the rural and urban centres reduced utilization of maternal health care services for the rural dwellers. Closely related to this is the distance to the health facility and transportation problems one may encounter in accessing health services. Thus, these can greatly hinder the utilization of the ANC services since they serve to discourage the expectant mother who may have to travel along bad road networks or may have to travel for long distance before being able to access a health centre for ANC. Even if the mother does it the

first time, further visits may be hindered due to the struggle to get to the health facility, thereby reducing adequate utilization.

2.4.2 Quality of maternal health care

Good care during pregnancy is important for the health of the mother and the development of the unborn baby. Pregnancy is a crucial time to promote healthy behaviours and parenting skills. Good ANC links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle. Inadequate care during this time breaks a critical link in the continuum of care, and affects both women and babies (WHO, 2002).

Preventing problems for mothers and babies depends on an operational continuum of care with accessible, high quality care before and during pregnancy, childbirth, and the postnatal period. It also depends on the support available to help pregnant women reach services, particularly when complications occur. An important element in this continuum of care is effective ANC. The goal of the ANC package is to prepare for birth and parenthood as well as prevent, detect, alleviate, or manage the three types of health problems during pregnancy that affect mothers and babies.

2.4.3 Challenges due to health care support

In most developed countries study of health insurance and its significance to improve maternal health care service utilization and outcome have been explored. For instance, Ghandour et al.,(2015) indicates that health insurance provide a better advantage among women to choice health care of their choice and thereby improve both their maternal health

outcome and that of their infant. Secondly, it is the health insurance those assists women with adverse birth outcome utilize the services wholeheartedly and utilize improve the quality of life (Grey et al., 2005; Karaca-Mandic et al., 2013). Yet more studies on the contribution of health insurance more especially on maternal health care ANC utilization have been deathly investigated across many countries both developed and developing countries, Zimbabwe included. As such the current study hypothesized the relationship of health care support among women in the form of health care insurance and its contribution to their choice of ANC utilization in Zimbabwe.

2.5 Determinants of Antenatal Care

2.5.1 ANC service Utilization

Over time different studies have been using frequency of ANC to measure ANC utilization among women (Zeine et al.2010; Villar et al., 2002; Dairo et al., 2010). In this study is to adopt the same approach to estimate use of ANC in Zimbabwe.

2.5.2 Timing of ANC visits

Timing of ANC use has been viewed as an important indicator in women use of ANC service despite the studies measuring timing of ANC as an outcome variable (Exavery et al., 2013; Gross et al., 2012).However the studies did not check the relationship between ANC service utilization and timing of ANC use among women and this study hypothesized the effect of timing of ANC on women use of ANC services and thus used this variable.

2.5.3 Maternal age

Ages is an important indicator in the measure in demography and population studies and have been adopted over time (Simkanda et al., 2008; Iyaniwira et al., 2009). Therefore, hypothesizing of age in this current study on its influence on ANC service utilization cannot be over stated.

2.5.4 Education status

Education and use of maternal care, the notion of hypothesizing completion and incompletion status of education and its influence of health care service use among women has been completely neglected (Simkanda et al2008; Tura,2009). This study therefore chose this variable to test the how education and women use of ANC relate by understanding their completion status of their education.

2.5.5 Wealth quintile

The study of wealth and its relationship on health care service utilization cannot be understated. It is because wealth status is a source of better choices in terms of quality of care, quality nutrition and better well-being in general (Gabrysch et al., 2008; Schempf *et al.*, 2007; Simkanda *et al*., 2008). Therefore, continuous study of wealth and health care use among women is important. As such this study chose to replicate this hypothesis in Zimbabwe.

2.5.6 Permission to seek health care

Women autonomy has been neglected overtime among many scholars in as far as hypothesizing maternal health care services (ANC utilization) is concerned (Exavery et al.,2013;Gabrysch et al., 2008). This study therefore included this variable to test the how women autonomy estimate women use of ANC services in Zimbabwe.

2.5.7 Media exposure

The need to explore the role of media and its impact on maternal health seeking behaviours has been found to be dearthly investigated overtime (Simkanda, 2008). Therefore, the current study generated a composite media exposure indicator to test effect of media on ANC usage among women in Zimbabwe

2.5.8 Household health care insurance

The study of the contribution of health insurance and its effect on ANC services had been neglected and deathly discussed over time. The study therefore hypothesized how ability to have health care insurance affected women use of ANC services in the country.

2.5.9 Nurse and midwives

Over time, the availability of health care services at the health care facility was associated with increased utilization of the services among women (Mrisho, 2009). This consequently affects quality care services and subsequent health outcome. In the present study, skilled health care (nurses and Midwives) were hypothesized in order to assess their influence on ANC use among women in Zimbabwe.

2.5.10 Community nurse

Further to this the study anticipated to explore the influence of community nurses and ANC services use. As majority of the women predominantly rural, the study examined the association of such community nurses in informing women use of ANC services.

2.5.11 Traditional Birth Attendants

The use of Traditional Birth Attendant by women has been a cultural phenomenon despite calls to discourage women use of the services due worse health care outcome (Sialubanje *et al.,* 2015; Sibley *et al.*2004). The study hypothesized to test the role if Traditional birth attendants towards women use of ANC service in Zimbabwe.

2.5.12 Distance to health facility

Gabrysch (2008) observed that women still have distance barriers to access maternal health care services in most developing countries. Gage (2006) indicated that in Mali women with distance challenge prefer alternative home based care over institutional based counterpart. As such, the current study explored how distance influences women use of ANC services in the country.

2.5.13 Quality of care

Quality of care has been indicated over time to be the major factors that have a bearing on the quality of health care services among people, women included (WHO, 2010). Therefore, the current study computed the quality of care index from different maternal health care services in order to see how quality of ANC care affects women choice to use the service in Zimbabwe.

2.6 Theoretical aspects of the study

The study adopted the "*Three Delays Model*" model used to assess women use of maternal health care service use. The model describe the delay to seek identify the ill-health condition by the women, delay in seeking health and delay by the health care facilities in providing the requisite on demand health care service when the women is within the health care facilities seeking maternal health services. A summary below illustrates the delay factors;

1. Delay in *decision* to seek care due to;

- The low status of women
- Poor understanding of complications and risk factors in pregnancy and when to seek medical help
- Previous poor experience of health care
- Acceptance of maternal death
- Financial implications

2 Delay in *reaching* care due to;

- Distance to health centres and hospitals
- Availability of and cost of transportation
- Poor roads and infrastructure
- Geography e.g. mountainous terrain, rivers

3. Delay in *receiving adequate health care* due to;

- Poor facilities and lack of medical supplies
- Inadequately trained and poorly motivated medical staff
- Inadequate referral systems.

Therefore this current study is to use this delayed to highlight and defined some of the variables that are affecting women in seeking maternal health care services, more especially, antenatal care services facilities in Zimbabwe. Such delay variables include: maternal factors delays, household factor delays and health institutions delays.

2.6.1 Application of the *model* in the study

This study will address Factors influencing utilization of Antenatal Care among women in Zimbabwe. Secondary data will be used to do analysis that explains maternal and health care factors relate to the women use of antenatal care service in Zimbabwe.

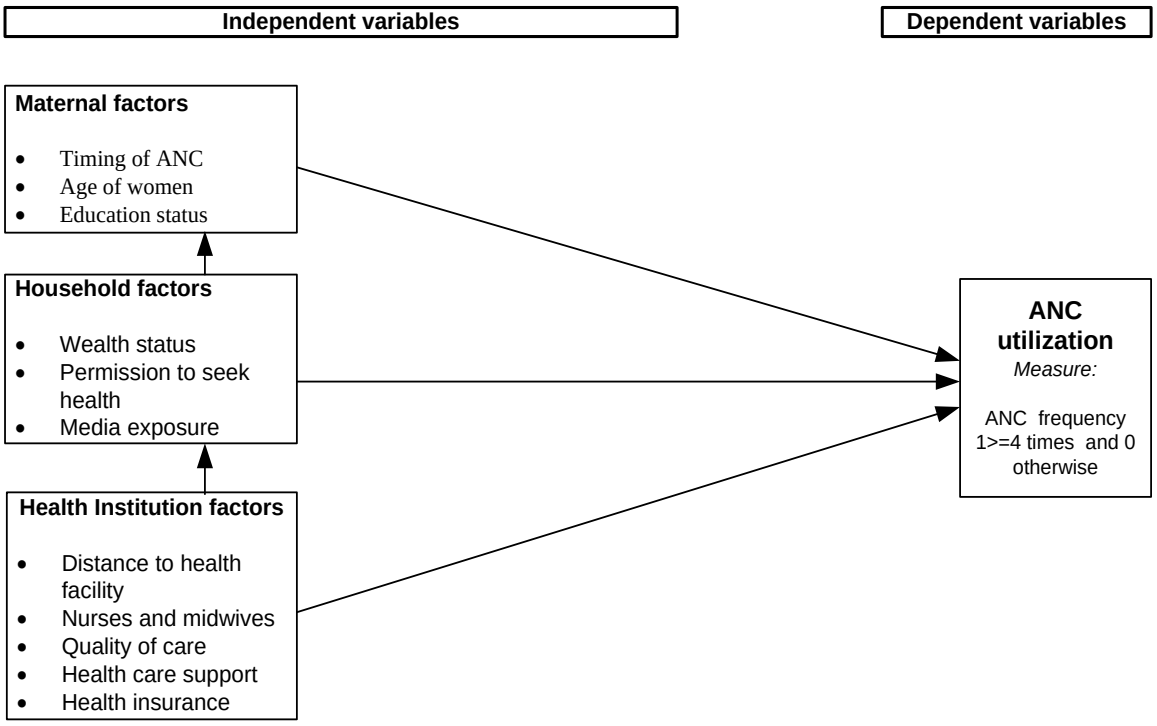

Figure 1 Conceptual framework: individual, household and institutional factors and ANC service utilization relationship

The conceptual framework presents an association between the individual maternal factors, household and institutional factors and ANC service utilization among women in Zimbabwe. Based on the model m ANC service utilization is influenced by individual maternal factors, individual maternal factors controlling for household factors and health care institutional factors in turn.

2.7 Chapter summary

The chapter discussed the literature from different sources around the world on the determinants of ANC services, however there are scanty studies which have over time explored the combination of maternal health, household and institutional factors with lower level indicators as illustrated in the conceptual framework across many countries, Zimbabwe included. This indicated that there is need to hypotheses other dimension that are contributing to an inverse relationship between maternal mortality and ANC service utilization in the sub Saharan Africa, using Zimbabwe as a study case in particular. In the succeeding chapter, research methodology is presented to explain how analytical process used to answer research questions was addressed.

Chapter Three: Methodology

3.1 Introduction

The chapter presents the research methodology that was used to answer research questions that the study presented. The chapter describes the study settings; data source, sampling technique and sampling selection; study design; variables, definition, measures and justification; analytical procedures; data quality; ethical consideration are presented.

3.2 Study Settings

The study was set to be conducted in Zimbabwe. In 2016, the country's total population reached 16, 034, 911 with an annual growth rate of 2.2% (World Bank, 2016). The country has a boundary with Zambia in the North, Botswana in the South west, and South Africa in the south and Mozambique in the east. On the same note, it is important to note that the countries health care expenditure public reduced greatly from 62.3% in 2000 to a record as lows as 7.4% in 2008 and gradually picked to 41.5% in 2012 and gradually decreasing to 38.3% in 2014 (World Bank, 2016).

On the same note, the majority of the people are earning less than a dollar a day with economic inequality between the urban and rural being high. In terms of maternal mortality reduction, the country have been stagnated from about 440 deaths per 100 000 live births in 1990 to about 443 deaths per 100 000 live births in 2015 (World Bank, 2016), which defined the countries maternal mortality reduction efforts futile.

3.3 Data, sampling technique and sampling selection criteria

The study used data from 2010 Zimbabwe Demographic and Health Survey (ZDHS). The ZDHS is the recent data that the country is currently having which collected data from about women from an array of mortality, fertility, HIV and AIDS, violence against women among others which the study used to test its objectives. The sampling design that was used to collect data was a stratified single stage cluster with unequal sampling probabilities. A sample of 9171 women was sampled out of which 4397 women were reported to have used antenatal care services in the country and become the study sample. Out of this study sample, about 65% of the women, a total of 2859 had at least 4 times ANC visits after conception of their pregnancy.

3.4 Study Design

The study adopted a quantitative study design in which a secondary data collected from ICF and Macro International in order to estimate the determinants of ANC service utilization among women in Zimbabwe.

3.5 Variables, definition and measures

The variables of interest for this study were obtained from the individual women questionnaire.

3.5.1 Dependent Variable

The dependent variable was defined based on the frequency of using antenatal care service during pregnancy. Women were asked *"How many times did you visit antenatal care during your pregnancy, M14_1*. As a count variable, women reported a range of 0 to higher.

In this study, based on World Health Organisation (2002) recommendation that women should have at least 4 ANC visits during pregnancy, the variable ANC visits was dichotomised as follows: if the woman has attended more than 4 ANC during her pregnancy period is defined as "better" maternal health seekers and was assigned 1 whereas those that are on the contrary "worst" maternal health seekers and were assigned 0.

3.5.2 Independent Variables

A total of twelve (12) independent variables were used in the analyses: Age of respondent, Region, Ethnicity, Highest educational level, knowledge of any method, ever use of any method, marital status, and sex of head of household, currently pregnant. The variables selected in this investigation are those that are frequently used for the analysis of determinants of antenatal utilisation. All the independent variables were obtained from the section on participant's background characteristics.

Table 3.1 illustrates the variables, measures, definition as was used in the study

(1)	(2)	(3)
Variable	**Definition**	**Measure**
Dependent variables		
ANC service Utilization	The frequency that the women had in accessing ANC services after conception	It is measured by; 1 = ANC visits >=4; 0 = ANC visits < 0
Explanatory Variables		
Individual Factors		
Timing of ANC visits	This measure the times that the women chose to use the ANC facility after conception	This is measured by: 1 = < 3 months, 2 = 3-5 months; 3 = 6 and higher
Maternal age	This defined the age of the mother	Measured by 1 = "14-24" 2 = "25-34" 3 = "35+"
Education status	This defined the education attainment of the women	Measured by: 0 = no education

		1= incomplete primary 2- complete primary 3= incomplete secondary 4= complete secondary or higher
Household Factors		
Wealth quintile	This measure the wealth status of the household	Measured by: 1= if household is poorest 2 = poor 3 = middle income 4 = rich 5 = richest
Permission to seek health care	This defined the ability of the woman to be autonomy in seeking her maternal health care services with or without the consent of spouse	It is measure by: 1 = problem 0 = no problem
Media exposure	This defines the time ability of the houses hold to access reproductive health information from the from two principle media which is radio and television	This is measured by: 0 = neither radio nor television; 1 = either a radio or a television; 2 = radio and television;
Household health care insurance	This measure the ability of the household in having health care insurance to support their maternal health care services	It is measure by: 0 = No, if they don't have insurance. 1=Yes, if they have insurance
Health institution factors		
Nurse and midwives	This defined health care provider who assist the woman at the time they visited the health facility, in this case, nurse and midwives	This is measure by : 0 = No, if not available. 1 = Yes, if available.
Community nurse	This defines health care provider who assist the woman at the time they visited the health facility, in this case, community nurse	0 = No , if not available 1 = Yes, if available.
Traditional Birth Attendants	This defines a health care provider who assists the woman at the time they visited the health facility, in this case, Traditional Birth Attendant.	It is measured by: 0 = No, if not available. 1 = Yes, if available.
Distance to health facility	This defines challenge to distance that women have in accessing the health service	0 = problem 1 = no problem

	facility.	
Quality of care	This defines the quality of care that the women get upon arrival and the health care facility. This is a composite variable that is derived using *Principle component analysis* of for factors, blood tested, complication of the pregnancy measure and told, urine tested, and vaccination given	It is measured by : 1 = low quality of care; below 30% of expected care; 2 = moderate care; 3= high quality care;

3.6 Analytical Procedures

The study used three approached to analyze data and these are univariate analysis, bivariate analysis and multivariate analysis. The succeeding section discusses the approaches.

3.6.1 Univariate analysis

The study used descriptive statistics to present frequency and percentage distribution of the background characteristics of the respondents. The results are presented in a table.

3.6.2 Bivariate analysis

Analysis of variable was performed to measure the association between each independent variable and dependent variable. In this case, the measure of association was tested using Pearson's Chi-square. The p – values at 1%, 5% and 10% were used to test the significance of the association coefficient.

3.6.3 Multivariate analysis

Using ANC which is a binary variable measured as 1 for women use of ANC for at least 4 times and 0 otherwise, the study used a binary logistic regression models to estimate the determinants influencing women use of ANC services at individual, household and health institutional level.

The equation presents the logistic regression model:

$$\log\{pr(\rho = 1|x_i, \varepsilon)\} = \beta_1 x_1 + \cdots + \beta_1 x_1 + \sum_{i=0}^{3} \pi_i + \varepsilon \quad \ldots (I)$$

where in this care ρ is the likelihood of the women of using the ANC services after pregnancy, β_i (is a vector of independent variables Odds Ratio estimating individual, household and health institutional factors π_i is a function denoting control variables and ε is the stochastic error term.

Therefore, based on this logistic Regression model expression, the study adopted a nested simulation approach in which maternal individual factors were iterated first to generate Model 1. Secondly, Model 2 was simulated using maternal determinants controlling for their household factors, Model 3 and household factors controlling for health personnel access factors to estimate the ANC utilization. Model 4 is the aggregate model comprising of maternal, household factors, health personnel access factors and institutional factors to women use of ANC service utilization.

3.7 Data quality

The data used in this study was a secondary data which in terms of quality such data are able to meet data quality check. According to Randall and Coast (2016) who tested quality of different dataset such as Demographic and Health Survey data (DHS), found that the Zimbabwe demographic and Health Survey was fairly accurate and feasible for any further analysis. As such the present study used DHS data in order to test factors affecting women use of antenatal care services in Zimbabwe due to its quality. This is because according to Randal and Coast (2016), such datasets as Zimbabwe Demographic and Health Survey belongs to the class of datasets with fewer errors and are feasible for further scrutiny.

3.8 Summary of the chapter

The chapter presented the research methodology used to acquire data and analysis in order to meet the study objective. The succeeding chapter presents the findings, interpretation and discussion.

Chapter Four: Results and Discussions

4.1 Introduction

This chapter presents the results of the research question that investigated the determinants associated with antenatal care service utilization in Zimbabwe using 2010 Zimbabwe Demographic and Health Survey dataset. The chapter consists of three main sections. The first section, Section 4.2, describes relevant characteristics of the study population. The second section, section 4.3 presents the relationship between ANC utilization and background variables. Lastly, in section 4.5 Logistic regressions were used to estimate the odds of having at least four ANC visits given their demographic and socio-economic characteristics.

4.2 Background characteristics of the study population

The study explored the background characteristics of the study respondents that were pregnant three years prior to the survey and were asked to respondent on their ANC utilization frequency in Zimbabwe. The study found that in terms of timing of the ANC, the highest proportion of the women (56.13%) had ANC utilization between 3-5 months whereas only 3.5% of the women were early users of ANC within a period of less than 3 months after conception.

In terms of the age of the respondents it was observed that the highest proportion of the women that used ANC were aged between 25-34 years.

In another aspect, it was noted that women that had an incomplete status in as far as secondary education was concerned represented 62.40% and out of these women 1.84% had no education.

On wealth status, it was found that the richest represented about 16.80% whereas the poor had the highest proportion at 23.13%. On another aspect, the study found that women autonomy to seek ANC services after conception stood at 90.60%. In terms of media exposure, the study found that the household that had neither a radio nor television represented the highest proportion and were 47.30%.

Regarding the challenges to health insurance, majority of the respondents did not have health insurance and were represented by 95.70%. On the same note; the women that had no access to health care providers such as midwives, community nurses and traditional birth attendants represented about 70.10%, 54.00% and 87.00% respectively. Furthermore, the study found that women that had challenges due to distance to access maternal health care services represented a proportion of 39.90%. On the quality of ANC services, it was found that 54.95% of the women reported to experience low quality of care ANC services whereas those that experienced high quality of care were 2.89%.

Table 4.1 Background characteristics of the study population

Total Number	4397	Percentage (%)
Maternal Individual factors		
Timing of ANC visits		
<3 months	154	3.50
3 to 5 months	2468	56.13
6 months or higher	1775	40.37
Age of Woman		
15-24	1592	36.21
25-34	2073	47.15
35+	732	16.65
Education		
No education	81	1.84
incomplete primary	524	11.92
complete primary	875	19.90
incomplete secondary	2744	62.41
complete secondary or higher	173	3.93
Household Factors		
Wealth		
Poorest	1017	23.13
Poorest	885	20.13
Middle	790	17.97
Rich	965	21.95
Richest	740	16.83
Permission to seek health		
Problem	399	9.07
no problem	3998	90.93
Exposure to media		
neither radio nor television	2080	47.30
either radio or television	1429	32.50
radio and television	888	20.20
challenge due to health insurance		
No	232	5.28
Yes	4165	94.72
Health Institutional factors		
Healthcare personnel		
Nurse /midwives		
No	3083	70.12
Yes	1314	29.88
Community nurse		
No	2400	54.58
Yes	1997	45.42
Traditional birth attendant		
No	3841	87.36
Yes	556	12.64
Distance to facility		
Yes	1754	39.90
No	2643	60.11
Quality of care		
Low	127	2.89
Medium	1854	42.17
High	2416	54.95

4.3 Bivariate results: measure of association between the explanatory variables and ANC service utilization

Table 4.2 presents the chi-square coefficients denoting the measure of association between the variables. As is indicated in the table, timing of ANC visits, age of woman, education status, wealth quintile, exposure to media, challenges due to health insurance inaccessible to support health care, at the house, availability of the health care providers and quality of care were significantly associated with ANC service utilization among the women in Zimbabwe. It is therefore important to note that permission to seek health care at household levels and health institutional indicator such as the distance to the health care facility was found to be insignificantly related to women use of ANC service facilities during pregnancy period.

As illustrated in Table 4.2, at individual level, the study found in terms of timing in ANC visits, about 89.90% of the women reported that they started utilizing ANC services after conception in between 3 to 5 months. It is further important to note that the percentage of women who could be described to have delayed in starting their ANC visitation in their third trimester of their pregnancy was represented by 27.90%. On the same note, in terms of maternal age, about 66.60%, aged 25-34 years, were the majority to use ANC service after conception of their pregnancy. On the same note, the study found that about 62.00% of the women that visited the ANC services were adolescent girls whereas the older women were represented by only 66.90%. On the same maternal health factors, the study categorized the educations status based on four levels, namely, no education, incomplete primary, complete primary, incomplete secondary and complete secondary. It is important to note that this finding was based on the women that were sampled and were asked their utilization status of the ANC services after conception. Based on this categorization, about 66.70% of the women

had no formal education, and 59.10% had primary education status and 67.80% of the women attained secondary education or higher.

Table 4.2 Background characteristics of the respondents, their ANC utilization status, and Chi-square

	Women Antenatal Care utilization					Pearson Measure
N	1539	%	2858	%	4397	
Maternal Factors						
Timing of ANC visits	N	%	N	%	Total	Chi-square
<3 months	9	5.80	145	94.20	154	1.80***
3 to 5 months	251	10.20	2217	89.80	2468	
6 months or higher	1279	72.10	496	27.90	1775	
Age of woman						
15-24	605	38.00	987	62.00	1592	9.90**
25-34	692	33.40	1381	66.60	2073	
35+	242	33.10	490	66.90	732	
Education						
No education	27	33.30	54	66.70	81	51.04***
Primary	572	40.90	827	59.10	1399	
Secondary or higher	937	32.20	1977	67.80	2914	
Household Factors						
Wealth						
Poorest	406	39.90	611	60.10	1017	31.23***
Poorest	319	36.00	566	64.00	885	
Middle	276	34.90	514	65.10	790	
Rich	337	34.90	628	65.10	965	
Richest	201	27.20	539	72.80	740	
Permission to seek health						
Problem	188	47.10	211	52.90	399	28.32
no problem	1351	33.80	2647	66.20	3998	
Exposure to media						
neither radio nor television	765	36.80	1315	63.20	2080	16.85***
either radio or television	515	36.00	914	64.00	1429	
radio and television	259	29.20	629	70.80	888	
challenge due to health insurance						
No	47	20.30	185	79.70	232	23.40***
Yes	1492	35.80	2673	64.20	4165	
Health Institutional factors						
Healthcare personnel						
Nurse /midwives						
No	1163	37.70	1920	62.30	3083	33.59***
Yes	376	28.60	938	71.40	1314	
Community nurse						
No	949	39.50	1451	60.50	2400	47.89***
Yes	590	29.50	1407	70.50	1997	
Traditional birth attendant						
No	1283	33.40	2558	66.60	3841	36.68***
Yes	256	46.00	300	54.00	556	
Distance to facility						
Yes	656	37.40	1098	62.60	1754	1.67
No	883	33.40	1760	66.60	2643	
Quality of care						
Low	62	48.80	65	51.20	127	253.74***
Medium	882	47.60	972	52.40	1854	
High	595	24.60	1821	75.40	2416	

Hint: * P < 0.1 ; ** P < 0.05; *** P < 0.05; N = number of observations

At the household level, based on the wealth quintile, the study found that women use of the ANC service utilization increases the higher the women wealth. It is important to note that the 72.80% of the women from the richest households. Regarding women permission to seek health care, slightly about 52.90% of the women had problems in accessing antenatal care services whereas about 66.20% had no problems in seeking permission to the spouse on issues related maternal health care. Exposure to media among women had a significant influence in their decision to seeking skilled antenatal care services. For instance, those women with both radio and television had 70.80% ANC service utilization whereas 64.00% had either a radio or a television.

Furthermore, the study considered to explore the health care institutional factors in relation to ANC service utilization in Zimbabwe. Based on the findings, the study found that among the health care personnel's, dissenting results were associated on the availability of nurses and midwives, community nurses and traditional birth attendants on women use of ANC services in Zimbabwe. For instance, only women that indicated to have attended ANC services in the country, 71.40% had attended skilled health providers such as a nurse and midwives whereas 62.30% reported never to have been attended by the skilled nurse and midwives while in the health care facility accessing ANC services. In terms of community nurse, the study found that about 70.50% of the women that attended the ANC services accessed the services of the community nurses and about 60.50% were not. The other third category of the health providers was the traditional birth attendants. The current study found that a relatively small percentage of the women, about 54.00%, were getting their antenatal care services from the traditional birth attendants.

Distance to the health care facility was found not to be a barrier among women to use the ANC service facilities in the country. For instance, the study found that about 62.60% of the

women reported to have challenges due to distance to access a health facility relative to their counterpart, an equivalent of 66.60%, who indicated to have no challenges due to distance in utilizing ANC service facilities in Zimbabwe. Furthermore, quality of care that the health care facilities administered to women upon visiting the health care facilities was reported to be high quality (75.40%) to medium quality of care (52.40%).

4.3 Multivariate logistic regression model estimating the determinants of women use of ANC services in Zimbabwe

Table 4.3 presents the logistic regression outcome of the estimating determinants of women use of ANC services in Zimbabwe. In this case, two different approaches were used to describe the results. Firstly, each model within analysis is discussed to present the factors affecting women use of the ANC service facilities. Secondly, the between model approach was employed to describe the between models variations while controlling for factors such as health care factors and institutional factors incrementally.

4.3.1 The within determinants influencing women use of ANC service utilization

Model 1 indicates the relationship between utilization of ANC services and individual level factors**.** The study found that women that started their ANC service utilization between 3-5 months after pregnancy conception were 1.92 times more likely to use ANC services during the pregnancy period compared to their counterpart that started as early as less than 3 months. Women that started their ANC service utilization 6 months or higher were 0.08 less likely to use the ANC services after conception compared to their counterpart that started as early as less than 3 months. In terms of women's age, the study found that use of ANC service increase with rising age of women. For instance, the study found that women aged between 25-34 years (OR = 1.26, 95% CI [1.06 -1.5], $p < 0.001$) were more likely to use ANC services compared to the adolescent counterpart that were aged 15-19 years. On the same, those women aged 35 or higher were found to be more likely (OR=1.54; 95% CI [1.21-1.95], $p < 0.001$) to use ANC service than their adolescent counterparts.

Table 4.3 Logistic regression estimates of the determinants influencing women use of Antenatal Care Services during pregnancy

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Maternal Factors								
Timing of ANC visits								
<3 months	1.00		1.00		1.00		1.00	
3 to 5 months	1.92***	1.32-2.76	0.72	0.35-1.42	0.71	0.35-1.4	0.72	0.36-1.44
6 months or higher	0.08***	0.05-0.11	0.03***	0.14-0.06	0.03***	0.2-0.6	0.03***	0.2.-0.06
Age of woman								
15-24	1.00		1.00		1.00		1.00	
25-34	1.26**	1.06-1.5	1.14	0.96-1.37	1.15	0.95-1.37	1.08	0.98-1.30
35+	1.54***	1.21-1.95	1.35**	1.06-1.73	1.37**	1.07-1.75	1.22	0.94-1.56
Education status								
No education	1.00		1.00		1.00		1.00	
incomplete primary	2.38***	1.57-3.61	0.68	0.36-1.3	0.68	0.35-1.3	0.67	0.35-1.29
complete primary	3.22***	2.17-4.78	0.87	0.46-1.65	0.87	0.46-1.64	0.82	0.42-1.51
incomplete secondary	4.82***	3.36-6.91	1.11	0.59-2.08	1.04	0.55-1.93	0.90	0.48-1.67
complete secondary or higher	7.9***	4.47-13.96	1.47	0.67-2.36	1.36	0.61-2.99	1.12	0.49-2.51
Household Factors								
Wealth status								
Poorest			1.00				1.00	
Poor			1.19	0.93-1.53	1.00	0.89-1.47	1.25	0.86-1.43
Middle			1.26*	0.96-1.63	1.15	0.91-1.56	1.07	0.86-1.48
Rich			1.31*	0.98-1.75	1.19	0.87-1.54	1.29	0.79-1.46
Richest			1.71**	1.22-2.41	1.15**	1.03-2.06	1.45**	0.88-1.86
Permission to seek health								
Problem			1.00		1.00		1.00	
no problem			1.76***	1.32-2.33	1.75***	1.3-2.31	1.64**	1.23-2.19
Exposure to media								
neither radio nor television			1.00		1.00		1.00	
either radio or television			0.92	0.75-1.12	0.92	0.76-1.13	0.92	0.745-1.12
radio and television			1.19	0.91-1.57	1.19	0.95-1.57	1.16	0.87-1.54
Health Institutional factors								
Healthcare personnel access								
Nurse /midwives								
No					1.00		1.00	
Yes					1.58***	1.29-1.92	1.5***	1.22-1.84
Community nurse								
No					1.00		1.00	
Yes					1.38**	1.14-1.64	1.26**	1.04-1.51
Traditional birth attendant								
No					1.00		1.00	
Yes					1.07	0.81-1.39	1.09	0.84-1.44
Distance to facility								
Yes							1.00	
No							1.03	0.86-1.25
Quality of care								
Low							1.00	
Medium							1.07	0.66-1.71
High							2.24**	1.39-3.61
Challenge due to health insurance								
No							1.00	
Yes							0.89	0.57-1.39

***p < 0.1; **p < 0.05; ***p < 0.001; OR= Odds Ratio; CI= Confidence Interval**

Use of ANC services is also influenced by educational attainment of women. For instance, the study found that women who completed primary and secondary education were 3.22 and 7.9 times more likely to use ANC services compared to their counterparts with no education.

In Model 2 factors influencing ANC are examined after controlling for individual and household factors. In this model utilization of ANC services is significantly related to timing of ANC, age, wealth status, women that delayed in seeking antenatal; care service facilities and come after 6 month or higher were found to be less likely to use ANC services compared to their counterparts that started ANC service facilities between within 3 months after conception. Considering age of women, the study found that those that were aged between 35 or higher were 1.35 times more likely and significantly able to use ANC services compared to the adolescent women counterparts. In terms of wealth quintile, the study found that women from the poor households health seeking behaviour was better in that they were weakly, more likely and significantly to seek ANC services after pregnancy conception than their counterparts from the poorest households (OR=1.26; 95% CI[0.96-1.63], $p < 0.1$).

On the same note it was observed that women from the richest households behaviour were moderate and increase their likelihood to seek ANC services after conception compared to the poorest households counterpart (OR=1.71, 95% CI[1.22-2.41], $p < 0.05$). Furthermore, at household level, the study found that women who reported to have no problem in seeking permission from their household family members were more likely to use ANC service facilities after a pregnancy conception relative to those that reported to have problems in seeking maternal health care services on their own without consultation of their household members.

In model 3 after controlling for health professional indicators, the study found that delay in seeking ANC services among women (OR= 0.03, 95% CI[0.2-0.6], $p < 0.001$) were more likely to use ANC services compared to their counterpart who started seeking ANC service between below 3 months after they conceive. In as far as the age was concerned, the study found that older women aged 35 and higher (OR=1.35, 95% CI [1.07-1.35] $p < 0.05$) were more likely to use ANC services compared to those women that were adolescent. On the same household level, women with no problem in seeking permission from household members (OR= 1.75, 95% CI [1.32-2.31], $p < 0.001$) were more likely to use ANC services compared to women without household independence on their own health.

In another aspect, the study found that women that were attended by skilled nurse and midwives at the antenatal care service facility [OR = 1.58, 95% CI [1.29-1.92], $p < 0.001$) were more likely to use ANC services compared to those that did not have access of skilled nurse and midwives at the health care facility. It is also important to note that women who had an access of skilled community nurse at the ANC service facility were more likely to use ANC service facilities (OR = 1.38, 95% CI [1.14 - 1.64), $p < 0.05$) compared to their counterpart who were demeaned of skilled community nurse services in Zimbabwe.

In model 4 after controlling for other health institution factors, the study found some variables demonstrated partial statistical significance in influencing women use of ANC service facilities after pregnancy conception in Zimbabwe. For instance, despite showing consistent significance in terms of timing that the women decide to seek maternal health care service after conception, the study found an all-inclusive model 4 reported timing of ANC service utilization delay among women influenced their decision to use ANC service after conception (OR = 0.03; 95% CI [0.2-0.06], $p < 0.001$) compared to those women who used the services in less than 3 months after conception. At household level, an all-inclusive model found that women who come from richest household were the singled out to be significantly

related to increase their ANC service utilization compared to their counterpart from the poorest household (OR = 1.45; 95% CI [0.88-1.86), $p < 0.05$).

Furthermore, based on the health institution indicators, the study found that women that were reported to have been attended by the skilled nurse and midwives were associated with an increased likelihood of using ANC services after pregnancy conception compared to their counterpart who did not have skilled nurse and midwives attendance (OR=1.5;95% CI[1.22-1.84], $p < 0.001$). Along the same health service providers' perspective, the study found that women that were attended by the skilled community nurses were more likely to use ANC service facilities compared to their counterpart who did not have the privilege of being attended by the community nurses in Zimbabwe. Quality of care was found to be significantly related to increase women likelihood of seeking ANC service facilities in Zimbabwe. For instance, this is noted in model 4 in which the higher the quality of maternal health care, the more likely the women attended the ANC services compared to their counterparts who reported to have been given low quality of care service upon visiting the ANC service facilities.

4.3.2 Correlation Analysis of the factors associated with women use of ANC services in Zimbabwe

The between analysis was performed in order to test the level of consistency in the level of maternal health factors while controlling for household level indicators. To investigate the relative change of the control such as the household factors after controlling for health institutions factors and check the variations in determinants that consistently affect women use of antenatal care services in Zimbabwe in an all-inclusive model.

Based on this background the study found individual women who started ANC visits between 6 months and higher were associated with consistent delay in utilizing ANC service after pregnancy relative to their counterparts with 3 months or less after conception. Similarly, older women were found to have a consistent health seeking behaviour of utilizing ANC services after they get pregnant compared to their counterpart adolescent women even after controlling for other factors such as household and institutional factors. On the contrary, the study found inconsistencies in as far as education status was concerned. For instance, the study found that women education was consistently and insignificantly associated with women use of ANC services after conception of their pregnancy as is noted in Model 2, model 3 and model 4. This was despite the fact that women who were found to complete their secondary school education or higher were observed to be more likely to increase their likelihood of using ANC service facilities after pregnancy.

At household level, it was observed that household that were rich by wealth quintile rank increased their likelihood of using ANC services after getting pregnant relative to their counterpart from the poorest household. Furthermore, it was found that households with women that were autonomy to seek their own maternal health were found to be more likely to increase their likelihood of using ANC services after pregnancy compared to their counterparts who reported to have no household autonomy to decide on their own regarding their maternal health seek after getting pregnant.

Considering the health institutions indicator, it was observed that availability and access to nurse and midwives, and community nurses in which women were able to access their services, the present study find that such experiences increased women decision to seek antenatal care services after pregnancy compared to the environment where women are not either visit the facility but have no chance of having an access to these health care providers.

It is also worthy to note that despite being insignificant, traditional birth attendants' services are discouraging women to rely on their services but seek facility based antenatal care services among women who reported to have used traditional birth attendants compared to women who never had antenatal services from the traditional birth attendants after getting pregnant. On the same note, it was observed that high quality of ANC care administered within the health care facilities increased women's likelihood to use ANC services compared to low quality ANC service delivery.

4.5 Summary of chapter

A lot of factors exist that are affecting related to women use of ANC services in Zimbabwe as discussed in the aforementioned chapter. The succeeding chapter presents the discussions, conclusion and recommendation with regards to women's factor and their ANC service utilization in Zimbabwe and beyond.

Chapter Five: Discussions, Conclusions and Recommendations

5.1 Introduction

This chapter is organised into three sections. The first section discusses the major findings of the study; the second section presents the conclusions emanating from the study whereas the last section presents some recommendations.

5.2 Discussion

The study anticipated exploring maternal health; household and institutional factors determine women use of antenatal care services in Zimbabwe using 2010 ZDHS. In the survey, out of a sample of 9171 women that participated in the study, about 4397, an equivalent of 47.9%, with antenatal care services. Furthermore, it was found that out these women that had an experience with ANC utilization, about 2858 (64.99%) were found to use ANC services in the country. It is therefore important to note that different factors influenced women use of such facilities in Zimbabwe from maternal, household and health institutional side perspectives.

For instance despite the country's antenatal care service utilization based on the current study findings found that women with ANC service utilization for at least 4 times during their pregnancy period as a remarkable progress, the country's maternal mortality level is as high as 470 deaths per 100 000 live births in 2013 and is among the country declared to have insufficient progress in maternal mortality fight. In terms of women use of maternal health care services by age, the study found that the youthful women maternal health seeking behaviour was very high and were using ANC services much more than the youth counterparts. On the same note, it was observed that the adolescent women maternal health seeking behaviour was a bit lower compared to the youth and elder women counterparts.

It is imperative to note that different studies around the world have been investigation the influence of education on maternal health care services. Most of them have found that education remains the major predictor and determinant influencing women used of maternal health care services in most developing countries. Yet, most of these studies did not hypothesis the effect of women completion or incompletion of their education status to the maternal health care service utilization, more specifically the ANC service utilization. For example, in the case of Zimbabwe, about 64.28% of the women who participated in the survey did not complete secondary school education Therefore despite that development; their associations to ANC service care have been limitedly discussed in most developing countries.

For instance the study bivariate analysis observed maternal health care factors associate significantly and highly in influencing women use of maternal health care services in Zimbabwe. In this aspect education and timing of women in starting the ANC services after conception remain the highly significant predictors determining women use of ANC in Zimbabwe. According to Barnes-Josiah (1998), such delays in health seeking behaviour have negative consequences to the welfare of the women in general. For instance, if the women have challenges as a result of pregnancy and delay in seeking and accessing skilled health services, the normally increase their vulnerability risk of dying to pregnancy related and child birth related conditions (Creanga et al.,2015).

At household level, the study found that wealth status, exposure to media and challenges no health insurance were highly significant and influenced women use of ANC greatly. In terms of the health institutional factors the study found nurses and midwives, community nurses and traditional birth attendants as the providers of Antenatal cares services in Zimbabwe

relate significantly and highly to women use of ANC services during pregnancy period. It is important to note that majority of the women rely on support of either the skilled health care professional or alternative in order to get support in as far as maternal health care services is concerned. In terms of the distance in relation to ANC service utilization, the study found an existence of the association to influence women use of ANC service utilization. According to Gabrysch (2008), distance is still the significant indicator that affects women to access the health care services and consequently affect their maternal health outcome.

In a multivariate, the study found that women in Zimbabwe have the tendency of delaying use of ANC service utilization and start ANC services very rate. This current study found that this is consistently and significantly effect in influencing women use of ANC service. According to Lubbock et al. (2008) he indicated that the delay in women use of ANC service during the expected time is partly due into poor quality of care delivery which pushes them to seek alternative health care services. This is the case because any challenge that the health care service facility experiences the information goes viral and cause women trust such information and later seek other alternative services compared to the facility based care.

Furthermore, the study found that older women are more likely to understand health care services and its significance in that they are capable of using the services more than the other women. In order to improve maternal health care service utilization in this case, there is need to have integrated programmes that would see younger and adolescent women being mentored by the older women and get encouraged on the advantages of using facility based maternal services if and only if younger and adolescent women are to improve their maternal health care services. Previous studies argued that older women who have a challenge in health seeking practice suffer challenges to be diagnosed of some diseases which might be aggravated due to pregnancy such as diabetes (Albrech et al.,2010), hypertensive disorders

and chronic heart diseases (Andrees et al.,2014; Kuklina et al,2009). So it is worrisome to observe that the youthful women are superseded by the older women on use of ANC services during pregnancy.

At household level, the study found that women that were coming from the wealth families were found to be better positioned to use antenatal care service facilities much more than their younger and adolescent women counterparts. However, despite women that were from either the middle and poorest income households, they were found to be positively increasing their likelihood of using ANC service despite being found insignificant. This implies that wealth has a likelihood of increasing women use of ANC service facilities. As such improved economic status among women provides a competitive advantage among women to use health care services of their choice. On the same note, the study found that women who had autonomy were found to increase their likelihood of seeking maternal health care services, ANC services in particular compared to those women that were not autonomy. Therefore, the culture that do not promote women empowerment still affect women in seeking maternal health care services, more specifically ANC services in Zimbabwe. This development affects not only the women health but also increase maternal mortality delays in seeking health care services (Barnes-Josiah et al., 1998).

In terms of the health care institutional factors, the study found that use of facility based health providers increased women use of the antenatal care services. Some similar studies indicated the availability of skilled health care advantages women in accessing quality of care services and access continuum of maternal health care and consequently increase maternal health outcome. For instance, according to World Health organization, the delivery of quality of care in order to promote maternal health outcome have been decade's long campaigns (WHO 1978; 1994; 1995; 2000; 2015). If countries, Zimbabwe included would have taken

recommendation of such conferences and initiatives seriously, issues associated with low quality of care still a challenge in meeting maternal health needs of women from prenatal, intranatal and postnatal care would have been of old.

For instance, in the current study, the rich women would not have been the only significant group to increase antenatal care services utilization; this would have been a benefit of all women at levels regardless of their wealth quintile differences. Jackson and Kroenke (2001) argued that lack of unmet meet of quality care that most women do experience as a result of quality make them rely on alternative health care that presumably perceived as to meet their maternal health needs. Yet, yet studies have it that such alternative are the source of vulnerability exposure which result in worse maternal health outcome as a result of such alternative health seeking behaviour.

5.3 Conclusion

The current study anticipated to explore factors influencing women use of ANC Service during pregnancy in Zimbabwe using 2010 Demographic and Health Survey datasets. These factors were investigated from three dimensions, namely, maternal factors, household factors and institutional factors. Therefore based on this determinant categorization, the study can conclude that;

i) Maternal health care service utilization is consistently and significantly decreasing among women who start ANC service facility utilization after 6 months or higher of their pregnancy status. It is observed that majority of the women within start ANC services between 3 and 5 months after pregnancy.

ii) Older women aged 35 and higher are the major antenatal care service users and increasing their usage likelihood as compared to their younger and adolescent mothers' counterparts.

This implies that in the case of Zimbabwe, older women are winners in as far as health care service utilization is concerned compared to the younger and adolescence women. Yet, these women were very few in proportion and less than 20% of the total women that indicated to have used the ANC services.

iii) At household level, the women from the richest household have a better competitive advantage over the other women lower in wealth quintile than themselves. The study found that while the richest women are increasing their likelihood of seeking antenatal care services significantly, those with lower wealth status were insignificantly related to ANC service utilization in the country. This richest household however is very small in proportions about 18.80% compared to those lower in economic statuses.

iv) Availability and accessibility of health care providers at ANC level, improved women willingness to use maternal health care services increasingly compared to women who reported not to be satisfied with the ANC facility services due to unavailability and inaccessibility of the health care providers despite their effort to visit the health care facilities seeking improved quality care. Yet, less that 50% of the women, about 32.80% and 49.20% of women reported to have accessed to skilled maternal health providers such as nurses and community nurses in Zimbabwe, respectively.

v) High quality of care is the major predictor influencing women use of ANC services among women significantly in Zimbabwe. Yet, it appears that women with quality of care issues are not significantly related to ANC service care utilization in the country. On the same note, it is important to note that high quality of care was found to be about 38.70%. This implies that only about a third of the women in Zimbabwe have access to improved quality of care as compared to over two thirds who are still getting lower to medium quality of maternal health care services.

5.4 Recommendations

Based on the study findings, the following recommendations are made;

There is need for government to have a continued enhancement of community based interventions in order to improve knowledge among women of the significance of utilizing maternal health care services as early as first 6 weeks of conception if health care service facility could be a change agent significant to reduce stalled maternal mortality in the country.

There is need to improve quality of maternal health care services in the country by adopting a pro-poor quality of care support strategy. This strategy will ensure that those that are not economically poor have better served and are significantly related utilize ANC services during pregnancy period than is presently the case.

There is need to train more health care providers in order to meet the needs of maternal health care services. This is because the present study has found that of the little women who managed to have access to skilled health care service providers, their willingness to utilize antenatal care service facilities increased greatly. As such talking advantage of the positive and significant association between availability and accessibility of skilled health providers and wiliness to use maternal health care services could be the best window of opportunity if and only if health dividend could be reached sustainably.

5.5 Limitations of the study

The study of maternal health care services is significant, but in this study it would have been important to study all issues associated with women use of health care services. Some of the factors not included in this study are place of delivery and postnatal care as well as institutional births and postnatal care. Their inclusion would have provided a better ground to understand the determinants from institutional and household perspectives which affect

women use of maternal health services and consequent increased maternal mortality level in the country.

Thirdly, another limitation of the study is that it does not cover some important possible predictors of utilization of maternal and child health services. This stems from the fact that both the 2011 ZADHS did not collect such variables as distance to health facilities, transportation services, the price and quality of care and respondent's belief concerning health practices and attitudes toward modern medicine which are important factors influencing the use of maternal health services in the country.

Lastly, this study is based on data from 2011 ZADHS. This data set is nearly five years old. It is possible that the maternal health situation in the country may have changed contrary to the situation presented in this study. If this is the case the results may not be as enlightening to policy and decision makers as one would have expected. However, if the situation has changed this study should be seen as providing a basis for comparisons for similar studies in future.

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