REGIONAL INSTITUTE FOR POPULATION STUDIES

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CORRELATES OF PREGNANCY LOSS EXPERIENCES IN GHANA

BY

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ACCEPTANCE

Accepted by the Faculty of Social Studies, University of Ghana, Legon, in partial fulfillment of the requirements for the award of degree of Master of Arts (Population Studies).

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DECLARATION

I, hereby declare that this submission is my own work towards the award of Master of Arts degree in Population Studies and that to the best of my knowledge no material previously published by another person nor material which has been accepted for the award of any degree of the University, except where due acknowledgement has been made in the text.

Signature…….

Date……..

PATRICK DARKO AGYEKUM

(STUDENT)

DEDICATION

This work is dedicated to my lovely wife, Gloria D. Agyekum, my sons Roniel Nana Kwame Agyekum, Ephraim Nana Yaw Agyekum and my dearest mum Margaret PokuwaaAgyekum for their care, support, prayers and encouragement.

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LIST OF ABBREVIATION

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
CI	Confidence Interval
FCDP	Free Child Delivery Program
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Service
HIV	Human Immunodeficiency Virus
KBTH	Korle-Bu Teaching Hospital
MDGs	Millennium Development Goals
MoH	Ministry of Health
NHIS	National Health Insurance Scheme
OR	Odds Ratio
RIPS	Regional Institute for Population Studies
SPSS	Statistical Package for Social Science
STDs	Sexually Transmitted Diseases
WHO	World Health Organization

TABLE OF CONTENTS

Table of Contents Page

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The reduction in the rate of miscarriage, stillbirth and induced abortion is a major challenge for thehealth system, governments and the society (Schoeps et al.,2007). This incidence is often high and concentrated in regions with most disadvantaged populations with low income and Ghana is not an exception. Therefore, the main aim of this study was to identify and examine the correlates of pregnancy loss experience among ever pregnant women in their reproductive ages in Ghana using the 2008 Ghana Demographic and Health Survey. The other objectives of the study was to identify some risk factors associated with pregnancy loss among women in Ghana and also to examine household factors that influence pregnancy loss among women in Ghana.

The study uses univariate, bivariate and multivariate techniques to assess the influence of women's demographic and socio-economic background characteristics. Results show that the highest proportion of ever pregnant women werebetween the ages of 25-29 years was (19.4%). On marital status of these ever pregnant women, 69.5 per cent of them were married as against 19.8 per cent who were never married. An overwhelming proportion (80.1%) of ever pregnant women reported that they had never consumed any alcoholic beverages relative to 19.9 per cent who affirmed that they had ever taken or consumed alcohol. Also about 74 per cent of these women reported having easy access to health facility for antenatal care services as compared to 26.3 per cent who affirmed that they encountered difficulty in accessing health care. The results shows that 1-in-5 women ever pregnant had experienced pregnancy loss.

The bivariate results indicate a statistically significant relationship between the demographic and socio-economic background characteristics of ever pregnant women in Ghana and their pregnancy loss experiences. Higher proportion (23.3%) of women who have attained primary education had ever terminated their pregnancies compared to women who had no education (14.7%). Ever pregnant women who dwell in urban areas had a higher proportion (22.1%) of those who had experienced pregnancy loss relative to their counterparts who resides in the rural areas (18.4%). On the consumption of alcohol, women who ever consumed any alcoholic beverages have a higher proportion of them having loss their pregnancies as against those who never consumed.

Binary logistic regression analysis was also conducted to determine the link between the correlates of pregnancy loss and pregnancy loss experiences. Results of the regression models indicated that ever pregnant women who ever consume alcohol were more likely to experience pregnancy loss. In terms of the other correlates of pregnancy loss experiences, the respondent's age, educational level, their marital status, place and region of residence, the type of occupation and their wealth index were significant predictors of pregnancy loss experiences.

The study therefore recommends there should be more reproductive health public education especially for young women as they enter their reproductive ages on safe practices during pregnancy period.

CHAPTER ONE

BACKGROUNG OF THE STUDY

1.0 Introduction

Pregnancy loss can occur through miscarriage, stillbirth or induced abortion.Global statistics according to The World Health Organization (2006) indicate that nearly 15% of clinically identified pregnancies end in recognized miscarriage, a pregnancy loss before 20 weeks' gestation (Maconochie et al., 2007; Michels&Tiu, 2007). More than one-third of all conceptions that can be identified hormonally may end in loss when taking into account unrecognized pregnancies (Wilcox, Weinberg& O'Connor, 1988). It is estimated that fewer than five per cent of women will experience two consecutive miscarriages, and only one per cent experience three or more (Stirrat, 1990).

Over 3 million stillbirths occur globally each year, nearly all of which are in low-income countries (Lawn et al., 2005; McClure et al., 2006; Chigbu et al., 2009; Engmann et al., 2009). Of the 130 million babies born worldwide every year, approximately 4 million are stillborn, more than 98% of these occur in developing countries (WHO, 2009). Stillbirth accounts for more than half of perinatal mortality in developing countries,with about26 deaths per 1000 live births, about five times higher than in developed countries(Jones &Jerman 2014).It is also estimated that a little over one fourth of all stillbirthstakes place during delivery(Jones &Jerman 2014).

Globally, half of pregnancies among women are unintended, and 40% of these are terminated by spontaneous abortion (Finer &Zolna, 2014). Similarly, Jones and Jerman, 2014 report that 21% of

all pregnancies are lost due to induced abortions. Both spontaneous and induced abortions are very common experience in every culture and society (Gilda et al.,2007). Out of the 210 million pregnancies that occur each year globally, an estimated 46 million (22 per cent) end up in induced abortion, in relation to that, 19 million women experience unsafe abortions annually (Gilda et al., 2007; WHO, 2011; Jones &Kavanaugh, 2011).

Proportionately, miscarriages are by far the most frequent type of pregnancy loss; most pregnancy losses occur during the first trimester, and it is estimated that only 3.1 percent of all intrauterine deaths take place after sixteen weeks of gestation(Bongaarts& Potter, 1983).Within Sub-Saharan Africa, stillbirth rates are particularly high,up to 14% of deliveries could result in stillbirths. According to the World Health Organization's Opportunities for Africa's Newborns 2006 report, 98% of stillbirths occur in developing countries, especially Sub-Saharan Africa.The term "pregnancy loss" includes stillbirths of at least twenty weeks' gestation period and reported abortions of under twenty weeks' gestation, but not neonatal deaths. It is inherently difficult to obtain complete data on pregnancy loss in a population. This difficulty arises in connection with abortions rather than with stillbirth (Rowe, 1973). Again, pregnancy loss refers to the unexpected loss of an unborn baby.

In 2011, 1.06 million abortions were performed, down 13% from 1.21 million in 2008. From 1973 through 2011, nearly 53 million legal abortions occurred in United States of America (Jones &Jerman 2014). Pregnancy loss can reduce effective fecundity, lengthen birth intervals, and decrease fertility. Wood and Weinstein,(1990): p.20 states that “Indeed, variation in

fecundability may be more sensitive to heterogeneity in risk of fetal loss than it is to variation in coital frequency".

In the case of Ghana, according to Ghanaian constitution, abortions are illegal despite having one of the most of liberal abortion laws in Sub Saharan Africa. However, it is estimated that 20% of pregnancies in Ghana are aborted (Lithur, 2004). It had also been established that abortion-related deaths are the most frequent cause of maternal mortality (Mills et al. 2008).

A community based study in Ghana in 1998 found that only 12% of the women obtaining induced abortion utilized physician services for the procedure (Ahiadeke, 2001). A hospital based study also found that 18% of gynecology admissions in 2000 were related to complications of induced abortion. Further, out of a total of 105 maternal deaths recorded at the Korle Bu Teaching Hospital, 14% were due to complication of induced abortion (Srofenyoh&Lassey, 2003). Again, according to the 2007 Ghana Maternal Health report, more than 1-in-10 maternal deathsresults from complications of induced abortion, which is also the second leading cause of maternal death in Ghana (GSS et al., 2009).

Concerning stillbirth experiences among women in Ghana, an autopsy conducted at the Korle Bu Teaching Hospital (KBTH) in 1997 found that out of a total of 3,761 deliveries, 93 of those deliveries ended up in stillbirths (Wiredu&Tettey, 1998). Another hospital based study found that 54.8% of stillborns were males and 45.2% were females where 55.9% of the stillbirths were macerated and 44.1% were fresh stillbirths (Wiredu&Tettey, 2004). The same study found out that low maternal educational level, low socio-economic status, late and irregular antenatal attendanceamong pregnant women were associated with occurrenceof stillbirths. The general lack

of proper and rigorous medical examination for stillbirths in Ghana, could easily lead to a recurrence loss of pregnancy (Whittey et al., 1999).

Another hospital based study at the Korle Bu Teaching Hospital found that 42.0% of pregnancy cases among women had experienced at least one miscarriage in their lifetime (Bampoe-Addo, 2010). From the introduction above, it could be clearly seen that although globally the incidence and prevalence of pregnancy loss (stillbirth, miscarriage and abortion) is low, the situation seem to be different on the side in developing countries, in Sub-Saharan Africa and Ghana in particular. Most hospital-based studies on pregnancy loss experiences among women in Ghana have clearly shown that there are high rate of pregnancy loss experience among women.

1.1 Statement of the Problem

The reduction in the rate of miscarriage, stillbirth and induced abortion is a major challenge for regional health services, governments, and the general society (Schoeps et al., 2007).The incidence was high and concentrated in regions with the most disadvantaged populations, having a low income. This situation reflects the social inequalities and timely unavailability of qualified health services in the affected countries (Santos et al., 2012).

Even though the government of Ghana has put in place several measures such as the National Health Insurance Scheme (NHIS), Free Child Delivery Program (FCDP) for pregnant women among other measures in order to meet both the Millennium Development Goals on healthand Sustainable Development Goal 5 on achieving health and wellbeing ar all ages, a the problem of

pregnancy loss continues to prevail in the country at still alarming rates.In the situation of the Sub-Saharan Africa each time a woman become pregnant, she is at a greater risk of encountering maternal morbidity or mortality. Maternal deaths are appreciably higher in African countries than in developed countries. The occurrence of maternal mortality indicates, to a large extent, the level of development the country has attained (WHO, 1999).

It is estimated that over 7200 still births are recorded in the world each day. According to a report published by Medline, 5% of all deliveries are stillbirths in Ghana (Ampofo, 1971). Based on the above information, pregnancy loss due to still births, miscarriages and induced abortions are on the rise. This will have a negative effect on the reproductive health of the mother; the potential loss of life of the mother, the strain on the health system and loss of human resources for the country.

1.2 Rationale of the Study

According to the World Health Organization's Opportunities for Africa's Newborns 2006 report, 98% of stillbirths occur in developing countries, especially Sub-Saharan Africa, and the stillbirth rate for Ghana is 24 per 1000 deliveries. Even though stillbirths represent a large proportion of perinatal deaths, causes of stillbirths are poorly understood in Ghana. The reduction of stillbirth, miscarriages and induced abortion in Ghana is the main concern of the general public since procreation ensures continuity of human generation. This study is also in line with the United Nation Millennium Development Goal five which is to reduce maternal related deaths.

Again, of the 22 published articles on abortion and other pregnancy losses in Ghana conducted between 1972 and 1994, only one (involving a rural area) used data not based on hospital records (Bhatia & Newman, 1982 cited in Anarfi, 1996); the remaining 21 were hospital-based studies, 19 of which relied solely on data from the Korle-Bu Teaching Hospital (WHO, 1998). Also, poor record-keeping, the unwillingness of hospital staff to accurately classify the type of pregnancy loss and lack of hospital policies regardingaccurate classification of pregnancy loss. Furthermore, the lack of accurate hospital based data, had also affected accurate record keeping about the characteristics and other experiences of women who experience these conditions (stillbirths, miscarriages, abortions). This study therefore sought to use a broader or wider data set like the Ghana Demographic and Health Survey (GDHS).

Again, studies so far on pregnancy loss mainly focused on either one or two out of the possible three indicators of pregnancy loss (Rowe, 1973; El Saadani, 2000; Layne, 2001; Petrozza et al, 2006; Annas& Sherman, 2007). This study therefore seeks to combine all the three indicators of pregnancy loss.Another contribution this study will seek to add to the body of knowledge on pregnancy loss is unlike other studies on pregnancy loss used hospital-based data. This study is using the GDHS which is a national representation will give an idea of the experiences of pregnancy loss amongst women at the national level. This will help in national decision making on issues of gender and mortality and also have influence on policy making especially health policy.

1.3 Study Objectives

The main objective is to identify and examine the correlates of pregnancy loss among women in Ghana. Specifically, the study would:

1. Identify some risk factors associated with pregnancy loss among ever pregnant women in Ghana.

2. To examine household factors that influence pregnancy loss among women in Ghana.

1.4 Research Hypotheses

1. Older women are more likely to lose their pregnancy as compared to the younger women.
2. Women with secondary and higher education are less likely to experience pregnancy loss compared to those with no education.
3. Women who have never married are less likely to experience pregnancy loss as compared to women who are currently married.

1.5 Organization of the Study

The study consists of six chapters. The first chapter describe the introduction which includes the background information, the problem statement, the objectives of the study, the rationale for the study and the outline of the study. The second chapter focused on literature review, conceptual framework, limitations of the study, and the scope of the study. Chapter three discussed the methodologies the study used. Thus, sources of data, methods of analysis, measurement of

variables, the data collection and limitations were discussed in this chapter. The fourth chapter discussed the univariate analysis where frequency and percentage distribution were used to describe the various variables used in the study. The chapter also assessed the relationships between the background characteristics and pregnancy loss among women in the study population. In the fifth chapter, binary logistic regression model was used to examine the influence of the demographic and socio-economic background characteristics on pregnancy loss experience of ever pregnant women. The sixth chapter concludedwith the summary of the findings, the conclusion of the study and suggested recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents related literature on correlates associated with stillbirths, miscarriages and induced abortion and experiences among ever pregnant women. The chapter comprises the maternal characteristics of women who experiences stillbirths, miscarriages, and abortion. It also contains the conceptual frameworks used in the study.

2.1 Maternal Characteristics and Experiences of Stillbirths

The World Health Organisation defined Stillbirth as a baby born with no signs of life at or after 28 weeks' gestation (WHO, 2005).Stillbirths are complex and multifactorial in nature. Although maternal age is important, they can also be influenced by parity, weight at birth, and duration of gestation (Luke and Brown 2007). Weight and prematurity are recognized as the most important causes of stillbirth (Mohsin et al. 2006). Also, according to Belsten (2008), stillbirth is one of the most common adverse outcomes of pregnancy.

Concerning Maternal age, for single and multiple deliveries, a reduction of late foetal mortality from 3.9 to 3.3 per 1000 was reported in Spain from 1996 to 2005 (Luque 2008), but mothers age 45 or older still accounted for 70% of stillbirths. Other studies also found increased maternal aged was associated with more stillbirths, thus indicate that older mothers may be at increased risk for adverse health outcomes. The older women in these studies were found to be unemployed,having

poor access to health care, inadequate nutrition, and high levels of interpersonal and community violence (Geronimus, 1992; Ziadeh, 2002; Beauclair et al., 2014).

Adverse foetal outcomes begin to accelerate when women reach the age of 35, but they rise even more quickly after 40 (Ulizzi and Zonta 2002). Undesirable results ofpregnancies among adolescents have been associated with a range of socioeconomic and biological disadvantages (MacDorman et al., 2007), including incompletelower level education, limited job opportunities, and parental marital disruption (Cowden and Funkhouser 2001). The incidence of stillbirths among teenage mothers is high because they are more vulnerable to nicotine and alcohol addictions, often lack pre-natal care, and have premature and low birth-weight deliveries(Reeskeet al.2011).

Fusterand colleagues, 2014 studied geographic differences in low birth weight with regard to biological, demographic, and socioeconomic factors, among them the mother's professional qualification. They reported considerable inter-provincial variation, which was partly attributable to the unequal reproductive pattern of immigrant mothers. The level of the mother's education is also regarded as a reliable indicator of economic factors that may influence the occurrence of stillbirths (Ulizzi and Zonta 2002).Stillbirth risk, when viewed based on maternal origin or ethnic group, may be greatly affected by socioeconomic status and level of education (Luque-Fernández et al., 2012; Reeske et al., 2011).

Another study by Fuster et al., (2014) in Spain found that higher stillbirth risk is associated with short gestation period; low weight of the mother at birth is a causal factor of stillbirth. The same

study also found that women with limited schooling (less than 5 years) show a higher risk of stillbirth. The reason being that women with less than 5 years of schooling come from very low socioeconomic segments of the population who have limited access to medical services during pregnancy. Reddy et al., (2006) in their study examined the relationship of maternal age with stillbirth risk throughout the period of gestation. In doing this, a total of 5, 458, 735 singleton gestation without any reported congenital anomalies from the 2001 to 2002 National Centre for Health Statistics perinatal mortality and natality files were analysed. What was found was that risk of stillbirth (fatal death 20 weeks or longer) were at 37 to 41 weeks for 35 to 39 years old was 1 in 382 ongoing pregnancies and for woman 40 years old or older, 1 in 267 ongoing pregnancies. Compared with younger woman of less than 35 years old, the relative risk of stillbirth was 1.32 for women 35 to 39 years and 1.88 for women 40 years old or older at 37 to 41 weeks. Thus effect of maternal age persisted despite accounting for medical disease, parity, and race/ethnicity.

A study by Say et al., (2006) in the Thai Nguyen Province found that women of low socioeconomic status in rural communities have higher odds of having stillbirths. Based on this results, the study recommended that increasing coverage, quality and utilization of prenatal care among women in rural communities.A case-control study of 451 stillbirths in Ahmedabad, India by Mavalankar et al., (1991) showed that poor maternal nutritional status, absence of antenatal care, and complications during labour were independently associated with substantially increased risks of stillbirth.

An unpublished hospital based-study in the Hohoe Municipality of Ghana, by Kudzo, (2011) found that place of residence; obstetric problems, alcoholic drinks and self-medication were

relevant predictors of stillbirth.Whilst age group, antennal visits, weight of baby, sex of baby, hours of work and anemia were not important in predicting stillbirths.Stillbirth was also found to be associated with older mothers (>35 years), being unemployed or in semi-skilled employment, grand multiparity (parity ≥ 5), hypertensive disorders in pregnancy,breech delivery, vacuum extraction and preterm births (Dassah et al., 2014).

Concerning antenatal care visits and stillbirths, (Chopra et al., 2009) claim that 24 per cent of stillbirths in South Africa could have beenprevented every year if women utilized antenatal care services. Again, reductions in stillbirth mortality can be achieved through ANC by increasing detection and management of hypertensive disease, fetal growth restriction and gestational diabetes as well as referring women to appropriate and skilled care for delivery when caesarean sections or inductions would be appropriate (Pattinson et al., 2011). Another study in South Africa found that the combination of too few ANC visits and poorer quality of infrastructure may account for the increased odds of stillbirth among women of low Socio-economic status, if this in turn led to decreased detection and treatment of maternal conditions that may be risk factors forstillbirths(Lawn et al., 2011).

2.2 Maternal Characteristics and Experiences of Miscarriages

Miscarriage is challenging to study because risk varies markedly by gestational age.Thus, the gestational age at study entry must be considered when estimating risk of loss. Few biological, behavioral, or socioeconomic factors have been definitively associated with risk of miscarriage (Wilcox et al., 1988; Maconochie et al., 2007; Kline et. al, 1989; Hasan et al., 2009; Kavanaugh et al., 2005). Studies have found that increasing maternal age and history of miscarriage are the

strongest predictors of miscarriage (Wilcox et al., 1988; Maconochie et al., 2007; Kline et al., 1989).

Risk factors associated with miscarriage, defined as the interruption of pregnancy before the 20th week of gestation, include high age, a low level of education, unemployment or unstable employment, low socioeconomic status, previous multiple gestation pregnancies, a high number of sexual partners, use of illicit drugs (Gracia et al., 2005; Kim et al., 2012; Pilecco et al., 2014). However, a study by Boldori et al., (2014) in Brazil found that maternal age, sexual partnership, presence ofco-infections, and hypertension were not associated with miscarriages among women. But only illicit drug use was considered a risk factor for miscarriages occurrence among women.

Furthermore, other studies have demonstrated an association between illicit drug use and an increased rate of miscarriages, particularly in those women who injected drugs, such as cocaine (Thackway et al., 1997; Forsyth et al., 2002; Barbosa et al., 2009). Thus there is evidence that illicit drug use by pregnant women is associated with hepatitis, tuberculosis, and pre-eclampsia, which can increase the risk of miscarriages by up to 3%, in addition to clinical complications related to the use (Mayet et al., 2008; Joya et al., 2012; Izquierdo and Yonke, 2014). It was also verified by Boldori and colleagues that multiple gestation features a 3.6 times greater risk for the occurrence of miscarriages (Boldori et al., 2014).

A study byKochar et al., (2014) on miscarriages inIndia found that many miscarriages go unnoticed early in pregnancy. The reason being that some women may not be comfortable in reporting miscarriage as it may have adverse social implications. Also, stress was found as a risk

factor for miscarriage (Li et al., 2012).Another study by Khalil et al., (2013) in the United Kingdom found maternal age, maternal weight and height, mode of conception, smoking, history of chronic hypertension or diabetes and previous obstetric history to be highly associated with miscarriages among women. It has been established through scientific research that miscarriage places a heavy psychological strain on the mother and her whole family (Fergusson et al. 2006; Bowles et al. 2006). The evaluated risk factors associated with marriages were mainly related to smoking, alcohol and caffeine consumption, physical inactivity and environmental exposures (Wen et al., 2001; Wisborg et al., 2003; Rasch, 2003; Ness, 1999; Fenster et al., 1997; Brandt & Nielsen, 1992; Zhang& Bracken, 1996).

According to a hospital based-study by Samaraweera and Abeysena (2010) in Sri Lanka found that paid employment, sleeping less than 8 hours perday, sitting less than 4 hours perday, standing more than 3 hours perday, physical trauma during pregnancy were risk factors associated with miscarriages. Other risk factors were taken other than routine antenatal drugs, smoking, having a maternal height less than 153 cm, and education grade more than 5 had statistically significant association with second trimester pregnancy loss. Sleeping less than 8 hours perday, standing less than 3 hours day, exposure to cooking smoke, physicaltrauma during the pregnancy and low maternal education were also found to be risk factors for second trimester miscarriage (Samaraweera and Abeysena, 2010).Further on physical activity/inactivity and miscarriages among women, some studies reported that standing more than 8 hours per day at work increased the risk of miscarriage (Eskenazi et al., 1994; McDonald et al., 1988). Zhang, (1996), found that standing more than 2 hours per day, walking more than 2 hours per day and sitting more than 2 hours per day at work had no association with both first and second trimester miscarriage.Another

study from Sri Lanka affirmed that walking <2.5 h ⁄ day was a risk factor for second trimester spontaneous abortion (Abeysena et al., 2009). Also, swimming for 75–269 min per week was shown to decrease the risk of miscarriage, defined here as period of gestation up to 22 weeks (Madsen et al., 2007).

Furthermore, literature has established that exposure to cooking smoke was alleged to be statistically significant in second trimester miscarriage. Previous studies had explained that smoke from biomass combustion produces respirable particulate matter, carbon monoxide, polycyclic aromatic hydrocarbons and many other toxic organic compounds(Kourembanas, 2002; Li et al., 2003). They observed that carbon monoxide combines with haemoglobin to form carboxyhaemoglobin and this reduces the quantity of haemoglobin in the blood, thereby causing anaemia. A developing fetus, deprived of adequate oxygen, suffers increased risk of perinatal mortality(Kourembanas, 2002; Li et al., 2003). Other pollutants (for example polycyclic aromatic hydrocarbons) in biomass smoke can also increase the risk by reducing the mother's lung function, which also reduces oxygen delivery to the fetus. Similarly, it can lead to impaired fetal tissue growth (Kourembanas, 2002; Li et al., 2003).

2.3 Maternal Characteristics and Experiences of Abortion

The global unsafe abortion rate has remained essentially unchanged within the period; 14% -15% of induced abortions was committed among women aged 15-44 years (Sedgh et al., 2007; WHO, 2007). Induced abortion is the second largest direct cause of maternal mortality in Ghana, second only to haemorrhage (GSS et al., 2009).

Concerning maternal age and abortion, there are contradictory results from various studies. Some studies found that women over the age of 30were significantly less likely than younger women to have an abortion (Geelhoed et al., 2002; Okonofua et al., 2004; Jewkes et al., 2005). An explanation given was that women in the youngest age groups who want to delay childbearing and women at the end of their childbearing years, who believe they cannot get pregnant at that age, are most likely to get induced abortions. A study in Hohoe, found that the older the age group of a woman, the more likely she was to have an abortion. Thus women aged 45-49 were over five times more likely to have had an abortion than women aged 15-24(Mote et al., 2010).

A study in Ethiopia revealed that, married women who were residents in peri-urban areas and without formal education were more likely to have an abortion (Gebreselassie etal., 2010). Another study in Kenya showed that married women who were rural residents and housewives were more likely to have sought an abortion (Biddlecom, 2008). Other studies indicate that single women were significantly more likely to have had an abortion when compared with married women (Ahiadeke, 2001; Adanu et al., 2005; Okonofua et al., 2004).

On educational level of women and abortion, literature has been divided on this issue. Studies have revealed that the lower a woman's level of education, the less likely she was to have had an abortion (Geelhoed et al., 2002). The reasons being that women with a low level of education may not know where to go to have an abortion, educated women may be considered a group of first movers, using their rights to access safe abortion (Thapa& Sharma, 2012). A study from north-western Ethiopia has similarly found that the number of women experiencing induced abortion increased with higher educational level (Senbeto et al., 2005).

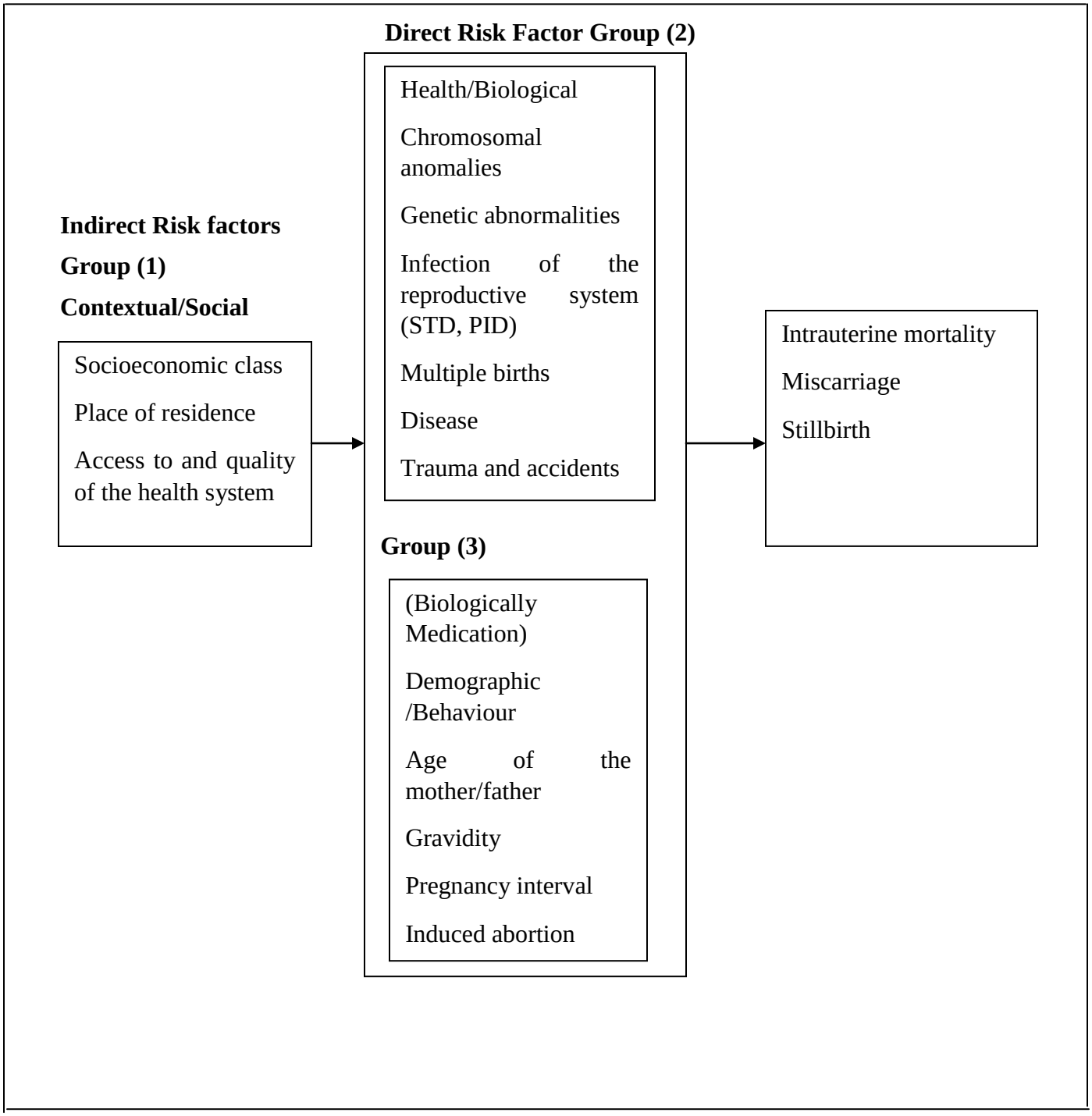
Further, a recent study among Ethiopian female university and college students found that 32.1% of the students were familiar with the liberalization of the abortion law and women who were aware of the law were more likely to have experienced an induced abortion (Animaw&Bogale, 2011).Again, a study by Bonnen et al., (2014) in Ethiopia found that low level of education and single parenthood were strong predictors for abortion. A tendency of delay in women's age at marriage has been suggested to result in increased sexual activity among unmarried women, raising their risk of unintended pregnancy (Singh et al., 2010; Sibanda et al., 2003; Okereke, 2010). This study (Bonnen et al., 2014) further indicated that single women are susceptible to induced abortion because of the stigmatizing and economic conditions that make single motherhood highly disadvantaged.

On the relationship between illicit drug use and abortion, a recent study in Ghana found that abortion relatedmaternal mortality was higher in women who had consumed alcohol (Asamoah&Agardh, 2012). Other US studies have found an association between illicit substance use and abortion (Mensch &Kandel, 1992; Martino et al., 2006). Another study in Russia by Keenan et al., (2014) found that alcohol use among Russian women increased the likelihood of subsequently experiencing a repeat abortion, but not a first abortion.

2.4 Conceptual Framework

This study adapts conceptual framework developed by El-Saadani, 2000 presented in Figure 2.1.In this proposed framework, the etiologic factors that are identified and cited in previous studies are classified into indirect determinants and direct (or proximate) ones.

Figure 2.1:Conceptual Framework I



Source: El-Saadani, 2000: Adapted from his article high fertility does not cause spontaneous intrauterine fetal loss: The determinants of spontaneous fetal loss in Egypt.

The proximate determinants are in turn arranged into two main groups. One group includes health/biological-related risk factors (Group 2) and the other, Group 3, includes the (biologically mediated) demographic/behavioral risk factors. The indirect risk factors that are classified as contextual-social (Group 1) are hypothesized to influence the chance of fetal loss indirectly through the several health and demographic/behavioral links. These environmental factors do not modify only the chance of intrauterine mortality caused by the proximate determinants but also the prevalence rates in different areas.

2.4.1Indirect Risk factors: Group (1) Contextual and Social

It is assumed that the environment in which individual women live affects their probabilities of spontaneous fetal loss indirectly in several pathways. In particular, the importance of two main components of the contextual-social dimension are stressed, namely, place of residence (with its conventional classification into rural and urban) and socioeconomic status (El-Saadani, 2000). The socioeconomic status and place of residence of women shape their behavior and family formation attitudes (for example, age at childbearing, birth interval, and place of delivery). Finally, both independent and dependent quality of, and access to, health services and the level of health providers' gynecological and obstetric experience are associated with some intrauterine deaths that are amenable to intervention(Park and Koh, 1983). Services are generally better in urban regions if compared to rural ones (Hefnawy, 1983; Serour et al., 1980). Accordingly, most researchers expect that the risk of spontaneous intrauterine loss is less in urban areas compared to rural areas and among women of higher socioeconomic status compared to women of lower socioeconomic status.

2.4.2 Direct Risk Factors: Group (2) The Proximate Determinants: Health and Biological Factors

Several risk factors have been detected in the medical setting and are assumed to be direct causes of intrauterine mortality. These include serious chromosomal anomalies (numerical chromosomal anomalies, chromosomal translocations, and inversions); gross congenital abnormalities (e.g., uterus unicornis and cervical incompetence); infection with STDs (e.g., syphilis, chlamydia, variola); trauma and severe accidents (e.g., car accidents, fire, and violence); multiple births; and malnutrition. The majority of clinically recognized intrauterine deaths, especially during the first trimester, are attributed to cytogenetic anomalies (Simpson and Carson, 1993:291-306).

The researchers do not agree on the role of these risk factors; even the role of chromosomal anomalies remains disputed. For instance, some pregnancy losses in the second trimester have chromosomal abnormalities similar to those observed in live births. It is also difficult to identify whether an infection occurs before or after the fetal loss (Simpson and Carson, 1993:291-306).

2.4.3 Group 3: Proximate Determinants: Demographic and Behavioral Factors

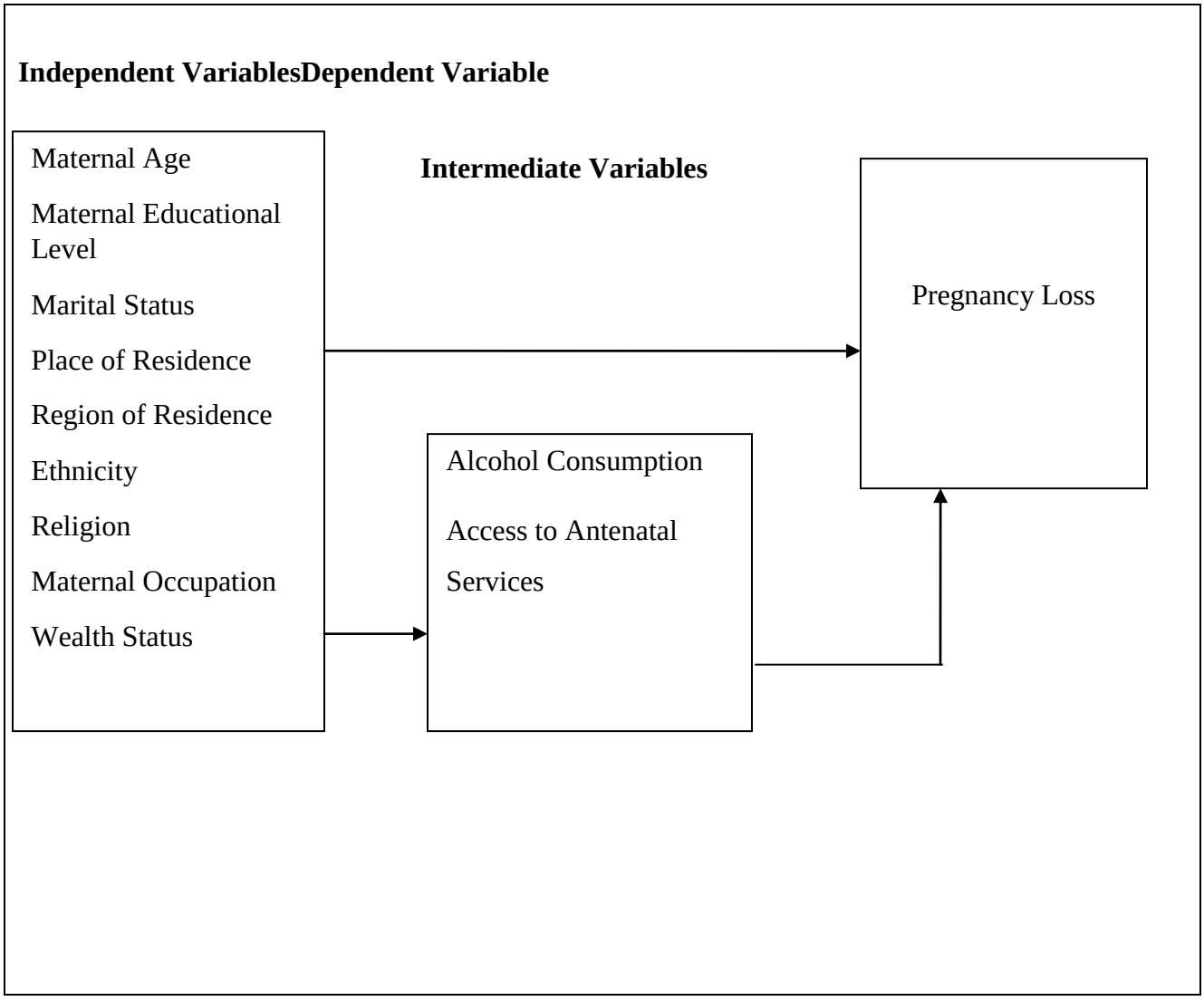
Age and gravidity:It is well established that the risk of pregnancy loss rises with maternal age and gravidity. The probability of spontaneous intrauterine mortality takes either a J- or a U-shape as women age. Maternal age can affect the survival status of the fetus in a number of ways. Older women are also naturally at a higher risk of experiencing pregnancy loss through miscarriages due to their chromosomal anomalies. The risk of various ailments is cumulative andgenetic defects become more salient at advanced ages (Casterline, 1989a; Pebly et al., 1985). Age and pregnancy order are highly correlated. The apparent positive association between these two

factors and the risk of spontaneous pregnancy loss may be an artifact due to other factors,notably memory lapses and previous reproductive history (Casterline, 1989a; Santow&Bracher, 1989).

This study draws literature from related studies by different authors that explain the risk factors to pregnancy complications or loss. Figure 2.2 is a modified and adapted framework which is therefore a pictorial guide to this study, showing the relationships between the various variables of study presented below.

The study is modified, conceptualized to include as determinants of pregnancy loss, the demographic and socio-economic characteristics of women, such as their educational, occupational and marital statuses, as well as their ages, wealth status, type of place of residence, region of residence and their religion. Apart from the background characteristics influencing pregnancy loss, they would also be intermediate variables to influence the pregnancy loss of women.

Figure 2.2: Conceptual Framework II



Source: Modified fromEl-Saadani, 2000

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter comprises the methodology, including, sources of data, measurement of variables, the data collection process,methods of analysis, and the limitations inherent in the data.

3.1 Sources of Data

The study is based on data obtained from the 2008 Ghana Demographic and Health Survey (GDHS). This is a national survey carriedout by the Ghana Statistical Service (GSS) every five years since 1988 in collaboration with other stakeholders such as the Ministry of Health and the Ghana Health Service that covered all the ten regions of the country. This survey was designed to collect, analyze, and disseminate information on housing and household characteristics, education, maternal health and child health, nutrition, family planning, gender, and knowledge and behaviour related to HIV/AIDS.

This study focuses on ever pregnant women within thereproductive ages 15-49 who had experienced any form of pregnancy loss. The women's data file utilized in this study was weighted to obtain a sample size of 4,141. The study use information on the demographic and socio-economic characteristics of the women. These are age, educational level, theirmarital status, place of residence, region of residence, ethnicity, religion, occupation, and wealth quintile. Other important information such as alcoholconsumption and access to antenatal services was also collected.

3.2 The Measurement of Dependent Variable

The dependent variable comprises pregnancy loss among women. This study considers ever pregnant women who have ever experienced pregnancy loss through stillbirth, miscarriage or abortion regardless of the number of pregnancy she ever had. The following question was used to determined pregnancy loss among women: *"Have you ever had a pregnancy that miscarried, was aborted, or ended in a stillbirth?* Thus the sample of women who have ever been pregnant prior to the period within which the survey was conducted was filtered out of the weighted dataset.

3.3 The Measurement of Intermediate Variables

The intermediate variables comprise alcohol consumption and access to antenatal services.

Alcohol consumption was measured by the frequency in which alcoholic beverages were consumed. Alcohol intake among women was categorized into three [1=Often] [2=Sometimes] [3=Never]. However, for this study alcohol consumption was recategorised into two thus those who have never consume alcohol and women who have ever consume alcohol. The reason for this re-categorization was because of the measurement of the dependent variable which was women who had ever had a pregnancy loss.

Access to antenatal services was measured as the distance from home to health facility by ever pregnant women who have ever loss a pregnancy. This variable was categorized as follows [1=Difficulty in access] and [2= Easy access]. For the purpose of this study, I used distance to the health facility as a proxy to measure their access to antenatal services.

3.4 The Measurement of Explanatory Variables

The measurement of the independent variables is as follows:

i. Maternal age: This variable was categorized into seven age groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49).

ii. Educational level: This was classified into four categories. Firstly, no education (women who confirmed having no formal education, and those whose educational levels are unknown. Secondly, primary education (women with some level of formal education not exceeding nine years including nursery and primary). Thirdly, Middle and Junior High education (women with up to 12 years of formal education or those whose education ended at lower and upper secondary school level). Lastly, Secondary education (women who completed at least 15 years of formal education, including those with Senior High School education, college, polytechnic, or university level studies). However, in this study, women with secondary and tertiary education was put together to form one category.

iii. Marital status: Marital status was classified into three categories. These are women who are married (married and living together), those who were formerly married (comprising separated, divorced and widowed) and those had never married.

iv. Place of residence: This variable only has two categories. Urban and Rural.

v. Region of residence: This variable measures the 10 regions of the country. They are Western, Central, Ashanti, Greater Accra, Eastern Region, Brong-Ahafo, Volta, Northern, Upper East and Upper West Region.

vi. Ethnicity: This variable comprises all the major recognized ethnic groups in Ghana. For the purposes of this study, this variable was classified into five categories. These comprise

Akan, Ga/Dangme, Ewe, Mole-Dagbani and Other ethnic groups such as (Guan, Grussi, Gruma, Mande and others).

vii. Religion: This was classified into five categories. No religion (those who do not belong to any religion). Secondly, Christianity (those who belong the Roman Catholic, Anglican, Methodist, Presbyterian, Pentecostal, and Charismatic faith). Thirdly, Moslem (women who belong to the Islamic faith). Fourth, traditional/spiritualist and fifth women who were affiliated with other religion.

viii. Maternal occupation: This variable was divided into five categories. These comprise those who have no occupation, those who are in professional/managerial/technical/clerical occupation, women who are sales persons, and those who were engaged in agricultural work. The rest were women in the services sector and those who were engaged in both skilled and unskilled manual job.

ix. Wealth status: This variable was classified into five categories. These are the Poorest, Poorer, Middle;Richer andRichest groups coded 1 through 5.

3.5 Methods of Analysis

The 2008 GDHS women's data file used in this study contained 4,916 female respondents. Since this study consisted of all women aged 15 through to 49 years the information was filtered to obtain only those who had been exposed to pregnancy. Thus, women who were never pregnant and those who never experienced any form of pregnancy loss were filtered. The reason for filtering them out was because they study focused only on women who had ever experienced pregnancy loss.The data were weighted and filtered out to obtain 4,141 women who had ever

been pregnant. All information used for the work related to women who have everbeen pregnant within the five years prior to the interview.

The statistical analysis software package Statistical Package Social Sciences (SPSS) version 20.0, were used for both the descriptive and inferential analyses. Age data, frequencies, cross-tabulations, regression outputs were displayed using table and graphs. The univariate analyses were conducted to show the proportions of respondents with various characteristics. The technique was also used to determine the proportions of respondents who experienced pregnancy loss. Bivariate analysis used cross-tabulations to relate the demographic, socio-economic variables (alcohol consumption and access to antenatal care) to pregnancy loss. Chi-square tests were performed to determine whether or not the observed associations were statistically significant.

Multivariate analysis, using binary logistic regression estimation techniques were employed to determine which background variables were likely to influence a woman's pregnancy loss experience. Thus two different models were built; the first model comprised of only the intermediate variables (alcohol consumption and access to antenatal services) on pregnancy loss experience the study population. The second model on the other hand examined the influence of all independent variables together with the intermediate variables on the dependent variable to examine the independent effect of each factor. The equation for the binary logistic regression model is given:

$$\text{Logit (p)} = \text{In}\left[\frac{p}{1-p}\right] = a+b_1x_1+b_2x_2+\ldots..+b_nx_n$$

Where:

a=constant

b_1, $b_{2....}b_n$= the regression coefficients

$x_1, x_2 \ldots x_3$= the independent/intermediate variables

p= the probability of a woman experiencing pregnancy loss

1-p= the probability of a woman not experiencing a pregnancy loss.

A binary outcome variable was created for pregnancy loss among women coded as "0" if the respondent responsed "No" and coded as "1" if the respondentanswered "Yes" to the question: ''Have you ever had a pregnancy that miscarried, was aborted or ended in a stillbirth?'' The question looks simply stated and it does not distinguish between induced and spontaneous abortions, women can easily answer it without the fear of being stigmatized for admitting to a voluntary termination of a pregnancy.

3.6 Limitation of the Study

The major limitation of the study was with the variables used to calculate access to antenatal care services. Access is a broad concept that includes physical, psychological and financial access to utilize something in this case antenatal care services. All these aspect of access to health facility plays a critical role in the utilization of antenatal care services by women. However, due to the use of secondary data, the study will only use physical access thus distance to the health facility as a proxy to measuring access to the health facility to utilize antenatal services. Thus due to data limitation that study is constrain not to explore other important aspect of access to antenatal care services.

Again, the variables used to calculate pregnancy loss has a limitation to the study. The variable used to examine pregnancy loss includes stillbirth, induced and spontaneous abortions. Since the issue of induced abortion is not single out, maximum reporting of the event is believed to have been achieved. However, this combined response is also a major limitation to the study. Preferably, it would have been best to distinguish between these two types of abortions since one is induced and voluntarily performed while the other is a natural condition that occurs to some women. The conventional definition given to miscarriage and stillbirth made obtaining data difficult and problematic.

Lastly, the data do not provide the pregnancy histories of women, which would aid in the analysis of pregnancy loss. It was also not possible to obtain background characteristics of the respondents at the time they experienced the pregnancy loss. However, it is assumed that the background characteristics of the women remained unchanged within the last five years.

CHAPTER FOUR

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTIC OF WOMEN AND PREGNANCY LOSS

4.0 Introduction

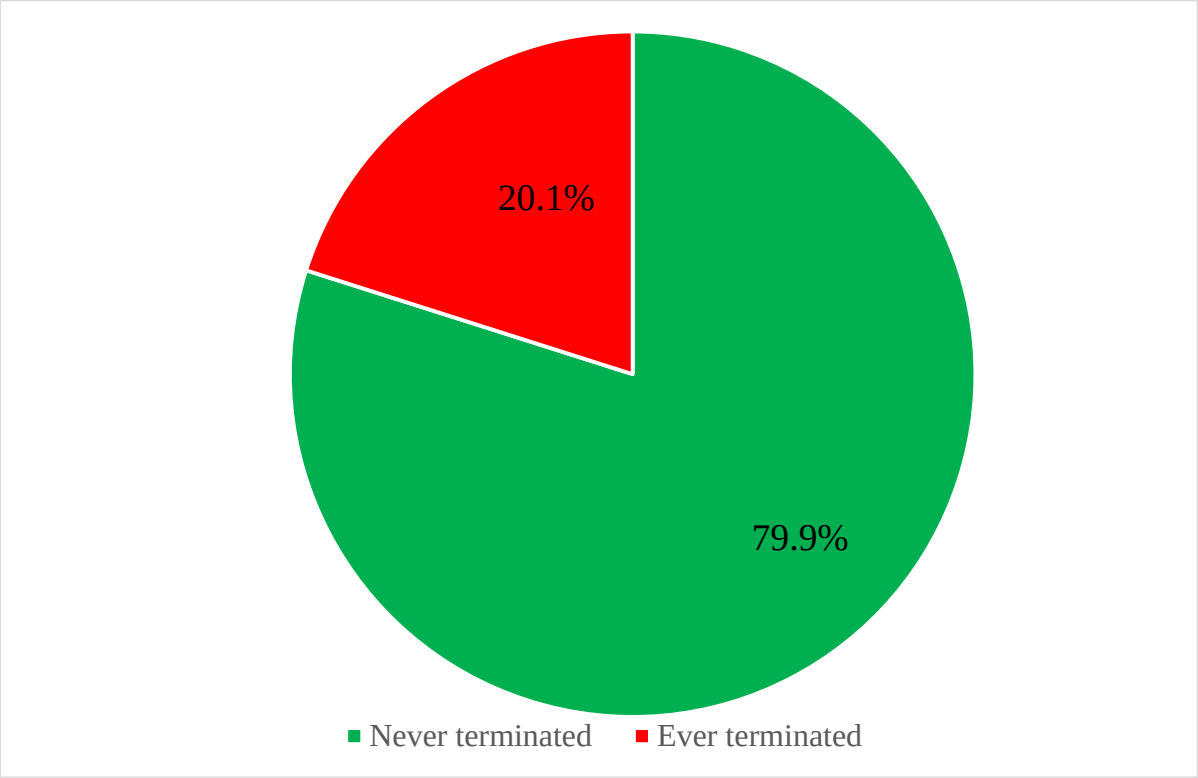
This chapter discusses a variety of background characteristics of women that play a role in influencing pregnancy loss. Maternal age, highest level of education, occupation, type of place and region of residence, wealth index, religion, maternal occupation and marital status are likely to influence the way she feels about pregnancy as well as the outcome of a pregnancy. In addition, alcohol consumption as well as access to antenatal services plays a role in determining the some riskfactors associated with pregnancy and the occurrence of pregnancy loss.

4.1 Descriptive Statistics of outcome and explanatory variables utilized in the study

4.1.1 Pregnancy Loss

Pregnancy loss incorporates termination of pregnancy through miscarriages, stillbirths, and induced abortion by ever pregnant women and the results presented in Figure 4.1. The graph illustrates percentage distribution of pregnancy loss among population of ever pregnant women. A higher proportion of thesewomen had not experienced any form of pregnancy loss (79.9%) while those who have ever experienced any form of pregnancy loss was represented by 20.1 per cent.

Figure 4.1 Percentage distribution of respondents by pregnancy loss



Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

4.1.2 Alcohol Consumption

Studies have established an association between alcohol consumption and pregnancy loss (Henriksen et al., 2004; Ford and Schust, 2009; Nykjaer et al., 2014). Women with a very high alcohol intake have been shown to be at increased risk of preterm delivery and stillbirth, and a high intake during pregnancy may be teratogenic for some (Hadi et al., 1987). It is therefore important to consider this variable. The result showed that majority (80.1%) of respondents had never taken alcohol and the other 19.9 per cent responded to the affirmative on alcohol consumption.

4.1.3 Access to Antenatal Services

This section illustrates the percentage distribution of access to antenatal care services by the respondents.

Table 4.1 Percentage distribution of access to antenatal services

Access to Antenatal Services	Percent	Number
Difficulty in access	26.3	1088
Easy access	73.7	3053
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Results from the table above indicate that majority (73.7 %) of ever pregnant women have easy access to antenatal services such as easy access to the health facility and health services as compared to women who encounter difficulty in accessing these services represented by 26.3 per cent.

4.1.4 Maternal Age

Maternal age is an important characteristic that determines pregnancy loss experiences. Adetunji (1998a) suggest that a woman's age measures her "biological and social maturity" as well as her "preparedness for the responsibilities of childbearing" (p.22). Research suggests that both young and old women are likely to experience pregnancy loss (Adetunji 1998a; Santelli et al., 2003).

Table 4.2: Percentage distribution of theage of respondents

Maternal Age	Percent	Number
15-19	9.2	382
20-24	18.7	776
25-29	19.4	804
30-34	15.5	643
35-39	15.4	637
40-44	11.4	470
45-49	10.4	429
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Table 4.2 displays the percentage distribution of respondents within the reproductive age group 15-49 years who had ever been pregnant. The results revealed that nearly 20% were in the 25-29 year age groups. This was closely followed by women within the age groups 20-24 years and 30-34 years represented by 18.7 per cent and 15.5 per cent respectively. The least proportion of women was aged 15-19 (9.2 %) years.This is due to the fact that, they may still be in school accounting for their least proportion.

4.1.5 Educational Level

This section shows the percentage distribution of the educational level of respondents through tabular representation.

Table 4.3: Percentage distribution of educational level of respondents

Educational Level	Percent	Number
No education	24.0	995
Primary	20.6	854
Middle/JHS	41.9	1737
Secondary&Higher	13.4	554
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

From the table above, the highest proportion of womenwho had ever been pregnant (41.9 per cent) had attained Middle/JHS education. This was followed by those women who have no formal education as well as women who attained primary education represented by 24.0 per cent and 20.6 per cent respectively. Only 13.4 per cent of these women had attained secondary or higher level of education.

4.1.6 Marital Status

This section provides a percentage distribution of the marital status of the respondents.

Table 4.4: Percentage distribution ofthe marital status of respondents

Marital Status	Percent	Number
Never Married	19.8	818
Currently Married	69.5	2876
Ever Married	10.8	446
Total	**100.0**	**4141**

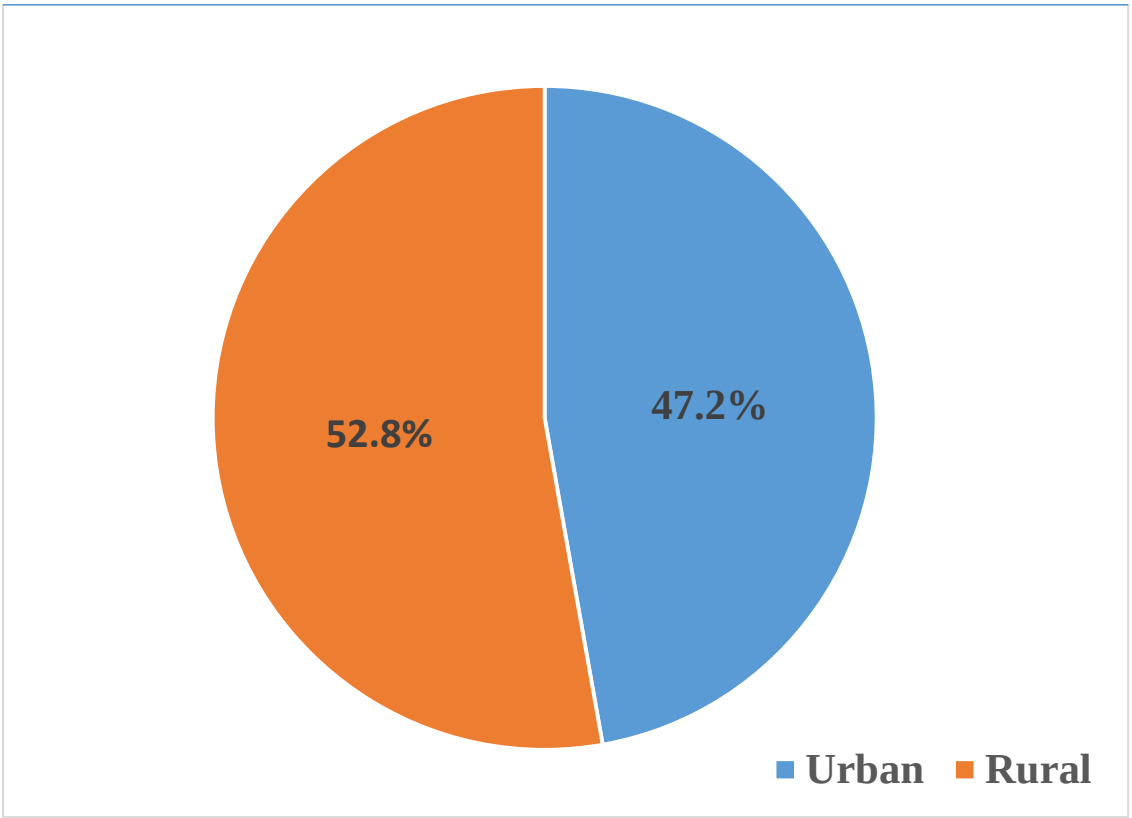
Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The percentage distribution of women by marital status suggests that majority (69.5%) of women are currently married, 19.8 per cent had never married (single) while 10.8 per cent had ever married(that is separated, widowed or divorced) at the time of the survey.

4.1.7 Type of Place of Residence

This section describes the proportion of respondents who dwell in rural and urban areas

Figure 4.2: Percentage distribution of respondent by type of place of residence



Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

According to figure 4.2, 52.8 per cent of women who had ever been pregnantreside in rural areas whilst the rest (47.2%) resides in urban areas. This reflects that among the reproductive female population, there are more rural dwellers as compared to their urban counterparts.

4.1.8 Region of Residence

This section provides information on the regional place of residence of the respondents.

Table 4.5: Percentage distribution by region of residenceof respondents

Region of Residence	Percent	Number
Western	9.0	374
Central	8.9	367
Greater Accra	16.6	687
Volta	8.7	360
Eastern	10.0	414
Ashanti	20.8	861
Brong Ahafo	9.1	376
Northern	9.4	390
Upper East	5.0	208
Upper West	2.5	104
Total	**100.0**	**4141**

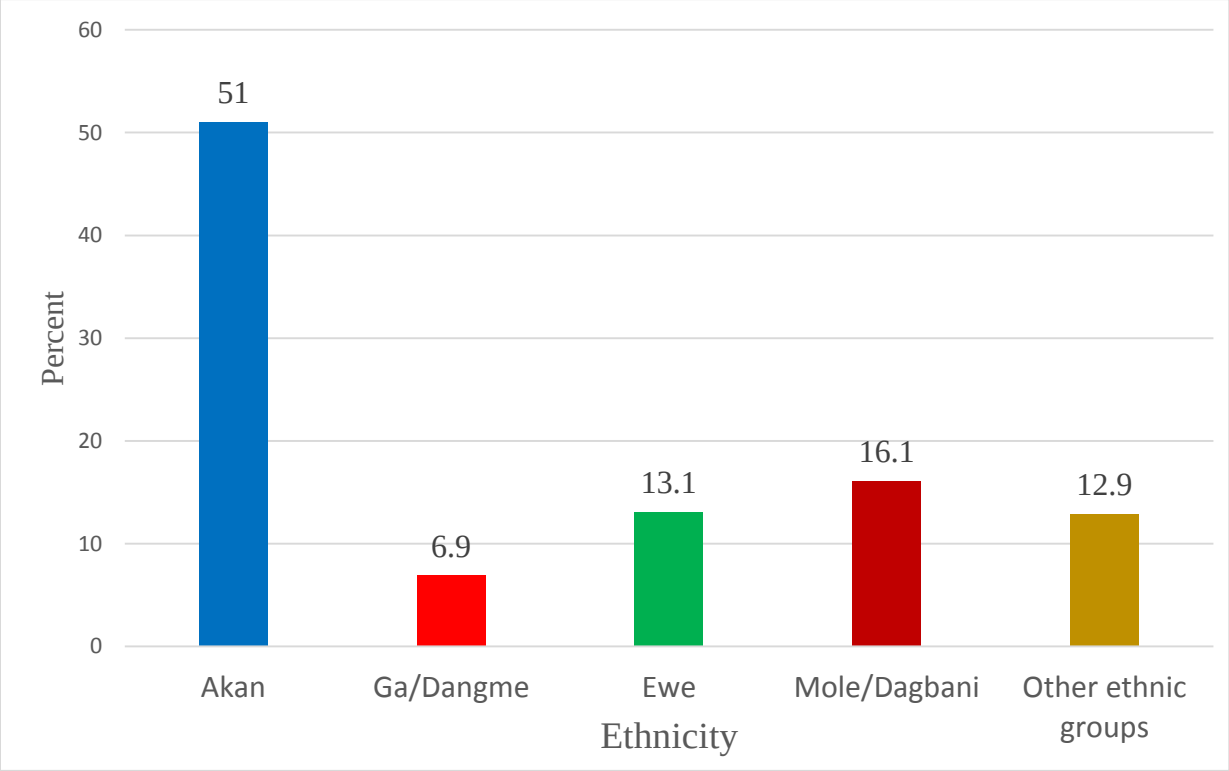
Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Table 4.5 illustrates the regional representation of the reproductive female population across all the ten regions of Ghana. The regions with high proportion of female population are the Ashanti (20.8%) and the Greater Accra (16.6%) regions. Apart of these two regions, the respondents were almost evenly distributed among the regions, with the exception of Upper West region which had a least proportion of only 2.5 per cent of the reproductive female population.

4.1.9 Ethnicity

Ethnicity is mostly associated with cultural beliefs and practices which influence pregnancy outcomes including pregnancy loss. The figure below provides such ethnic groupings among the reproductive female population.

Figure 4.3: Percentage distribution of the ethnic background of respondents



Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

As figure 4.3 illustrates, majority (51.0%) of the respondents belong to the Akan ethnic group relative to other ethnic groups. Again, about 13 per cent and 16.1 per cent of them belong to the Ewe and Mole-Dagbani ethnic groups respectively. The ethnic group with the least proportion is the Ga/Dangme ethnic group represented by only 7 per cent. This result indicates that as faras ethnic affiliation is concern, the Akan ethnic group is the dominant ethnic group among the reproductive female population in Ghana.

4.1.10 Religion

Religious affiliation that one belongs to influences ones reproductive decision and reproductive lives through the religious beliefs and practices they uphold. It is therefore important to consider this variable.

Table 4.6: Percentage distribution of religion

Religion	Percent	Number
No Religion	3.3	138
Christians	66.1	2736
Moslem	15.0	619
Traditional/spiritualist	4.4	183
Other Religion	11.2	465
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Table 4.6 above illustrates the percentage distribution of the religious affiliation of the reproductive female population. It shows that majority of respondents represented by 66.1 per cent of the respondents are Christians, while 15 per cent and 11.2 per cent of the respondents are Moslem and belong to other religious affiliation respectively. The least proportion of the respondents either belongs to no religious affiliation (3.3%) or upholds the traditional faith (4.4%).

4.1.11 Occupational Type

This section also describes the various occupational types of respondents which comprise those not working and others who engage themselves in various types of occupations.

Table 4.7 Percentage distribution of occupational type

Occupational Type	Percent	Number
Not working	13.5	560
Professional/Technical/Managerial/Clerical	5.8	239
Sales	35.3	1460
Services	10.1	418
Agric.-self employed	26.1	1080
Skilled/unskilled manual	9.3	385
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Table 4.7 above indicates that 35.3 per cent of women work in the sales sector thus retail stores and hawking. This was closely followed by those who are working in the agricultural sector and those women who were not working represented by 26.1 per cent and 13.5 per cent respectively. The least percentage (5.8%) of women was those who work as professionals, technicians, managers and provide clerical services.

4.1.12 Wealth Status

The household wealth status is a composite variable computed by summing up and weighting a variety of household assets owned by respondents, with the assets ranging from radios to refrigerators. The type of housing structure and materials used to construct the homes respondents reside in were also included to obtain this composite household wealth measure.

Table 4.8: Percentage distribution of wealth status

Wealth Status	Percent	Number
Poorest	16.4	681
Poorer	19.0	787
Middle	20.2	838
Richer	22.8	945
Richest	21.5	891
Total	**100.0**	**4141**

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

As illustratedin Table 4.8, from all the wealth indices, women who belong to the richer wealth category represented by 22.8 per cent was the highest proportion. This was closely followed by women who belong to the richest household (21.5%). The proportion of women in the middle wealth category was 20.2 per cent. Those who belong to the poorer and poorest household are represented by proportion of 19.0 and 16.4 respectively.

4.2 Bivariate Analysis

This section discusses the influence of the socio-economic and demographic characteristics of women on pregnancy loss. Thus the age of the mother, level of education, marital status, place of residence, region of residence, ethnicity and household wealth quintile are likely to influence pregnancy loss experiences among women.

4.2.1 Maternal Age and Pregnancy Loss

Several studies have observed an increased risk of fetal death and particularly spontaneous abortion with increasing maternal age (Frett et al., 1987; Berkowitz et al., 1990; Coste et al., 1991). However, the association between age and pregnancy loss which reflects both biological mechanism and forces of selection changes overtime. As women grow older, the incidence of chromosomally abnormal eggs increases dramatically. This results in lower changes for getting pregnant at all, as well as increasing the risk of miscarriage (Sherbahn, 1997).

Table 4.9: Percentage distribution of pregnancy loss by age of the women

Maternal Age	Pregnancy Loss(%)	Number
15-19	6.0	382
20-24	15.4	775
25-29	18.7	804
30-34	22.6	643
35-39	24.8	637
40-44	29.6	470
45-49	23.1	428
Total	**20.1**	**4141**

(χ^2=98.860) P.Value=0.000
Source: Computed fromGhana Demographic and Health Survey (GDHS), 2008

The results from Table 4.9 indicate that there is a significant relationship between age of women and their pregnancy loss experiences ($p<0.005$). It reveals that the highest proportion of ever pregnant women (29.6%) who are in the 40-44 year age group had experienced pregnancy loss as compared to women between the age group 15-19 years (6.0%). This means that women in the later reproductive age group (30-49 years) have experienced relatively higher loss of pregnancy than women in their early reproductive age group (15-24 years). The reason might be due to the fact that women in their later reproductive ages have experienced more conception in their entire reproductive years as compared to women who are now entering their reproductiveyears.Previous studies found that at age 42 years, more than half of such pregnancies resulted in fetal loss (Santelli et al., 2003). The risk of a spontaneous abortion was 8.9% in women aged 20-24 years and 74.7% in those aged 45 years or more (Andersen et al., 2000). Again, high maternal age was a significant risk factor for spontaneous abortion irrespective of the number of previous

miscarriages, parity, or calendar period. The risk of an ectopic pregnancy and stillbirth also increased with increasing maternal age.

4.2.2 Educational Level and Pregnancy Loss

There is some complexity concerning the relationship between educational level of a woman and pregnancy loss. Studies have shown that highly educated women are more likely to use antenatal care and practice safe pregnancy-related habits to prevent involuntary forms of pregnancy loss. This section therefore explores the relationship that exists between the educational level of women and their pregnancy loss experience. It has been established that education plays an important role in determining fertility, impacting factors such as pregnancy loss (William et al., 1999).

Table 4.10: Percentage Distribution of pregnancy loss by educational level

Educational Level	**Pregnancy Loss (%)**	**Number**
No Education	14.7	995
Primary	23.4	854
Middle/JHS	21.2	1737
Secondary& Higher	21.3	554
Total	**20.1**	**4141**

(χ^2=25.993) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The results from above show a significant relationship between educational level of women and their pregnancy loss experiences at a statistical significant level of 0.05. Ever pregnant women who have attained primary level of education had the highest proportion (23.3%) of those who have experience any form of pregnancy loss as compared to women with no formal education represented by 14.7 per cent. Again, those who had attained secondary or higher level had experience more pregnancy termination (21.3%) compared to those with no education. Studies have indicated that educated women are more likely to use antenatal care and practice safe pregnancy-related habit to prevent involuntary forms of pregnancy loss (Adetunji, 1998a; Williams, 1991). However, Bleek (1990) describes mass education as a catalyst of induced abortion among women in Ghana, suggesting that the rise in formal education and the desire by young girls to attain certain educational levels led to more induced pregnancy terminations. Thus young girls who became pregnant while in school are more likely to undergo induced abortion in order to continue with their education. According to Adanuand colleagues, 2005 and Geelhoed, 2002 suggest that women who have received some level of education are more likely to engage in induced abortions when faced with unintended pregnancies.On the other hand, women who did not have the opportunity to go to school tend to start engaging in early sexual intercourse, which results in more pregnancies, and consequently they have more exposure to the risk of pregnancy loss.

4.2.3 Marital Status and Pregnancy Loss

The relationship that exists between the marital status of women and their pregnancy loss experiences in literature are scanty. However, studies have found higher pregnancy losses among married women in the United States (Simpson and Carson, 2013). In the area of pregnancy loss, researchers demonstrated substantial marital strain resulting from the loss.Studies report that single (Never Married) women are more likely to experience pregnancy loss than their married counterparts (Adetunji, 1998a; Eggleton, 1999). Once a relationship is not bound by the commitment of marital union, it can become unstable. Women in these unstable relationships tend to abort pregnancies usually doing so at the request of their partners. Married women, who experience induced abortions, do so in order to space or limit childbearing (Adanu and Tweneboah, 2004).

Table 4.11: Percentage distribution of pregnancy loss by respondents' marital status

Marital Status	Pregnancy Loss(%)	Number
Never Married	12.3	818
Currently Married	21.5	2876
Ever Married	25.6	446
Total	**20.1**	**4141**

(χ^2=42.312) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The results from the table above shows a significant ($p<0.05$) relationship between those marital status of women and pregnancy loss experiences. The results indicate that pregnant women who had ever been married and had experience any form of pregnancy loss had the highest proportion

of 25.6 per cent. Also, about 22 per cent of those who experience pregnancy loss were currently married and 12.3 per cent of them were never married. This is because pregnancy frequently occurs among currently married women compared to never married women, hence married women have higher risk of pregnancy loss due to say shorter pregnancy intervals (Bankole, Singh and Haas, 1999). Studies have found that women in unstable relationships tend to abortpregnancies, usually doing so at the request of their partners. Married women, who experience induced abortions, do so in order to space or limit childbearing (Adanu and Tweneboah, 2004).

4.2.4 Place of Residence and Pregnancy Loss

Studies have shown that pregnancy loss is highly associated with rural residence (Abebe and Yohanis, 1996; Feresu et al., 2004) as compared to their urban counterparts. The reasons being given are failure to attend antenatal care services, women having a shorter pregnancy interval (less than 2 years), among others.

Table 4.12: Percentage distribution of pregnancy loss byplace of residence

Place of Residence	Pregnancy Loss (%)	Number
Urban	22.1	1953
Rural	18.4	2187
Total	**20.1**	**4141**

(χ^2=8.727) P.Value=0.003

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

From Table 4.12 above, the chi-square test indicates that there is a significant relationship between type of place of residence and pregnancy loss experience (χ^2=8.727; p-value=0.003).About 22 per cent ever pregnant women who reside in urban areas have experienced pregnancy loss relative to women in the rural areas with the proportion of 18.4 per cent. This phenomenon may be as a result of the type of occupation that exist in the urban areas, that is the sedentary work such as office and other corporate work demands a lot of sitting with little movement. Pregnant urban women who find themselves in such occupation stand a higher risk of pregnancy loss compared to their rural counterpart whose occupation demand more mobility. Again, women in the urban areas may aspire to attaining higher goals in their career say education, pregnancy especially unintended pregnancy may seem to be a disruption to attaining these goals therefore they are likely to terminate their pregnancy.

4.2.5 Region of Residence and Pregnancy Loss

Distinct differences within the 10 regions of Ghana suggest that pregnancy loss experiences would be different among women residing in these regions. It might also be influenced by the differing proportions of rural and urban women in these regions.Also regional differences in beliefs, ethnic compositions, cultural practices, lineage composition and practices culminate to determine pregnancy outcome and pregnancy loss.

Table 4.13:Percentage distribution of pregnancy loss by region of residence

Region	Pregnancy Loss (%)	Number
Western	13.4	374
Central	18.7	367
Greater Accra	27.8	687
Volta	15.3	360
Eastern	20.8	414
Ashanti	25.6	861
Brong Ahafo	15.4	376
Northern	14.9	390
Upper East	9.7	207
Upper West	14.4	104
Total	**20.1**	**4141**

(χ^2=85.550) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The results show a significant relationship between region of residence and pregnancy loss experiences at $p<0.05$. Ever pregnant women who reside in the Greater Accra and Ashanti regions had the highest proportion of 27.8 per cent and 25.6 per centrespectively of those who experience pregnancy loss. This was closely followed by women who dwell in Eastern (20.8%) and Central (18.7%). Less than 10 per cent of ever pregnant women in Upper East region represent the least proportion of women who experience loss of pregnancy.

4.2.6 Ethnicity and Pregnancy Loss

Differences in ethnic composition, lineage practices and other cultural beliefs across the ethnic groups culminate to determine pregnancy loss among women affiliated to the various ethnic groups in Ghana.

Table 4.14: Percentagedistribution of pregnancy loss by ethnicity

Ethnicity	Pregnancy Loss (%)	Number
Akan	22.4	2112
Ga/Dangme	26.0	285
Ewe	21.3	541
Mole/Dagbani	14.7	668
Other ethnic groups	13.8	535
Total	**20.1**	**4141**

(χ^2=38.775) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The result above shows a statistically significant ($p<0.05$) relationship between the Ethnic background of women and the pregnancy loss. The result clearly illustrates that ever pregnant women who belong to the Ga/Dangme Ethnic group had the highest proportion (26.0%) of those who have experienced pregnancy loss relative to the other ethnic groups. This was closely followed by women from Akan Ethnic group and Ewe Ethnic group represented by 22.4 and 21.3 percent respectively. The possible explanation for this phenomenon is that, pregnant women who belong to the Ga/Dangme ethnic group mostly reside in the cities where the prevalence of pregnancy loss is high compared to other ethnic groups.

4.2.7 Religion and Pregnancy Loss

The religious affiliation and beliefs of women could be linked to their pregnancy loss experiences. This section seeks to examine the relationship that exists between these two.

Table 4.15: Percentage distribution of pregnancy loss by Religion affiliation

Religion	Pregnancy loss (%)	Number
No religion	17.4	138
Christian	20.6	2736
Moslem	16.8	620
Traditional/Spiritualist	14.3	182
Other religion	25.2	462
Total	**20.1**	**4141**

(χ^2=16.508) P.Value=0.002

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

Results from the table indicate a statistically significant relationship between the various religious affiliations the respondents belong to and their pregnancy loss experiences. Women who had ever been pregnant and belong to the 'other' religion category had the highest proportion (25.2%) of pregnancy loss experiences. This was closely followed by Christian women who experienced pregnancy loss with a percentage of 20.6; Moslem women and ever pregnant women who had no religion were represented by a proportion 16.8 and 17.4 per cent respectively. This is because pregnant women who belong to Christian, Islamic and Tradition religion are being govern by their strong and strict religious rules and morality compared to those who belong to 'other religions', hence the prevalence of pregnancy loss higher in the latter than the former.

4.2.8 Maternal Occupation and Pregnancy Loss

The type of occupation a woman engages in sometimes influences her chances of experiencing pregnancy loss. Women who work in certain professional fields leads to conflict between her childbearing and career roles, as a results they are more likely to make attempts to prevent unintended pregnancies (William et al., 1999). However, once an unintended pregnancy occurs, it may result in pregnancy loss (Powell-Griner and Trent, 1987). This loss could be in a form of induced or spontaneous abortion as a result of the stressful and demanding nature of the job they do.

Table 4.16: Percentage distribution of pregnancy loss by maternal occupation

Maternal Occupation	Pregnancy Loss (%)	Number
Not working	11.2	560
Professional/Technical/Managerial/Clerical	18.0	239
Sales	25.5	1460
Services	15.9	417
Agric.-self employed	25.9	1079
Unskilled/skilled manual	19.3	384
Total	**20.1**	**4141**

(χ^2=75.401) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

The results show a significant ($p<0.05$) relationship between maternal occupation and their pregnancy loss experiences. The results indicate that about 26 per cent of ever pregnant women who are employed in the sales and services sector had the highest proportion of women who had

lost their pregnancies through spontaneous or induced abortion and stillbirths. Women who are not engaged in any form of occupation had the least percentage (less than 12 per cent) of pregnancy loss experiences. All the other maternal occupational types had a relatively higher proportion of pregnancy loss experiences and this goes to show that women who were working then lost their pregnancies (either intentionally or unintentionally) due to the nature of the work they do or terminate it to enable them to pursue a certain career goal.

4.2.9 Wealth Status and Pregnancy Loss

The household wealth status could be an important indicator of pregnancy loss among women.Adetunji (1998a) mentions that the household's economic index is another characteristic that exhibits a complex relationship with pregnancy loss.

Table 4.17: Percentage distribution of pregnancy loss by wealth status

Wealth Status	Pregnancy Loss (%)	Number
Poorest	12.8	681
Poorer	17.7	787
Middle	19.1	838
Richer	22.2	944
Richest	26.6	890
Total	**20.1**	**4141**

(χ^2=52.481) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

From Table 4.17 above, the chi-square test indicates that there is a significant ($p<0.05$) between household wealth quintile of women and their pregnancy loss experiences ($\chi^2=52.481$; p-value=0.000). About 27 per cent of women who were in the richest household wealth quintile had a relative higher percentage of pregnancy loss experience compared to women who belong to the poorest household wealth quintile whose proportion was 12.8 per cent. This finding is contrary to other findings where poorer women tend to experience unintended pregnancies in developed countries (Adetunji, 1998a; Williams, 1991). Again, abortion studies in Ghana indicate that women with lower economic potential were more likely to experience pregnancy loss than women in higher economic groups (Adanu et al., 2005; Ahiadeke, 2002).

4.2.10 Access to Antenatal Services and Pregnancy Loss

Access to Antenatal services plays an important role in pregnancy outcomes of women. Thus access to health facilities in terms of distance from home to the health centreand the quality of health services provided and received is crucial in determining pregnancy outcomes among women.

Table 4.18: Percentage distribution of pregnancy loss by access to antenatal services

Access to antenatal services	Pregnancy Loss (%)	Number
Difficulty in access	17.7	1088
Easy access	21.0	3053
Total	**20.1**	**4141**

($\chi^2=5.290$) P.Value=0.021

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

From Table 4.18 above, at a statistically significant level of 5%, about 18 per cent of ever pregnant women who had experienced pregnancy loss encountered difficulty in accessing antenatal care services. As compared to a higher proportion (21.0%) of ever pregnant women who had easy access to antenatal care services and yet had experienced pregnancy loss. This result is rather quite interesting and goes to suggest that having easy access to antenatal services is a necessary condition but not a sufficient condition for pregnancy safety. Also, the quality of antenatal services received by these pregnant women is critical to their pregnancy outcome.

4.2.11 Alcohol Consumption and Pregnancy Loss

Several studies have linked the excessive alcohol in-take by pregnant women and subsequent loss of their pregnancies. Thus taking of all forms of alcoholic beverages have been established as risk factor of pregnancy loss (Wilcox et al. 1990; Lorente et al. 2000;Clavel et al. 2005; MacArthur et al. 2008).

Table 4.19: Percentage distribution of pregnancy loss by their alcohol consumption

Alcohol Consumption	Pregnancy Loss (%)	Number
Never consumed	18.4	3317
Ever consumed	27.2	824
Total	**20.1**	**4141**

(χ^2=31.738) P.Value=0.000

Source: Computed from Ghana Demographic and Health Survey, 2008

From Table 4.19 above, the chi-square test indicates that there is a significant relationship between alcohol consumption among ever pregnant women and pregnancy loss experience (χ^2=31.738; p-value=0.000). The result indicates that 27.2 per cent of ever pregnant women who had ever consumed any alcoholic beverage had loss their pregnancies as compared to 18.4 per cent of women who had never consumed alcohol when they were pregnant. This clearly shows

that more women who consumed alcohol had their pregnancies terminated through induced or spontaneous abortion or stillbirth. This shows that alcohol consumption is dangerous to pregnant women and their unborn child.

CHAPTER FIVE

CORRELATES OF PREGNANCY LOSS EXPERIENCES

5.0 Introduction

In the previous chapter, a descriptive and bivariate analysis was conducted to examine the relationship of each of the selected independent variables and women's pregnancy loss experience. It was found in the bivariate analysis that there existsa significant association between most of independent variables and pregnancy loss in Ghana. However, a bivariate association between two variables does not necessarily imply a significant relationship between them, because in real life more than one independent variable operates to influence the dependent variable (Kistiana, 2009: pp. 50).

It was therefore important to carry out a statistical analysis which incorporated more than one independent variable and intermediate variables at a time. The most suitable analytical technique was multivariate analysis, which allowed the exploration of the effect of different independent variables on a dependent variable corrected for other independent variables (Tabachnick&Fidell 2007 cited in Kistiana, 2009). In this study, binary logistic regression model was used to determine the factors affecting alcohol use among women in Ghana. Two different modelswerebuilt; the first model comprised of only the intermediate variables (alcohol consumption and access to antenatal services) on pregnancy loss experience among women who have ever been pregnant. The second model on the other hand examined the influence of all the independent variables together with the intermediate variables on the dependent variable.

Table 5.1 Estimated odds ratio with 95% confidence interval for pregnancy loss by selected indicators among ever pregnant women in Ghana, 2008.

Indicators	Model I		Model II	
	OR 95% C.I	**P-value**	**OR 95% C.I**	**P-value**
Intermediate factors				
Alcohol Consumption				
Never consumed (RC)	1.00		1.00	
Ever consumed	1.69[1.42,2.02]	0.000	1.56[1.28,1.91]	0.000
Access to Health facility				
Difficulty in access (RC)	1.00		1.00	
Easy access	1.29[1.08,1.54]	0.006	0.99[0.82,1.21]	0.956
Independent factors				
Maternal Age				
15-19 (RC)			1.00	
20-24			2.19[1.35,3.54]	0.001
25-29			2.47[1.51,4.05]	0.000
30-34			3.08[1.85,5.13]	0.000
35-39			3.53[2.12,5.89]	0.000
40-44			4.70[2.79,7.90]	0.000
45-49			3.49[2.04,5.96]	0.000
Educational Level				
No education (RC)			1.00	
Primary			1.60[1.22,2.10]	0.001
Middle/JHS			1.26[0.97,1.65]	0.089
Secondary or higher			1.39[0.97,2.00]	0.070
Marital Status				
Never Married (RC)			1.00	
Currently Married			1.38[1.04,1.82]	0.025
Formerly Married			1.41[1.00,2.00]	0.059
Place of Residence				
Urban (RC)			1.00	
Rural			1.30[1.05,1.62]	0.018
Region of Residence				
Western (RC)			1.00	
Central			1.87[1.25,2.79]	0.002
Greater Accra			2.23[1.52,3.27]	0.000
Volta			1.06[0.64,1.75]	0.818
Eastern			1.79[1.20,2.68]	0.004
Ashanti			2.51[1.78,3.55]	0.000
Brong Ahafo			1.57[1.03,2.41]	0.037
Northern			1.93[1.17,3.19]	0.010
Upper East			1.06[0.55,2.03]	0.873
Upper West			1.62[0.80,3.28]	0.176

Table 5.1 continued

	Model I		Model II	
Indicators	**OR 95%CI**	**P-value**	**OR 95%CI**	**P-value**
Ethnicity				
Akan(RC)			1.00	
Ga/Dangme			1.08[0.77,1.51]	0.657
Ewe			1.20[0.87,1.64]	0.264
Mole-Dagbani			0.81[0.55,1.19]	0.280
Other ethnic group			0.70[0.50,1.00]	0.035
Religion				
No religion (RC)			1.00	
Christian			1.04[0.65,1.67]	0.866
Moslem			1.31[0.75,2.26]	0.343
Traditional			0.96[0.50,1.81]	0.888
Other religion			1.23[0.74,2.05]	0.426
Occupation				
Not working (RC)			1.00	
Professional work			1.27[0.80,2.02]	0.307
Sales			1.81[1.32,2.47]	0.000
Agric-self employ			1.26[0.88,1.80]	0.211
Service			2.11[1.47,3.02]	0.000
Un/ Skilled manual			1.57[1.07,2.31]	0.021
Wealth Status				
Poorest			0.60[0.40,0.90]	0.014
Poorer			0.70[0.50,1.00]	0.036
Middle			0.71[0.53,0.94]	0.018
Richer			0.85[0.67,1.08]	0.186
Richest (RC)			1.00	
Constant	1.68	0.000	3.99	0.000
Model chi-square (df)	37.64 (2)		304.76 (40)	
-2 Log Likelihood	4121.95		3854.83	
Nagelkerke R^2	1.4%		11.2%	
Percent of correct predictions	79.9%		79.8%	

(RC)=Reference Category; df= Degree of Freedom

Source: Computed from Ghana Demographic and Health Survey (GDHS), 2008

5.1 Correlates of pregnancy loss experiences among ever pregnant women in Ghana

Table 5.1 displays results from the binary logistic regression models used to examine the association between the predictor variables and pregnancy loss experience among ever pregnant women in their reproductive ages. The pregnancy loss variable was dichotomous, with 1 representing women who had ever had their pregnancies terminated through miscarriages, stillbirth or abortion, and 0 representing ever pregnant women who had no termination of pregnancy.The overall model is significant with a chi-square value of37.64 at two (2) degrees of freedom. The model 1, predicts 79.9% of the responses correctly. The model produced a Nagelkerke's R-squared value of0.014, suggesting that approximately 1.4% of the variation in pregnancy loss is explained by the variables entered in the model.Results of Table 5.1 suggest that in model 1, the two intermediate variables (alcohol consumption and access to health facility) were significant in predicting pregnancy loss among women. The results from model I indicate that alcohol consumption and access to health facility both influence pregnancy loss.

The model 2 displays the results of a binary logistics regression which was generated to identify this link. In this model, the independent variables were incorporated into the model to identify the significance and nature of the relationship between independent variables and pregnancy loss. Similar to the results from Table 5.1,a Nagelkerke R-square value of 11.2 was produced, suggesting that 89 percent of the variation in pregnancy loss was explained by the background characteristics and the intermediate variables. The results of model II shows that women who had ever consumed alcohol were 56% more likely to have experienced a pregnancy loss than their counterparts who never consumed any alcohol. The results indicate that eight (maternal age, educational level, marital status, place of residence, region of residence, type of occupation,

wealth index and alcohol consumption) out of the 11 variables included in the model were significant predictors of pregnancy loss experiences among ever pregnant women both at 0.01 and 0.05 significance level. The overall model is significant with a chi-square value of 304.76 at forty (40) degrees of freedom and predicts 79.8% of the responses correctly.

5.2 Alcohol Consumption

In the bivariate analysis (table 4.18) shows that higher proportion of pregnancy loss experiences among ever pregnant women who had ever consumed alcohol, at p=0.000. The observation still remains significant in model 1 with the inclusion of another variable at the multivariate level. The result shows that ever pregnant women who had ever consumed any alcoholic beverage were 1.69 times more likely to experience pregnancy loss as compared to women who had never consume alcohol.

The same scenario could be observed in model 2, with the inclusion of all other variables into the model. It indicates that women who had ever been pregnant and had also ever consumed alcohol were 1.56 times more likely to have experienced pregnancy loss relative to those who had not consumed. It could therefore be critically observed that the inclusion of other predictor variables into the model had reduced the likelihood of alcohol consumption in influencing pregnancy loss experience among ever pregnant women. This finding is consistent with other studies which found thatmoderate-to-heavy alcohol consumption was significantly associated with adverse outcomes, including miscarriage, premature birth, stillbirth, intrauterine growth restriction (Albertsen et al., 2004; Henderson et al, 2007; O'Leary et al, 2009; Mullally et al., 2011; Patra et al., 2011; Murphy et al., 2014; Nykjaer et al., 2014).

5.3 Access to Health Facility

In Model 1, there is a statistically significant association between access to health facility by these pregnant women and pregnancy loss at the multivariate level. The result shows that ever pregnant women who had easy access to health facility were more likely to have had lost their pregnancies relative those who had some difficulty in accessing the health facility. The odd ratios indicate that women who had easy access to the health facility were 1.29 times more likely to experience loss of pregnancy compared to those who had difficult access to these health access. There might be two possible reasons for these findings; first access here is measured in terms of distance from home to the health facility. Since the study considered all the means through which pregnancy can be loss (miscarriage, stillbirth and induced abortion), the women who have easy access to these health facility may go and opt for induced abortion compared to those who encounter difficulty in accessing these health facilities. Another possible reason is that by just gaining easy access to the health facility is a necessary but not a sufficient condition for safe pregnancy and delivery. This is because other factors such as the quality of service provided and the ability to afford this services is crucial, the inability to satisfy these conditions might result in pregnancy loss. However, this variable in the model 2 with the addition of other variables was not significant in predicting pregnancy loss. Other explanatory factors were more important in explaining pregnancy loss other than access or distance to a health facility.

5.4 Maternal Age

The beta values in table 5.1 show that as the age of ever pregnant woman increases the pregnancy loss experience also increases. Also, taking the odd ratios into consideration the table shows that

the higher the age of an ever pregnant woman the higher the probability of the pregnancy loss experiences. For instance, compared to women of the youngest age group (15-19) reference category to the odd of experiencing pregnancy loss was 2.2 times among women aged 20-24 increasing steadily to 2.5 and 3.1 among women aged 25-29 and 30-34 years respectively. Contrary to this finding, other studies have indicated that induced abortion is common among women whose age is less than 29 years compared to women whose age is 40–49 years (Yassin, 2000; Misago et al., 1998).Other studies also found that when compared with younger women, women older than 35 years are at increased risk of spontaneous abortion, ectopic pregnancy, placenta previa, pre-gestational diabetes, eclampsia, and pregnancy-induced hypertension that might account for the variations (Cleary-Goldman et al., 2005; Hollier et al., 2000; Jacobsson, 2004; Jolly et al., 2000). This finding supports the first hypothesis of the study as it suggests that women in the older age group are more likely to lose their pregnancy as compared to the younger women.

5.5 Educational Level

The table showed a statistically significant relationship between the educational level of the study population and their pregnancy loss experiences. Model 2 illustrates that ever pregnant women who had attained primary level of education were 1.60 times more likely as to have ever experience pregnancy termination compared to their counterparts with no formal education. Other studies found that pregnancy loss wasalso common among women who had technical skill training or secondary high schooleducation compared to women who did not have technical skill training nor had primary school or no education (Whitley et al., 1999; Vangen et al., 2008). Other studies found that women with higher educational attainment reported fewer pregnancy losses

(Toulemon, 1992; Toulemon and Leridon, 1992).Again, the likelihood that a woman will report having had any form of pregnancy loss rises steadily as educational attainment increases, with a particularly sharp increase from women who have lower-level to those who have upper-level secondary schooling, followed by a decrease for university educated women (Shapiro and Tambashe, 1994).Hence, the second hypothesis which stated that women with secondary or higher education were less likely to experience pregnancy loss compared to those with no education were disproved.

5.6 Marital Status

This variable was also significant ($p<0.05$) in predicting pregnancy loss experiences among ever pregnant women in Ghana. From the result, women who were currently married were 1.38 times more likely as to experience any form of pregnancy loss compared to those who were never married, the reference category. The possible logical reason for this occurrence was that, it is assume that since most conception and births occur in marriage, women are more at risk of losing their pregnancies because of the frequency of conception and birth. A study in the United States of America indicated the likelihood of aborting increases monotonically among unmarried women (Trent and Powell-Grine, 1991). Other studies have shown that abortion is more likely among the unmarried than the married women (Henshaw & O'Reilly 1982). They argued that although differences between married and unmarried women's propensity to abort are affected by the greater likelihood of unwanted pregnancies among unmarried than married women, differences in the costs of carrying a pregnancy to term also influence abortion levels. For example, a birth to an unmarried woman is likely to be more disruptive, more socially stigmatizing, and more costly in terms of lost opportunities than a birth to a married woman. The findings supports last hypothesis

that women who have never married are less likely to experience pregnancy loss compared to women who are currently married.

5.7 Place of Residence

The association between place of residence and pregnancy loss was found to be significant at p-value < 0.05. The odds ratio shows that women who reside in rural areas were 1.30 times more likely to experience pregnancy loss compared to their counterparts in the urban areas, the reference category. Similar findings were observed in a study in Tanzania where the prevalence of stillbirths among rural women was very high compared to their urban counterparts (Kiguli et al., 2015).Another study found that women in rural agriculture areas are at increased risk for adverse spontaneous miscarriage(Naidoo et al., 2011).

5.8 Region of Residence

Region of residence of these women was incidentally significant in predicting their pregnancy loss experiences. Regions like Central, Greater Accra, Eastern, Ashanti, Brong Ahafo and Northern regions were 87, 23, 79, 51, 57and93 percent more likely, irrespective, to report pregnancies loss than those who reside in the Western region. Certain characteristics within the various regions encourage higher or lower fertility which influence the loss of pregnancy. The lineage system of inheritance does not seem to be a factor influencing these results since certain regions have a majority of either patrilineal (Greater Accra, Volta, Northern, Upper East and West regions or matrilineal (Ashanti, Central, Western, Eastern and Brong-Ahafo regions) societies are accounted for in pregnancy loss

5.9 Maternal Occupation

There was a significant association, women's occupation and pregnancy loss experience. The result in table 5.1 shows that women who were engaged in sales were 1.81 times more likely to lose their pregnancy compared to women who were not working. The same can be said of women who are working in the service sector and those who are engaged in skilled and unskilled manual work were 2.11 and 1.57respectively, times as likely as to experience pregnancy loss relative to those who were not working.Certain characteristics within the professional fields of work leads to conflict between her childbearing and career roles, as a result, they are more likely to make attempts to prevent unintended pregnancies (William et al., 1999). However, once an unintended pregnancy occurs, it may result in pregnancy loss (Powell-Griner and Trent, 1987). This loss could be in a form of induced or spontaneous abortion as a result of the stressful and demanding nature of the job they do.

5.10 Wealth Status

Concerning the household wealth status of these women and their pregnancy loss experience, there was a significant predictive relationship between them. From the results, ever pregnant women who dwell in the poorest household wealth were 40% less likely to experience pregnancy loss as compared to women in richest household wealth status. Similar observations were seen of women who dwell in poorer and middle household wealth; thus they were 30 per cent and 29 per cent less likely to experience pregnancy loss respectively as compared to women in the richest household wealth quintile. These characteristics could contribute to the regulation of fertility and hence a reduction in the number of pregnancy loss experienced by women.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Summary

This study utilized information from the 2008 round of GDHS dataset to examine the correlates of pregnancy loss among ever pregnant women in Ghana. Specifically, the study sought to identify some risk factors associated with pregnancy loss among ever pregnant women in Ghana. Again, to examine the household factors that influences pregnancy loss among women in Ghana.Bivariate analyses tends to examines the cross-tabulations and chi-square tests between pregnancy loss experienced by ever pregnant women and their background characteristics, which have been shown to influence pregnancy loss.

The overall proportion of pregnant women who have ever experience any form of pregnancy loss represents 20.1 percent. Demographic and socio-economic characteristics that were significantly associated with a pregnancy loss experience were maternal age, educational level of the women, their marital status, type of place and region of residence. Others were their ethnicity, religion, maternal occupation, household wealth quintile, their access to antenatal services and alcohol consumption.

Multivariate analyses involving binary logistic regression models were used to determine which demographic and socio-economic background characteristics maintained significant influence on pregnancy loss. The results suggested that alcohol consumption, access to health facilities, age, educational level, marital status, place of residence, region of residence, occupation, and wealth

status. These findings support and confirm the first, second and third hypotheses. The first hypothesis states that older women are more likely to lose their pregnancy as compared to the younger women, and the second was women with secondary and higher education are less likely to experience pregnancy lose compared to those with no education. The third hypothesis was also confirmed that women who were never married were less likely to experience pregnancy loss as compared to women who are currently married.

6.1 Conclusion

This study attempted to identify and examine the correlates of pregnancy loss among ever pregnant women in Ghana. The results from the analyses enabled us to understand the following: first, the risk factors (alcohol consumption, difficulty in accessing antenatal health care) associated with pregnancy loss experience among ever pregnant women. Second, the household factors (household wealth quintile) that influences pregnancy loss among ever pregnant women in Ghana.

Results from the multivariate analysis revealed that age of a woman, educational level, and marital status, place of residence, occupational type and alcohol use were significant correlates of pregnancy loss experience among ever pregnant women. An important finding from the model was that women who consumed alcoholic beverage when controlling for other factors were 1.56 times more likely to experience pregnancy loss than those who never consumed. This reveals the high risk that alcohol consumption associated with pregnancy complication since there is no limited quantity of alcoholic beverage that is safe for women during pregnancy.

Again, the household wealth status in which these women dwell have shown in the binary logistic regression ever pregnant women who dwell in the poorest, poorer and middle household wealth category were 40, 30 and 29 percent, respectively, less likely to experience pregnancy loss than those who dwell in the richest household wealth status. Further observation of results in this category suggest that women who dwell in low socio-economic household have a less likelihood to lose their pregnancy relative to those who dwell in the higher socio-economic household.

6.2 Recommendations

Based on the findings of this study, the following recommendations were proposed: that first, there should be more reproductive health public education especially for young women as they enter their reproductive ages on safe practices during pregnancy period. This recommendation is essential because the results show that older women who have gone through their reproductive ages have experience more pregnancy loss compared to younger women. This therefore calls for more attention to be given to the younger women to adopt safe practices and avoid risky behaviours that will prevent the loss of pregnancy among them through miscarriages, stillbirths, (spontaneous or induced) abortion.

Second, women should be sensitized on the risk alcoholic beverage consumption poses to their reproductive health system in general and pregnancy in particular. This is because the result shows that women who have ever drunk any alcoholic beverages were more likely to lose their pregnancies than those who had never drank alcohol. The negative effectsof alcohol consumption on pregnancies among women cannot be underestimated, as various literatures have demonstrated the various effect it has on women reproductive health system.

Further, access to health facilities that provide antenatal care services must be made closer to these women to be easily accessible. This is because the result shows that ever pregnant women who have easy access to these health facilities are less likely to lose their pregnancies relative to who encounter difficulty in accessing antenatal services. This will also offer the opportunity for the service providers to educate these women on safe antenatal practices. Again these health facilities must be closer to women especially those living in the rural areas since the results also show that ever pregnant women in these areas are more likely to lose their pregnancies compared to those in urban areas. Once these recommendations are taken into consideration, they could aid in reducing the proportion of women who will experience any form of pregnancy loss.

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