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ASSESSMENT OF PREVALENCE AND RISK FACTORS OF STILLBIRTH IN ASANTE AKIM SOUTH DISTRICT

BY

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THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH, SCHOOL OF ALLIED HEALTH SCIENCES, UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN COMMUNITY HEALTH AND DEVELOPMENT.

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DECLARATION

I hereby declare that this submission is my own work towards a Master of Science in Community Health and Development and that to the best of my knowledge, it includes no material previously published by others nor material which has been accepted for the award of any other degree of the university or elsewhere, except where due acknowledgement has been made in the text.

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(Candidate)		

I hereby declare that the preparation and presentation of the dissertation was supervised in accordance with the guidelines on supervision of dissertation laid down by the University for Development Studies.

Dr. Alhassan Abass	.....	24/11/15
(Supervisor)		

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DEDICATION

I dedicate this piece of work first to God almighty who through his grace and mercies granted me the strength and other resources necessary to successfully complete the research amidst other competing demands. Secondly, to my mother Nboo Afiba for her care and support throughout my education, my dear wife Janet Abegme Adapore and my daughter Eureka Asigisunga Ayikae for their undying love and support and finally to all mothers who have lost their babies.

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ABSTRACT

Introduction: Developing countries records about 98% of the global annual number of stillbirths. The major causes of stillbirth are childbirth complications, maternal infections in pregnancy, and maternal disorders, especially hypertension, maternal under nutrition, fetal growth restriction, and congenital abnormalities. However, in Ghana there is very little information on the prevalence and causes of stillbirth.

Objectives: The objectives of this study is to determine the prevalence and the associated risk factors of stillbirth in the Asante Akim South District in the Ashanti Region of Ghana

Methodology: Records of women who delivered at health facilities in the district from 1st January 2010 to 31st December 2012 were retrieved from the maternity wards and data extracted for those who had stillbirth. Maternal characteristics such as age, occupation, parity, educational level, clinic attendance and anti-malarial prophylaxis were recorded and analyzed. In addition, certain characteristics of the stillborn such as birth weight, gestational age, sex and type of delivery as well as type of stillborn were also recorded.

Results: The total number of deliveries in the district was 6356 and 141 were stillbirths giving a stillbirth prevalence of 22.2 per 1000 births over the period of which most 80 (56.7%) were fresh. Most of the women had low education coupled with low-income employments. The factors that were found to be associated with stillbirths were maternal and foetal characteristics, as well as clinical factors. Low ANC attendance, low educational level of mothers, and malaria in pregnancy, low birth weight, and gestational age were the major ones.

Conclusion: The prevalence of stillbirth of 22.2 per 1000 birth was relatively high. The major risk factors were of both maternal and feotal origin with parity, type of delivery, low birth weight and complications during delivery being the major contributors. More than 50% of the stillbirths were fresh with 43% of the stillbirths were macerated. About 18% of the mothers were teenagers, and about 70% of the mothers were engaged in farming and petty trading.

Recommendation: The District Health Administration Team should institute health promotion programmes to increase ANC attendance and promote adolescent reproductive health. There is a need to conduct a prospective research on stillbirth in the district.

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STILLBIRTH

Stillbirth is defined as a baby born of, at least 26 weeks of gestation or 1000g birth weight who did not, at any time after delivery, breathe, or show any evidence of life such as a heartbeat.

ANTEPARTUM STILLBIRTH

Antepartum stillbirth is defined as death of a foetus before the onset of labour.

UNEXPLAINED ANTEPARTUM DEATH

Unexplained antepartum death is defined as the death of a normally formed foetus prior to the onset of labour where no predisposing factors are considered likely to have caused the death.

LIVE BIRTH

Live birth refers to the complete expulsion or extraction from the mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

ANTENATAL CARE

This is the care given to a pregnant woman and her unborn child throughout pregnancy. Such care involves regular visits to a doctor or midwife, who performs abdominal examinations, blood and urine tests, and monitoring of blood pressure and foetal growth to detect disease or potential problems.

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SKILLED ATTENDANCE

Skilled attendance has only recently been defined explicitly as the process by which a woman is provided with adequate care during labour, delivery and the early postpartum period. This definition goes on to emphasize that the process requires a skilled attendant and an enabling environment, which includes adequate supplies, equipment and infrastructure as well as efficient and effective systems of communication and referral.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
DHS	Demographic and Health Surveys
DLHS	District Level Household and Facility Survey
GHS	Ghana Health Service
IUFD	Intrauterine Fetal Death
MDG	Millennium Development Goals
OR	Odds Ratio
UN	United Nations
UNICEF	United Nations Children Emergency Fund
WHO	World Health Organization

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CHAPTER ONE

1.0 INTROUDUCTION

1.1 OVERVIEW:

This chapter deals with the background of the study, problem statement, conceptual model of risk factors of stillbirth, the goal of the study, the objectives of the study, the research questions and justification for the study

1.2 Background information of the study

Stillbirth, according to the World Health Organization's International Classification of Disease (ICD-10) definition for international comparison, is the full extraction of a foetus weighing 1000g or more or not less than 28 weeks of gestation, which shows no sign of life (WHO, 2004). The medical definition of stillbirth is the birth of a baby who is born without any signs of life at or after 24 weeks of pregnancy.

The baby may have died during pregnancy (called intrauterine death), labour or birth (Hogberg 2007)

Stillbirth as defined by Leduc (2006) is the death of foetus that takes places before the total expulsion or taking out the product of conception which lasted more than twenty weeks of gestation or the foestus weighs more than 500g. Loss of a pregnancy after 20th week of pregnancy which is due to natural causes, it can also occur before delivery or as a result of complications during labour and delivery. It can also be described as intrauterine foetal death (IUFD)

Still births are high especially in developing countries which has become a Public Health issue (Mavalankar et al, 1991), however 20% of still births at least one risk factor can be avoided (Smeeton, 2004). In the whole world, roughly 2.65 million pregnancies end up as stillbirths

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every year and about 98% of these occur in developing countries (Bhutta, 2011). In 2008, about 2.65 million stillbirths occurred globally in the third trimester and more than 45% of these happened during intrapratum (Bhutta, 2011). According to Bhutta, (2011) the major causes of stillbirths are childbirth complications, maternal infections in pregnancy (eg, syphilis), maternal disorders, especially hypertension, maternal under nutrition, foetal growth restriction, and congenital abnormalities.

In Africa stillbirth rates are generally not known due to few researches, however hospital based study in Ethiopia and South Africa showed rates of 55.3 and 38.4 per 1000 births respectively (Bisetegne & Hakim, 2008; Ntuli & Malanga, 2012). Low antenatal attendance and mechanical factors were revealed to be responsible for the high rate of stillbirths in the Ethiopian study (Bisetegne and Hakim , 2008).

Walker et al (2013) and Bhutta et al (2010) said that devising strategies that measurably improve maternal and newborn care in low resource settings is an urgent global priority have been identified. According to Hogan et al (2010), nearly 300,000 maternal deaths, 3 million newborn deaths (Rajaratnam et al 2010), and 1 million intrapartum-related stillbirths (Lawn et al 2011), take place each year in grossly disproportionate geographic patterns. Given that there are many countries with very low childbirth-related mortality rates, it is clear that high childbirth-related mortality burdens are not inevitable. Rational bolstering of health systems saves lives, even in lower income settings where resources are limited.

The major complications that result in maternal, newborn, and fetal deaths are well known. For mothers, these are traditionally categorized as excessive hemorrhage, infection, hypertensive disorders, and obstructed labour (Ronsmans and Graham, 2006). For babies, these are

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intrapartum-related events (previously called birth asphyxia), infection, and complications of prematurity (Lawn et al., 2005). Avoidable stillbirths are largely attributed to inadequate intrapartum care (Lawn et al 2011). These categories provide an important orientation to the general causes of childbirth-related deaths and as such are fundamental to establishing a basis for strengthening health systems. However, a limitation of these somewhat broad categorizations is insight into where exactly deficiencies in clinical care are occurring, information that is critical to the design and implementation of effective health system improvements. For example, a maternal death from haemorrhage can result from absent prophylactic oxytocin, undetected bleeding, and/or inaccessible blood transfusion capability, three different types of system failures that necessitate different intervention approaches to prevent failure recurrence. Targeted health system strengthening relies on a systematic analysis of the events that lead to deaths in order to determine if avoidable breakdowns in medical care are present. If such deficiencies exist, fully categorizing them and pinpointing precisely where in the clinical care continuum they occur provides clinicians, policymakers, and other stakeholders with information needed to effectively address them.

Audits are tools that provide a logical framework for quality improvement by systematically assessing clinical practices against accepted standards (Mancey-Jones and, Brugha, 1998). Mortality audits have demonstrated success in helping to reduce childbirth-related deaths in lower income countries (Pattinson et al 2009; Dumont et al., 2013; Kidanto et al. 2012). Since the main causes of maternal and perinatal deaths are consistent across lower income countries, it stands to reason that there are also similarities in the avoidable factors associated with those deaths. Most maternal and perinatal death audits have been restricted to a single facility or region

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with no widely utilized centralized mechanism for aggregating data from across countries (Pattinson et al. 2009).

Family characteristics such as low maternal income, low socioeconomic status of families, low level of antenatal service, late start and infrequent antenatal attendance were associated with stillbirths in Ghana, (Wiredu and Tettey 2004). They also identified hypertensive disorders, pre-existing maternal complications, antepartum haemorrhage pyrexia in pregnancy, pregnancy induced hypertension, as well as pre-elampsia as the causes of stillbirth, (Wiredu and Tettey 2004).

According to Engmann et al (2012) the prevalence of stillbirth in Northern Ghana was 23/1000 birth and associated risk factors were prematurity, delivery for the first-time and multiple pregnancies.

Analysis of the 2007 Ghana Maternal and Health Survey indicates that the risk of losing a pregnancy is about 50% in the third trimester. Place of residence, maternal age and low level of education of mothers were association with the risk of foetal death (Luguterah and Nokoe 2013).

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1.2 Problem statement

Lawn et al (2011) noted in their study that despite increasing attention and investment for maternal, neonatal, and child health, stillbirth remains a major health problem. According to them in 2008 at least 2·65 million stillbirths were estimated worldwide. Low-income and middle-income countries account for about 98% of stillbirths , and the numbers vary from 2·0 per 1000 total births in Finland to more than 40 per 1000 total births in Nigeria and Pakistan. Worldwide, 67% of stillbirths occur in rural families, 55% in rural sub-Saharan Africa and south Asia, where skilled birth attendance and caesarean sections are much lower than that for urban

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births. In total, an estimated 1·19 million intrapartum stillbirths occur yearly. Most intrapartum stillbirths are associated with obstetric emergencies, whereas antepartum stillbirths are associated with maternal infections and fetal growth restriction.

According to Lawn (2011), around 2.6 million stillbirths occur each year. The issue of stillbirth has been closely linked to the state of development of a nation. Although 98% of these deaths take place in low-income and middle-income countries, stillbirths also continue to affect wealthier nations, with around 1 in every 300 babies stillborn in high-income countries.

Stillbirth rate is an indirect measure of the quality of management of pregnancy, labour and delivery. 11,387 stillbirths were reported in Ghana in 2006 given a stillbirth rate of 22/1000 (Ghana Health Service (GHS) Annual Report 2007). The most current statistics is in 2009 when the country recorded a total birth of 782,920 out of this number 17,200 was noted to be stillbirth given a rate of 22 per 1000 births.

The burden of stillbirth in the Asante Akim South District from 2005- 2010, totalled 187 with live deliveries of 4061. The stillbirth rate was about 46.0/1000 births. The stillbirth rate in the district is higher than the national one of 22 per 1000 births and this call for more attention and research to identify the causes and associated factors.

The aim of this research therefore was to determine the prevalence and contributing factors of stillbirth in Asante Akim South District in the Ashanti Region of Ghana.

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1.3 Research questions

1. What is the prevalence of stillbirth in the Asante Akim South District in the Ashanti Region of Ghana?
2. What are the risk factors associated with stillbirth in the district.

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1.4 Conceptual model/framework

The possible risk factors or determinants of stillbirth are: Distant factors, Socio-economic factors such as Income level, employment status and other socio-cultural practices such as prohibition of the eating of certain kinds of food. The use of herbs during pregnancy and smoking has been identified to be some of the determinants. Furthermore, the degree of religiosity and adherence to religious views has been identified to contribute to the occurrence of stillbirth.

Pregnancy related factors: The health and nutritional status of a pregnant woman; that is, when the woman is not healthy enough and also looking malnourished can affect the very survival of both the mother and the fetus. This is because for pregnant woman to have stillbirth free delivery, she must be very healthy and have all the needed nutrients required for the proper growth and development of the fetus. Likewise, the level of antenatal care is very important. Regular antenatal attendance helps to monitor the mother and the fetus. Relating to this is the issue of infections. Regular antenatal attendance helps to address the problem of infection by providing professional advice and guidelines.

Biological factors: The formation and structure of the fetus can be said to be a contributory determinant. This normally occurs when the unbiblical cord is sometimes severely infarted with

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the needed flow of blood impeded. Also congenital abnormalities on the part of the pregnant woman with regards to her reproductive system can lead to the death of the fetus. Finally excessive smoking and overweight could also be the determinants of stillbirth.

National estimates of causes of stillbirths are scarce, and multiple (>35) classification systems impede international comparison. Immediate data improvements are feasible through household surveys and facility audit, and improvements in vital registration, including specific perinatal certificates and revised International Classification of Disease codes, are needed. A simple programmed-relevant stillbirth classification that can be used with verbal autopsy would provide a basis for comparable national estimates. A new focus on all deaths around the time of birth is crucial to inform programmatic investment (Lawn et al., 2011) Dassah, Odoi and Opoku (2014) in a research conducted in a tertiary hospital in Ghana noted that of the 8,758 deliveries which met the inclusion criteria, 5.9% of the babies were stillbirths, and 6.5% and 1.9% of live births had very low Apgar scores in the first and fifth minutes respectively. Preterm delivery, hypertensive disorders in pregnancy, breech delivery and vacuum extraction were significant risk factors for stillbirths.

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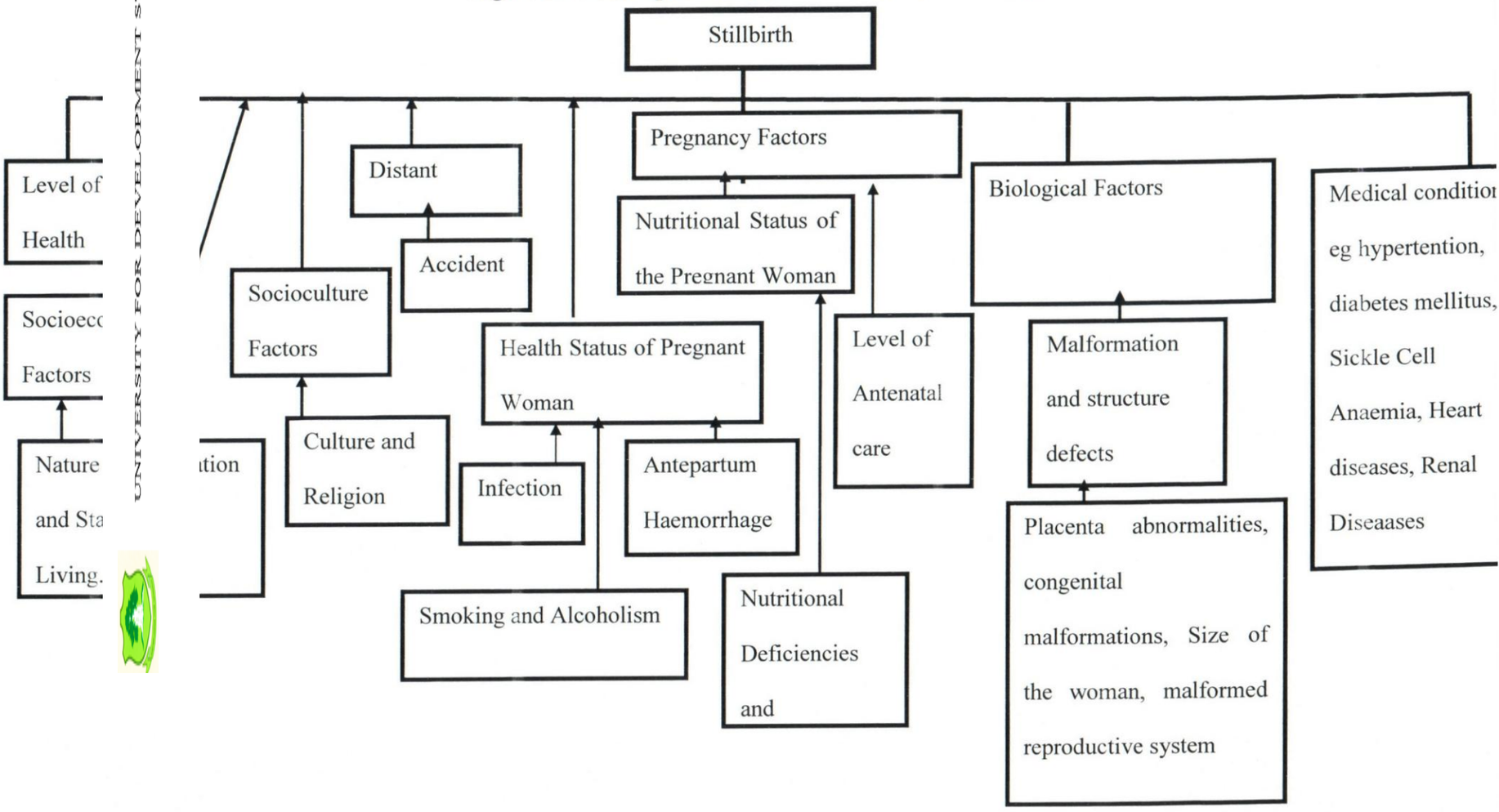
Figure 1.1 : Conceptual model on risk factors of stillbirth



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1.5 Aims

The main aim of this study is to assess prevalence and the risk factors of stillbirth in the Asante Akim South District in the Ashanti Region of Ghana

1.6 Objectives

The specific objects are to:

1. determine the prevalence of stillbirths in the Asante Akim South District
2. identify risk factors associated with stillbirths in the Asante Akim South District

1.7 Justification

According to WHO (2011), some 2.6 million stillbirths occurred worldwide in 2009. Every day more than 7200 babies are stillborn — a death just when parents expect to welcome a new life — and 98% of them occur in low- and middle-income countries. The interventions that improve maternal and newborn health would reduce the number of stillbirths too are simple and well known.

More and better stillbirth data are needed. Better counting of stillbirths and improved cause-of-death data are one way to advocate for and prioritizes action to improve child health and survival. Most of the world's child death rates are based on surveys, which do not routinely measure stillbirths. Global statistics groups and the World Health Organization are actively promoting a systematic and open approach to global estimates of stillbirths that is well-documented and peer-reviewed. Improved stillbirth data will help decision-makers chart an effective course to improve child health and survival.

For the past five years, Ghana has recorded a steady increase in stillbirths. In the Asante Akim South District, the records available at the District Health Directorate indicated that out of every 200 deliveries that took place in the various health facilities in the District, not less than 10 resulted in

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stillbirth. These high values are way beyond the acceptable range in the WHO/ United Nations Children Emergency Fund (UNICEF) document (WHO/UNICEF, 2006), which is $^{10}/_{1000}$. This, thus, calls for a search to unravel the risk factors associated with the high rate of stillbirth in the District at large.

Health policies that promote child survival need better data on stillbirths. It is important to collect stillbirth data to determine if improved delivery care practices or more attention to problems that crop up during pregnancy could increase a baby's chance of survival.

This information can be used to more effectively design medical and midwifery curricula, develop community and facility-based health programmes, and monitor their progress.

The findings of this study with respect to the risk factors that are responsible for high stillbirth rate in the District would serve as a guide to design appropriate control measures and interventions to curtail the high incidence of stillbirth in the District. This would also help the Ministry of Health, Ghana Health Service and other relevant bodies to formulate policies on maternal and infant health in the region and the nation at large. Finally, recommendations based on the findings would serve as tools for further search in the subject matter, to ensure that acceptable and lasting solutions are found. The findings can also serve as guide for the District Health Directorate and Juaso District Hospital to formulate policies and educational programs to reduce the incidence of stillbirth in the district.

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CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview

This section of the project work reviews literatures that are relevant to the issue of maternal healthcare. The review was done with literature from online sources like peer review journals, books and articles. The data was both theoretical and empirical in nature. These are grouped under the objectives of the study.

2.2 Stillbirth Defined

Stillbirth is defined as the complete expulsion of the product of conception after twenty-two weeks of gestation or weighing more than 0.5kg which no sign of life such as movement, breathing and heart beat (Johnson 2008). Marcovitch (2005) defined stillbirth as the death of a fetus at any time after the twentieth week of pregnancy . Stillbirth is also referred to as intrauterine fetal death (IUFD) and factors that increase a mother's risk of stillbirth include: age over 35, malnutrition, inadequate prenatal care, smoking, and alcohol or drug abuse.

Stillbirth as defined by Leduc (2006) is the death that takes places before the total expulsion or taking out the product of conception which lasted more than twenty weeks of gestation or the foetus weighs more than 500g. Johnson (2008) outlined the following as the causes of stillbirth: Pre-eclampsia and Eclampsia, diabetes in the mother, hemorrhage, infections, severe birth defects and postmaturity.

The definition recommended by WHO for international comparison a baby is born with no signs of life at or after 28 weeks gestation (WHO 2004).

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According (Bhutta, 2011) the major causes of stillbirths are childbirth complications, maternal infections in pregnancy (eg, syphilis), maternal disorders, especially hypertension, maternal under nutrition, fetal growth restriction, and congenital abnormalities.

Fretts (2005) and Silver et al (2007) noted in their study that although certain events are likely cause of stillbirth, identification of the cause at this period of life is complex, and even with placental pathological examinations and autopsies, the cause cannot be identified in half of stillbirths. Wigglesworth (1987) had suggested way back in time that the proportion of stillbirth that is unexplained varies, based, in part, on the classification system used, the amount of information available to determine cause, and the biases of the person conducting the review. This assertion was confirmed by Silver (2007).

Multiple factors may act directly on the fetus or indirectly on the mother. Especially in many developing countries settings and particularly those with a high proportion of home deliveries, why the fetus died will often be unknowable, and the percentage of stillbirths without a clearly defined cause will be even higher as noted by McClure et al (2006).

Estimates as noted in Goldenberg and Thompson (2003) suggested that infection contributes to nearly half of the stillbirths in developing countries. Infection may lead to stillbirth through several pathways. First, through maternal infection resulting in systemic illness, i.e., high maternal pyrexia or breathing problems, the fetus may die, without the organisms being transmitted to the placenta or fetus. Next, the placenta may be directly infected without spread of the organisms to the fetus with reduced blood flow resulting in a stillbirth. Finally, infection of the fetus may damage vital organs resulting in stillbirth or may result in an anomaly that later kills the fetus.

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A substantial proportion of the infection-related stillbirths in developing countries occur secondary to fetal infection with bacteria that also cause chorioamnionitis. In developing countries, infections with Gram negative organisms such as Klebsiella Pneumoneae or E Coli may be the most common of these Goldenberg and Thompson (2003).Syphilis is prevalent in Sub-Saharan Africa more than 10% of pregnant women are sero positive in some geographic areas. Where this occurs, up to half of all stillbirths are in syphilis sero positive women and estimates suggest that 25% of all stillbirths are blamed on syphilis alone (Newman, et al., 2003).

Almost half of all births worldwide occur in areas with endemic malaria, where there are particularly high rates of stillbirth. Although malaria is generally not associated with higher stillbirth rates in multigravidae, women infected for the first time in pregnancy are at higher risk for stillbirth (Wort et al., 2006). Placental damage is the likely cause for stillbirths associated with maternal malaria.

Melkert (1988) in an earlier study suggested that many other infections have been associated with stillbirth, but their impact in developing countries is unknown. Lyme disease, caused by the spirochete B burgdorferi, occasionally causes stillbirth. Interestingly, at least one report from Tanzania found that B burgdorferi seropositivity is more than 30%, but the relationship to stillbirth in Tanzania is unknown.

African tick-borne relapsing fever, another spirochete disease, has also been associated with stillbirth. One study reported a perinatal mortality rate of 30% with maternal infection, and described relapsing fever spirochetes in the placenta. The contribution of this disease to the overall stillbirth rate in Sub-Saharan Africa is unknown. Leptospirosis, still another spirochete disease, has also been associated with per placental infection and has been described as a potential cause of stillbirth in China. Chagas disease, caused by Trypanosoma cruzi, is widespread in South America and may infect the fetus and

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placenta, causing fetal death (Althabe, et al., 2006). As with African sleeping sickness, the extent to which maternal infection is linked to stillbirth is still unknown. Despite the many unknowns, in certain developing countries, it appears clear that maternal infection contributes significantly to high stillbirth rates.

Zupan (2005) noted that since the proportion of all births complicated by a major anomaly is relatively similar in most populations, in developing countries with high incidences of stillbirths due to the other causes, the proportional role of congenital anomalies is significantly less than other causes. Recent studies have attributed less than 5% of stillbirths to congenital anomalies, compared to nearly a quarter due to anomalies in developed countries.

Weiner, et al. (2003) noted in their study that another important cause of stillbirth in developing countries is prolonged labor, which may result from feto-pelvic disproportion from contracted pelvises associated with childhood malnutrition. Although fetuses do not die from the labor itself, fetal death may result from associated asphyxia, trauma and infection that typically accompany prolonged labor. Appropriate cesarean sections typically reduce the impact of these complications. Although it has been estimated that overall cesarean section rates of about 5% are needed to reduce the morbidity and mortality associated with prolonged labor, cesarean section rates lower than 1% are found in many developing countries (WHO, 2006). A related cause of stillbirth is fetal mal position. When available, these fetuses generally are delivered by cesarean section to prevent the problems the woman goes through with prolonged labor. However, when cesarean sections are not accessible, mortality from these problems is high. Similarly, twin pregnancies are often complicated by mal positions, prolonged labor and high fetal mortality from the same causes.

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Finally, an important cause of stillbirth is preeclampsia/ eclampsia, which occurs in about 6% of pregnancies worldwide. Preeclampsia/eclampsia decreases blood flow, causing poor fetal growth and hypoxia and often resulting in stillbirth. For example, in a hospital-based study in Pakistan, hypertensive disease including pregnancy-induced hypertension and eclampsia, accounted for 24% of the stillbirths (Korejo, et al., 2007). While currently there are no treatments to reduce the incidence of preeclampsia, with screening and medical management, including early delivery, the stillbirth rates could potentially be reduced. However, where blood pressure and urine protein screening are not routine, and where induction of labor or cesarean sections are unavailable, fetuses frequently die secondary to hypoxia associated with maternal preeclampsia or eclamptic seizures. Another cause of fetal asphyxia and stillbirth is cord accidents. While there are not good data available about the number of stillbirths occurring secondary to asphyxia/hypoxia, approximately 25% of perinatal deaths are attributed to asphyxia (Zupan, 2005; Lawn et al., 2005) In developed countries because intrapartum stillbirth is reduced with adequate care, it is likely that stillbirths could be reduced significantly with adequate care in developing countries (Fauveau, 2007).

2.3 Prevalence

Although an estimated 10.6 million children aged 0 to 5 years die each year, national health information systems fail to count for most child deaths (Stanton et al 2006). While researchers are trying to collect better child death data, they have focused largely on some age groups to the exclusion of others. Efforts have focused largely on children in the post-neonatal period, or 1-month-olds to 5-year-olds, although attention has recently been turning to the newborn, yet stillbirths—babies born dead in the last 12 weeks of pregnancy go uncounted in most national or global statistics. Evidence suggests that stillbirths constitute a large and invisible loss of life and a significant public health issue that must be addressed (Population Reference Bureau, 2007).

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A five year study of 1142 deliveries in Imo State University Teaching Hospital, Orlu had 206 stillbirths a prevalence of 180/1000 and 75.2% were macerated (Okeudo, Ezem & Ojiyi 2012)

Using vital registration data, Demographic and Health Surveys (DHS), and data from a variety of sub national studies, IMMPACT (Initiative for Maternal Mortality Programme Assessment) and SNL calculated stillbirth rates for 190 countries and 10 regions for the year 2000. An estimated 3.2 million annual stillbirths occurred world-wide, of which 99 percent occurred in developing regions. This global estimate of 3.2 million stillbirths is close to a recent WHO estimate of 3.3 million, though there are substantial differences at the country level (WHO, 2006)

According to Cnattingius and Stephansson (2002) most countries do not include stillbirth in their vital statistics reporting system, where available, and when stillbirth is included, these rates are generally underreported for various reasons. It had been reported earlier by Phelan et al (1998) that this is especially true at the lower gestational ages or birth weights. It must be noted however that, even when stillbirth registration is excellent, variations between the lower birth weight and gestational age cutoffs used to define stillbirth make comparisons between countries difficult, and especially comparisons between developed vs. developing countries. For example, McClure et al. (2006) in their study noted that some States in the United States generally use a lower gestational age limit of 20 weeks or about 350g. Since gestational age dating is often inaccurate, many developing countries use a birth weight cutoff as part of their stillbirth definition. Furthermore, because even live-born infants weighing <1000g frequently do not survive, many developing countries use 1000g as the lower weight limit for defining a stillbirth. It was earlier noted by Phelan et al (1998) that in the United States, half of all stillbirths occurring at greater than 20 weeks gestation occur at less than 28 weeks or less than 1000g. Assuming that this relationship holds true elsewhere, when 1000g is the lower

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birth weight cutoff, by United States standards, the stillbirth rates will be underestimated by half in those geographic areas.

Efforts using existing data systems have been made to evaluate stillbirth rates, by modeling to obtain standard gestational age and birth weight cut-offs. Stanton et al (2006) estimated a stillbirth rate of 25.5 per 1000 births for developing countries in the year 2000, with sub-Saharan Africa representing the highest rate (32.2 per 1000 births or a total of 889,697), followed by South Asia (31.9 per 1000 or a total of 1,286,231 births). A study of stillbirths in Zambia by Chi et al (2007) found stillbirth rates to be 32.9 per 1000 births. In Latin America, with both middle-income and lesser-developed countries, stillbirth rates generally range from 15 to 25/1000 births (Conde-Agudelo et al., 2000).

According to Stanton et al (2006) most countries in the Middle East have rates of 10 to 20/1000. South Asia has the world's largest population and highest number of stillbirths, with rates generally 25 to 40/1000 births. According to Jehan, et al. (2007), in a prospective study of middle-class women in Hyderabad, Pakistan with good access to health care, found stillbirth rates of 33.6 per 1000 births, while a study conducted at a referral hospital in Karachi reported a stillbirth rate of 73.4 per 1000 births (Korejo et al., 2007). In a prospective community-based, multi-country study, conducted in countries in South Asia, Latin America and Africa by McClure, et al (2007), stillbirth rates ranged from 9 in Argentina to 34 per 1000 in Pakistan. In this study, nearly 80% of the stillbirths had no signs of maceration and most likely represented intrapartum stillbirths. In contrast, a multi-country hospital-based study by Ngoc et al (2006), conducted primarily in mid-level countries in East Asia and Latin America, found a lower overall stillbirth rate of 12.5 per 1000 deliveries with a much lower proportion (7.6%) of intrapartum-related stillbirths.

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In Impact and SNL estimates, stillbirth rates ranged from about 5 per 1,000 in the developed countries to 32 per 1,000 in south Asia and sub-Saharan Africa. On average, the overall rate in developing countries (26 per 1,000) was about five times higher than in developed countries (5 per 1,000). The lowest stillbirth rates outside of the developed world were in Eurasia, Southeast Asia, and Latin America and the Caribbean (12, 13, and 13 per 1,000) (Population Reference Bureau, 2007).

Impact's analysis of DHS data showed serious under reporting of stillbirths in most countries. In Indonesia and Burkina Faso, Impact collected facility-based data on perinatal deaths so that researchers could analyze the relationship between perinatal health and survival and the mother's health status. Data from Indonesia show that the stillbirth rates are 56 percent for perinates whose mothers die in childbirth, 32 percent for perinates whose mothers suffer from a life-threatening complication during pregnancy, delivery, or in the postpartum period (a near miss), and 6 percent even among normal deliveries in facilities (Population Reference Bureau, 2007).

Jammeh (2010) carried out a hospital based retrospective study in Rural Gambia with the title 'Stillbirths in Rural Hospitals in The Gambia: A Cross-Sectional Retrospective Study' revealed a prevalence of 156/1000 stillbirths and 57.8% of the stillbirths were fresh.

A research conducted in the University of Port Harcourt Teaching Hospital in the Delta State in Nigeria to determine the prevalence and associated risk factors of stillbirth showed a prevalence of 45/1000 births which is high and fresh stillbirth of 50.9% which was insignificant (Ugboma and Onyearugba 2012), on the other hand a similar study entitled 'Risk factors for stillbirths at University of Maiduguri teaching hospital, Maiduguri, Nigeria: a cross-sectional retrospective analysis' had an institutional prevalence of 22/1000 births and macerated stillbirths of 52.5% (Audu, 2005).

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Another retrospective study for the period 1st January 2009 and 31st December 2010 in a tertiary hospital in the Limpopo Province in South Africa for 5597 deliveries showed a stillbirth prevalence of 38.9/1000; a 71% macerated stillbirth and age groups of 20-24 year and 35 years and above accounting for 24% and 23% of the stillbirths respectively (Ntuli, 2012).

In Zimbabwe in East Africa, the stillbirth rate is 61 per 1000 birth (Feresu et al, 2004). In Nigeria, the stillbirth rates between 2000 and 2008 were generally high, 42-78 per 1000 births (Ugboma and Onyearugba 2012). In the Gambia in West Africa, a Hospital based study in rural Gambia showed a hospital based prevalence of stillbirth of 156 per 1000 births and the associated factors were severe obsteteric complications, low birth weight cesarean section and late referral from the peripheral health facilities (Jammeh, 2010). A research conducted by Navrongo Research Centre on Stillbirth and Early neonatal death in Kasena Nakana District in the Upper East Region of Ghana showed a Stillbirth rate of 23 per 1000 births and Early Neonatal of 39 per1000 (Engmann, et al 2011).

2.4 Factors Associated with Stillbirth

Risk factors are characteristics associated with, but not obviously causal for stillbirth, such as advanced maternal age. The most common risk factors for stillbirths in developing countries include the lack of a skilled attendant at delivery, low socioeconomic status and poor nutrition, prior stillbirths, and advanced maternal age. According to the WHO (2005), women who lack skilled care at delivery and who do not have access to emergency obstetrical care are among those at greater risk for stillbirth. An earlier study conducted by Koblinsky Campbell, & Heichelheim (2009) noted that in many developing countries, one-third or more of the women in labor are attended by skilled birth attendants and deliver at home. Since complications associated with delivery are one of the main causes of stillbirth, the presence of a skilled birth attendant is often critical. In comparing stillbirth rates to measures of obstetric care, intrapartum stillbirth rates were correlated more closely with

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obstetric care measures, especially cesarean section rates, than were antepartum stillbirth rates suggesting that intrapartum stillbirth is more closely related to medical care availability (Goldenberg et al, 2007). This relationship was not unexpected, since it is well known that in many developing countries, prolonged and obstructed labor and associated asphyxia, is a major cause of stillbirth (Lawn, et al., 2005). Since preeclampsia/eclampsia is another important cause of stillbirth, timely delivery, and availability of cesarean section, can reduce stillbirth associated with both of these and many other conditions.

According to Paxton et al (2004), cesarean section is one component of essential obstetric services, which also includes the ability to provide parenteral antibiotics, blood transfusion, oxytocic drugs and anticonvulsants, and manual removal of the placenta and retained products of conception. Cnattingius et al (1998) noted earlier that in developing countries, having a skilled attendant at delivery does not equate to availability of essential obstetric services and especially cesarean section. For example, a skilled attendant may be a nurse without training in the performance of cesarean sections or without necessary equipment with which to perform surgery. Thus, while the presence of a skilled attendant may be a component of essential obstetric services, this measure does not capture the performance of the often life-saving cesarean section, or the use of other life-saving treatments such as antibiotics or blood transfusion. In general, it has been shown that even among the countries with the least resources, c-section and other resources are disproportionately allocated, so for example the richest quintile may have a 7% cesarean section rate, while the poorest have <1% (Stanton et al., 2006).

In a number of studies like Kunzel et al. (1996); Feresu et al (2004) and Watson-Jones et al (2007) they noted that in most geographic areas, in addition to access to obstetrical care at delivery, various other socio-demographic factors, including rural residence, low socioeconomic status, lack of education, lack of a partner, and poor nutrition have been associated with increased stillbirth rates. In

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addition, advanced maternal age is a stillbirth risk factor in all areas of the world. For example, in one study in Latin America, women >35 years of age were twice as likely (31/1000 vs.16/1000) to have a stillbirth as younger women. Finally, short inter- pregnancy intervals, prior stillbirths and a history of adverse pregnancy outcomes have been associated with increased risk of stillbirth. (Fretts, 2005).

Factors associated with stillbirth by far, the most commonly reported factors associated with stillbirth in developing countries were: maternal age; gestational age at birth; parity; lack of or inadequate antenatal care; fetal sex; birth weight; multiple gestation; and maternal morbidity.

2.4.1 Maternal factors

In the study of Engmann, et al., (2012) advanced maternal age (generally described as the age of 35 years and above was reported as a significant risk factor associated with stillbirth in many developing countries, 53,340–45 with an Odds Ratio (OR) of up to 2.31 (95% CI1.81–2.95) reported from India. For mothers 40 years or older in Peru, Gilbert et al. reported an increased risk of stillbirth with adjusted OR of 5.46 (95% CI 1.19 25.13) (Gilbert, et al. 2010).

Conversely, in a study by Olusanya and Solanke (2009) from Nigeria that examined pattern and correlation of stillbirth in a hospital setting, young maternal age (<20 years) was reported to increase the risk of stillbirth (OR 2.50; 95% CI 1.22–5.14) but this was not corrected for other risk factors. In the study of Mukhopadhyay, Chaudhuri and Paul (2010) there was also a higher proportion of stillbirths reported among teenage mothers when compared with older mothers (5.1% versus 0.9%, respectively) in a hospital setting in India. In addition, in a national survey involving 8481 deliveries in China, mothers 40 years or older (OR 2.98; 95% CI 2.67–3.32) and teenage mothers (OR 2.57; 95% CI 2.29– 2.89) were both reported to have an increased risk of stillbirth (Hu, et al. 2012).

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Parity is another frequently reported risk factor in studies from developing countries. In a study that investigated 218 women who had a stillbirth in a hospital in South Africa, Ntuli and Malangu (2012) identified primiparity as a risk factor for stillbirth (P=0.04). Similarly, a multicounty study that explored the time when stillbirth occurred during pregnancy found that both null parity (relative risk [RR] 1.3; 95% CI 1.2–1.5) and parity≥5 (RR 1.2; 95% CI1.1–1.3) increased the risk of stillbirth (McClure et al. 2011).

Both null parity and parity ≥5 have been associated with stillbirth by several other studies from developing countries, including Palestine, Nigeria, Vietnam, Ghana (Engmann, et al., 2012). Pakistan (Hossain, et al., 2009), Nepal (Lee, et al, 2011) and Uganda (Nankabirwa, et al., 2011). Obstetric factors were frequently described to be associated with stillbirth. Both history of previous stillbirth (Lee, et al, 2011; Ukaegbe et al., 2011) and mode of delivery have been found to be associated with stillbirth. Other factors associated with stillbirth that were reported by various studies in this review include consanguinity and smoking, alcohol intake and drug abuse (Cherry et al. 2008; Demir, et al. 2000).

2.4.2 Fetal factors

In Nepal, Shrestha and Yadav reported prematurity as a major risk factor in their study involving 3588 deliveries (Shrestha &Yadav, 2010). An association between prematurity and stillbirth was reported from Tunisia where an adjusted (for birth weight) OR 6.05 (95% CI 1.85–19.78) was reported among 87 stillbirths studied in a prospective cohort study (Nouaili, 2010). Stringer et al., (2011) in a study of 2109 stillbirths in Zambia, reported that extremes of birth weight increased the risk for stillbirth (OR for ≤ 1500 g 56.13, 95% CI 3.48 –5.85 and OR for ≥ 4000 g 2.08, 95% CI 1.54 – 2.80).

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Among 91 stillbirths in Brazil, proportionally more were male (52.7%) (De Lima et al., 2011). However, in a large retrospective study from Zimbabwe that explored delivery patterns and outcomes among 17 072 deliveries in a hospital setting, Feresu et al (2004) found no statistically significant difference between the risk of stillbirth in males and females.

2.4.3 Access to care

There were a number of studies reporting on the association between lack of antenatal care and stillbirth. Nouaili et al. (2010) found that inadequate antenatal care increased the risk of stillbirth in a Tunisian population with an adjusted OR of 3.50 (95% CI 1.07–11.43). Similar results were reported from Peru (OR 3.39; 95% CI 1.57 – 7.74) (Gilbert et al., 2010), Nigeria (OR 7.23; 95% CI 3.94–13.26) (Olusanya, Afe, &Solanke, 2009), Jamaica (OR 2.0; 95% CI 1.3– 3.1) (Del Rosario et al., 2004) and Vietnam (OR 2.56; 95% CI 1.25–5.23) (Grane et al., 2009).

Factors related to care setting and place of birth have also been reported to influence stillbirth. A prospective cohort study of 5259 births in Vietnam reported that women who delivered at home were at significantly higher risk of stillbirth than those who delivered in a health facility (OR 6.81; 95% CI 2.40–19.30) (Grane et al., 2009). Rural residence has also been reported to contribute to the risk of stillbirth in India (OR 2.05; 95% CI 1.93–2.18) (Bhattacharyya & Pal, 2012) Vietnam (OR 2.42; 95% CI 1.16– 5.03) (Cripe et al., 2007) and the Gambia (OR 6.68, 95% CI 3.84–11.62) (Jammeh, et al., 2010). On the other hand, a community-based prospective cohort study involving 835 deliveries in Uganda has reported a significant increase in risk of stillbirth among urban residents (RR 2.9; 95% CI 1.1–7.7) (Nankabirwa, et al., 2011).

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2.4.4 Socio-economic factors and education

Low socio-economic status has been reported by several studies as contributing to stillbirth in developing countries. In a systematic review of risk factors for stillbirth in developing countries, Di Mario et al. (2007) identified maternal socio-economic disadvantage as one of the factors with a population attributable fraction of higher than 50%. This association has been reported recurrently from other developing countries (Engmann et al., 2012; Cripe et al., 2007; Lee et al., 2011).

Williams et al. (2008) have reported wealth index and caste as significantly associated (P=0.001) with stillbirth in India. Bhatacharyya and Pal (2012) also reported this association in India (OR 1.81; 95% CI 1.76 – 1.90), Graner et al. (2009) reported an increased risk of stillbirth among ethnic minorities in Vietnam. In Burkina Faso (from verbal autopsy data) stillbirths were more common among women in a monogamous marriage (61.0%) than in a polygamous marriage (33.6%; P<0.01) (Bell et al., 2008). In a hospital-based study in Nigeria, Mutihir and Eka (2011) reported a statistically significant association between low maternal education and stillbirth (P= 0.01). In a study that explored stillbirth rates in five developing countries involving 60 154 births, lack of formal education was found to increase the relative risk of stillbirths by 1.6 (95% CI 1.4–1.8) (McClure, et al. 2007).

A number of other studies have also reported the association between low or poor maternal education and stillbirth including from Ghana (RR 1.4; CI 1.2 – 1.5) and Brazil (OR 1.6; 95% CI 1.02 – 2.6) (McClure, et al. 20077; Engmann et al., 2012; Williams et al., 2008; Andrade et al., 2009). Three studies reported on environmental pollution as a risk factor for stillbirth (Pope et al., 2010; Hu et al. 2012; Graner et al, 2009). In a systematic review that included four studies, Pope et al. (2010) reported that indoor air pollution was associated with stillbirth (OR 1.51; 95% CI 1.23– 1.85).

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2.4.5 Perception of maternal health services

Aside the socioeconomic factors influencing Antenatal Care (ANC), it is often believed that pregnant women's' knowledge and perception of importance of ANC determines its utilization. It was also reported that educated couples are more likely to switch from their cultural and religious ideology of leaving most events in their lives to fate and supernatural belief. For instance, in Indonesia, it was demonstrated that respondents' levels of education (Nuraini, 2005) significantly influenced improvement in ANC knowledge.

Studies have shown that not all pregnant women are willing to be tested despite the availability of Voluntary Counselling and Testing (VCT). Wachira, et al. (2009) reported that the reasons women gave for their refusals were mainly related to the need to consult their husbands or partners before being tested. Ignorance and socio-cultural barriers also hinder maximal utilisation of the Prevention of Mother to Child Transmission (PMTCT) services and the adoption of the infant feeding recommendations by women in Nigeria as well as other African countries. In some studies, almost all the respondents were willing to undergo Human Immuno Virus (HIV) testing in pregnancy, particularly if it would prevent the transmission of HIV to their babies (Wachira, et al. 2009).

In the study of Leshabari, Blystad, and Moland. (2007) noted that almost all the women approved of Voluntary Counselling and Testing (VCT), mainly because they perceived VCT could reduce the risk of transmission of HIV to their babies; however, a major condition for testing was that the results would be kept confidential. Overall, the acceptance of VCT appears to depend on the understanding that VCT has proven benefits for the unborn child. Maternal health services have a significant role in the improvement of reproductive health. Access to skilled assistance and well-equipped health institutions during delivery can reduce maternal mortality and morbidity and improve pregnancy outcomes. In accessing obstetric care, women can be influenced by health system factors, such as a

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respectful provider attitude, competency, and availability of drugs and medical equipment as rightly noted by Kruk, et al (2009).

According to Kruk et al (2010), cultural inappropriateness of care, disrespectful and inhumane services, and lack of emotional support, can deter women from accessing obstetric care. On the other hand, positive client perception of doctor and nurse skills can increase utilisation of delivery services. Support in the form of comfort, reassurance and praise during childbirth is particularly beneficial. In the context of maternity service, the mother's assessment of quality is central because emotional, cultural and respectful supports are vital during labour and the delivery process.

Karkee, Lee, and Pokhare, (2014) compared client-perceived quality of maternity services between birth centres, public and private hospitals in a central hills district of Nepal. A cohort of 701 pregnant women of 5 months or more gestational age were recruited and interviewed, followed by another interview within 45 days of delivery. Within the health facility sub-scale, birth centre was rated lowest on items such as 'adequacy of medical equipment', 'health staff suited to women's health' and 'adequacy of health staff', whereas public hospital was rated the lowest with respect to 'adequacy of room', 'adequacy of water', 'environment clean', 'privacy' and 'adequacy of information'. Overall, perception of quality differed significantly by types of health facility used for delivery. The respondents in the study rated lowest the supplies and equipment in birth centres and the amenities and interpersonal aspects in the public hospital.

The health sector reform in Ghana was launched in 1993 with the aim of increasing access to health services, improve health services quality and efficiency, decentralize planning and management, foster partnerships between providers and communities and expand healthcare resources (Ministry of Health, 1998). The services that are delivered largely influence how clients would perceive services.

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Perceptions have been noted to be mixed but in most of the cases challenges are associated with the attitude of healthcare services providers as noted by Addai (2000).

2.4.6 Patronage of maternal health services

Utilization of health services is a complex behavioural phenomenon. Empirical studies of preventive and curative service have often found that the use of health services is related to availability, quality and cost of services as well as the social structure, health beliefs and personal characteristics of the users. Pregnancy is not a disease and pregnancy related mortality is usually preventable yet more than half a million women die annually worldwide (about 1,600 women die every day) due to pregnancy related complications. A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO, 2004).

A WHO (2011) survey noted that there were only 58% of women have attended at least one antenatal clinic during pregnancy, 39% of births are attended to by a skilled professional, 35% of deliveries took place in a health facility and 43.7% received postnatal care.

2.4.7 Factors that promote or hinder patronage of maternal health services

Factors influencing maternal health services utilization operate at various levels-individual, household, community. Depending on the indicator of maternal health services, the relevant determinants vary. Although, in general, women in higher socio-economic groups tend to exhibit patterns of more frequent use of maternal health services than women in the lower socio-economic groups (Chimankar and Sahoo, 2011).

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Darmstadt et al. (2005) are of the opinion that accessibility of health services has been shown to be an important determinant of utilization of health services in developing countries. In most rural areas in Africa, one in three women lives more than five kilometres from the nearest health facility (World Bank, 2002). The scarcity of vehicles, especially in remote areas, and poor road conditions can make it extremely difficult for women to reach even relatively nearby facilities. Walking is the primary mode of transportation, even for women in labour (World Bank, 2002).

Addai (2000) stated that women in higher socioeconomic groups tend to exhibit patterns of more frequent use of maternal health services than women in the lower socioeconomic groups, factors such as education appear to be important mediator. Another important factor in the utilization of maternal care services, especially in Africa, is the cultural background of the woman. The cultural perspective on the use of maternal health services suggests that medical need is determined not only by the presence of physical disease but also by cultural perception of illness (Addai, 2000).

In most African rural communities, maternal health services co-exist with indigenous health care services; therefore, women must choose between the options (Addai, 2000). The use of modern health services in such a context is often influenced by individual perceptions of the efficacy of modern health services and the religious beliefs of individual women (World Bank, 2002).

The attitude of the health care provider and previous experience of the mothers about the care received, also influence utilization of maternal health services. This is not surprising since negative attitudes by health care providers elicit negative outcome in the utilization of maternal health care services and on the other hand, positive behaviours of health care providers to women will bring about positive outcome. Various studies have shown that there is a relationship between attitude of

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health care providers and mother's choice of where to receive antenatal, delivery and postnatal care (D'Ambruoso, 2005; Natukunda, 2007; Onasoga, Opiah, Osaji and Iwolisi, 2012).

Saxena, Vangani, Mavalankar, and Thomsen, (2013) sought to understand equity in access to maternal health care and to draw the attention of the policy planers to monitor equity in maternal care. Secondary data analyses were performed among 7,534 ever-married women who delivered since January 2004 in the District Level Household and Facility Survey (DLHS-3) carried out during 2007-2008 in Gujarat, India. The study noted that poverty is the most important determinant of non-use of maternal health services in Gujarat. In addition, social position (i.e. caste) has a strong independent effect on maternal health service use.

It was recommended by Saxena, Vangani, Mavalankar, and Thomsen, (2013) that more focused and targeted efforts towards these disadvantaged groups needs to be taken at policy level in order to achieve targets and goals laid out as per the MDGs 4 and 5. In particular, governments need to invest more in basic education and infrastructural development to begin to remove the structural causes of non-use of maternal health services. Issues have been raised in-terms of patronage of maternal health services in various parts of the country especially when it comes to the rural population. Services might be present in health facilities but in some cases, women find is very difficult to access it. This leads to some form of low patronage of existing services. There are also instances where services do also not exist. From observation there are maternal services in the Berekum municipality since maternal health services is part of healthcare delivery in most facilities in the country (Arthur, 2012).

2.4.8 Issues with Skilled Delivery

Countries worldwide are striving towards achieving Millennium Development Goal 4, which deals with the reduction of neonatal deaths. High-income countries have made much progress while low-

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income countries still lag behind. High-income countries have managed to achieve an almost universal skilled birth attendance with provision of appropriate care. Neonatal mortality rate of as low as 0.45 per 1000 live births and intrapartum stillbirth rate of 1.22 per 1000 births have been observed Countries with a neonatal mortality rate of greater than 30 per 1000 live births have about 50% skilled health worker attendance at birth (Lawn et al., 2009). Skilled birth attendant at delivery, timely emergency obstetric care, provision of immediate newborn care and postnatal care are essential in promoting neonatal health (Bhutta, et al., 2010; Lee, et al., 2009)

According to Spector, et al., (2012) the shift in place of delivery from home to health facilities is seen as an important strategy for improving neonatal outcomes. However, it is not only availability of health facilities for deliveries that is important, but also the quality of care provided. Emphasis is being placed on the quality of care, not only on availability of services (Kinney et al., 2010; van den Broel and Graham, 2009).

According to Olsen, Ndeki, and Norheim (2004) lack of quality care at health facilities limits women's access to quality care. Women may deliver in health facilities, but still have poor perinatal and neonatal outcomes because of the substandard quality of care. A study in rural Tanzania showed that even at higher-level facilities where well trained health workers were supposed to be available, women experienced delays in receiving emergency obstetric care and had poor quality of care. Consequently, women experienced severe birth injuries and stillbirths (Mselle, et al., 2011).

Leonard, Mliga, and Mariam (2003) noted that when women have a choice, they will go to health facilities where they perceive better quality of care, regardless of distance. This assertion is confirmed with the study of Olsen, Ndeki, and Norheim (2005) as well. According to Kruk, et al., (2009), forty-

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four percent of women by-passed their nearest health facility largely because of quality of care and delivered in another health facility.

Women's actual experience of care is significant and will greatly influence how women perceive quality. According to Hulton, Matthews and Stones (2000), a quality of care framework reflects both the provision of care and women's actual experience of the care. It is argued that understanding women's experiences of care is critical as it contributes to the use of health services and perinatal outcomes (Hulton, Matthews and Stones, 2007).

Quality is not the only reason hindering pregnant women to access skilled birth attendance. Women continue to experience various problems to deliver with the help of skilled attendants. Literature suggests that women encounter socio-cultural factors, perceived benefits, economic accessibility and physical accessibility as barriers to accessing skilled attendance during delivery (Gabrysch and Campbell, 2009).

Women in sub-Saharan Africa still face limited access to skilled delivery, especially in the rural areas (Essendi, Mills, and Fotso, 2011; van den Broek et al., 2003). Kumbani et al (2013) noted that onset of labour at night; rainy season, rapid labour, socio-cultural factors and health workers' attitudes were related to the women delivering at home. Traditional birth attendants, relatives or neighbours assisted the participants in the delivery. This study revealed beliefs about labour and delivery that need to be addressed through provision of appropriate perinatal information to raise community awareness. Even though, it is not easy to change cultural beliefs to convince women to use health facilities for deliveries. There is a need for further exploration of barriers that prevent women from accessing health care for better understanding and subsequently identification of optimal solutions with involvement of the communities themselves.

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According to Baral et al., (2010), the literature suggests that several socio-economic, cultural and religious factors play a significant role in the use of Skilled Birth Attendance for delivery in Nepal. Availability of transportation and distance to the health facility; poor infrastructure and lack of services; availability and accessibility of the services; cost and convenience; staff shortages and attitudes; gender inequality; status of women in society; women's involvement in decision making; and women's autonomy and place of residence are significant contributing factors for uptake of Skilled Birth Attendance for delivery in Nepal. Findings of quantitative research show that different social demographic, economic, socio-cultural and religious factors are responsible for the utilisation of maternal health services but very few studies discussed how and why these factors are responsible for utilisation of skilled birth attendants in pregnancy.

2.5 Causes of stillbirth

2.5.1 Maternal disease

A total of 21 studies identified one or more maternal diseases as the cause of stillbirth. The percentage attribution ranged from 8 to 50% of stillbirths. Maternal conditions as such as diabetes, HIV, syphilis and hypertensive disorders were the most commonly reported (McClure et al., 2009; Turnbull et al 2011).

Yatich et al (2010) noted that the underlying maternal morbidity is reported as increasing the risk of stillbirth in a number of developing country settings. In Ghana, malaria was reported to increase the risk of stillbirth with odds ratio of 1.9 (95% CI 1.2 – 9.3) and HIV, (Kim et al. 2012) syphilis (Labbe et al. 2002) Why some women fail to give birth at health facilities: a qualitative study of women's perceptions of perinatal care from rural Southern Malawi. Anaemia (Aimakhu &Olaymeni, 2003) and toxoplasmosis (Sarkar et al., 2012) have also been associated with stillbirth in developing countries.

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In a large cross-sectional study involving 120 998 deliveries that assessed the trend of stillbirth in Thailand over a decade, Tannirandorn and Jatuparisuth (2011) reported the increasing importance of causes of stillbirth related to the mother's condition, particularly diabetes and haemoglobin-opathies. In another study of similar size in Zambia, Stringer et al. (2011) reported a statistically significant association between hypertension and diabetes and macerated stillbirth (OR 1.40 [1.11–1.75] and 3.86 [1.27–11.70], respectively) but found no association with fresh stillbirth. A clinical trial among 1229 HIV infected mothers found an increased risk of stillbirth among mothers with a higher plasma viral load and who were symptomatic (adjusted OR 3.19; 95% CI 1.46 –6.97) (Kim et al. 2012). Similar results were obtained in a separate trial among HIV positive women in Tanzania where CD3 count >1179 cells/ml was reported to increase the relative risk of stillbirth by 2.15 (95% CI 1.16–4.01) (Kupka et al. 2009).

Conversely, in a multinational study involving 2434 deliveries among predominantly HIV positive women, Chi et al. (2007) found no association between HIV infection and stillbirth (Adjusted OR 1.11; 95% CI 0.38–3.26). They, however, reported that decreasing CD4 count was inversely associated with stillbirth risk (P= 0.009). Positive syphilis serology (rapid plasma reagin titre of ≥1:16) was associated with stillbirth in a case–control study of 138 stillbirths in Guinea-Bissau (adjusted OR 8.29; 95% CI 3.14–21.89) (Labbe et al. 2002).Temmerman et al. (2000) studied 296 women with confirmed syphilis in Kenya and reported an increased risk of stillbirths (OR 3.34; P=0.028). In Tanzania, a retrospective cohort study of 18 stillbirths found that the risk of stillbirths among women with a positive rapid plasmareagin test was significantly higher than those with a negative result (RR = 18.1; P<0.01) (Watson-Jones et al 2002).

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2.5.2 Congenital anomalies

Congenital anomalies are reported to account for 2.1–33.3% of stillbirths. Renal, pulmonary and cord abnormalities accounted for four out of 12 (33%) stillbirths in a study that examined postmortem reports in Malaysia (Vijayan & Hiu, 2012). In a community-based study of all perinatal deaths in four cohorts in selected districts of Thailand using verbal autopsy, Andola et al. (2012) reported that congenital anomalies including anencephaly, diaphragmatic hernia and thanatophoric dysplasia accounted for forty four out of hundred stillbirths.

In Brazil, Andrade et al. (2009) retrospectively studied all fetal deaths in a hospital setting by examining records and conducting verbal autopsy. They reported a strong association between fetal malformation and stillbirth (OR 7.5,95% CI 3.2–17.4), and this accounted for 10.3% of the 25 stillbirths. Another study in Brazil that reviewed autopsy records of all stillbirths (n=111) in a hospital reported that 26% were caused by congenital anomalies. 83 In India, two separate studies found that fetal anomalies accounted for 12% and 23% of 570 and 26 stillbirths, respectively (Aggarwal et al 2011; Bangal et al. 2012).

Similar results were reported from Nepal where 18% of 17 stillbirths were due to congenital anomalies in a study that examined medical records (Manandhar et al 2003) and in Turkey where a cross-sectional examination of hospital records found that congenital anomalies accounted for 19% of 32 stillbirths (Demir et al 2002).

2.5.3 Placental conditions

Placental causes, particularly placental abruption, are recognized in many studies as a major cause of stillbirth, with a percentage attribution of between 7.5 and 42%.81,87 A study involving 495

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stillbirths in multiple West African countries, strongly associated vaginal bleeding in late pregnancy or intrapartum bleeding with stillbirths (OR 15.1; 95% CI 11.1–22.1) (Chalumeau et al 2002).

In another study of 4744 deliveries, Kalter et al. (2008) reported uteroplacental insufficiency as one of the top three causes of stillbirth, accounting for 31% of all macerated stillbirths. Antepartum haemorrhage was responsible for one-third of 309 stillbirths in rural Ghana 90 and one-third of 140 stillbirths in Pakistan (Ghazi et al. 2009).

In another study that conducted verbal autopsies in four countries, ante partum haemorrhage was estimated to have accounted for 10% of 134 stillbirths (Engmann, et al 2012). A related study in India reported that 16% of 570 stillbirths were due to ante-partum haemorrhage (Bangal et al. 2012).Placental causes have also been reported as important in Nigeria, accounting for 20.1% of 266 stillbirths (Hinderaker et al., 2003), while in South Africa placental causes were reported to account for 24% of 218 stillbirths in a tertiary hospital (Ntuli and Malangu, 2012).

2.5.4 Intrapartum causes and trauma

Some studies have revealed that between 3.1 and 25% of stillbirths were due to intrapartum causes (including asphyxia) and trauma. A prospective cohort study of antenatal attendees in Tanzania found that, of 60 stillbirths, 15 (25%) were due to asphyxia-related causes (Hinderaker et al. 2003) while a study from four districts in Thailand found that intrauterine asphyxia accounted for 21% (5/24) of stillbirths (Andola et al 2012).

Similarly, Bhattacharya and Pal (2012) reported that while intrauterine asphyxia was the cause of 16.7% of 177 stillbirths, trauma accounted for 3%. In a retrospective study, misuse of oxytocin was thought to have accounted for 28% of 735 stillbirths in a teaching hospital in Bangladesh (Begum et al. 2010). A hospital-based cross-sectional study in China studied 58 'fetal losses' among 3498

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women who had amniocentesis planned or performed between 15 and 22 weeks of gestation and reported an association between mid-trimester amniocentesis and stillbirth (OR 1.97, 95% CI 1.15–3.36) (Kong et al 2006).

2.5.5 Umbilical causes

Umbilical cord accidents have been strongly associated with stillbirth (OR 29.63, 95% CI 14.23–61.71) (Olusanya & Solanke 2009). Overall, umbilical causes were reported to be responsible for 2.9 – 12% of stillbirths (Turnbull et al., 2011; Kuti, et al., 2003). In Zambia, umbilical causes accounted for 12% of 50 stillbirths in a cross-sectional study (Chi et al., 2007). Two separate studies from Nigeria have reported lower percentages (7% and 2.9%) among 158 and 266 stillbirths, respectively, 38,91, while a similar result (6%) was obtained in a multinational study involving 134 stillbirths (Engmann et al., 2012).

2.5.6 Amniotic and uterine causes

Amniotic and uterine causes were the least frequently reported causes of stillbirth in studies from developing countries, accounting for 6.5% and 10.7%, respectively (Ukaegbe et al. 2011). In a prospective cohort study of 1369 Pakistani women attending antenatal care, Jehan et al. (2007) have reported that chorioamnionitis significantly increased the risk of stillbirth (RR 4.6; 95% CI 2.1–9.8). A systematic review that measured the impact of risk factors on stillbirth has reported a population attributable risk of higher than 50% for chorioamnionitis (Di Mario et al., 2007).

Uterine rupture accounted for 26.7% of deaths in a study of 263 stillbirths among 728 women with severe acute maternal morbidity in Nigeria (Olagbuji et al 2012).A second study from Nigeria involving 169 stillbirths among all women (2326) found 10.7% of stillbirths to be due to ruptured uterus (Ukaegbe et al. 2011).

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2.5.7 Causes unknown

Many studies reported a large proportion of stillbirths as unclassifiable or as cause 'unknown' (3.8 – 57.4%) (Taweevisit & Thorner 2010). In the study of nearly half of all stillbirths were reported as cause 'unknown' in studies from Bangladesh (49%) (Baqui et al., 2011) and Nepal (47%) (Manandhar et al. 2003). In Nigeria, Kuti et al. (3002) reported 38.8% of 266 stillbirths as unexplained, while in Mumbai (India) 18% of105 stillbirths identified in a prospective study involving 467 births were classified as cause unknown. In rural Ghana, 57.4% of ante partum deaths and 31.5% of intra partum deaths were reported as 'unexplained' (Edmond et al. 2008). In a multi-country study, 12% of 134 stillbirths were reported with cause unknown (Engmann et al. 2011).

2.6 Classification systems for stillbirth used in developing countries

Currently, a variety of classification systems is used across geographical regions. Out of 59 studies that reported on more than one cause of stillbirths, 19 (32%) did not use any classification system at all while over half (34/59) used only terms such as 'fresh/macerated' and 'ante partum or intrapartum' to classify the time of death. Only12 studies used classification systems such as the Extended Wigglesworth or Aberdeen Classification System (six countries: Bangladesh, Brazil, Nepal, Pakistan, Tanzania and Vietnam) to help decide cause of death. One study from China classified stillbirth according to the recommendations of their National Institute of Child Health and Human Development.

From the review it can be said that a total of about 33 studies reported on percentage of stillbirths that were 'fresh' or 'macerated' (31/33 used only this categorization). The mean percentage of 'fresh' stillbirths among the 33 studies was 52.6%. While hospital-based studies (n=23) reported a mean percentage of 50.6%, population-based studies (n=10) reported 58.5% as the mean percentage for 'fresh' stillbirths.

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The highest was from a study involving 25 982 deliveries in Nepal where Manandhar et al. (2010) reported 84% of stillbirths as 'fresh', and a multinational study of 1472 stillbirths found the presence of maceration in only 17.2%. 6. On the other hand, Andrade et al (2009) reported only 4.3% of stillbirths as intrapartum among 116 deaths in a hospital in Brazil.

Although at health facility level most maternity registers record information on condition at birth (alive, still born), stillbirth is currently not recognized in the Global Burden of Disease; it is neither counted as missed lives in disability-adjusted life-years nor fully identified as an individual death by the International Classification of Diseases (Frøen et al 2011).

Furthermore, it is reported that stillbirths are not counted in country data in 90 countries worldwide. This lack of recognition and paucity of data on stillbirth has continued to make it difficult to assess the true rates of stillbirth in many developing country settings (McClure et al 2006).

2.7 Empirical Evidence

Gardosi, et al (2013) sought to assess the effect that accreditation training in fetal growth surveillance and evidence-based protocols had on stillbirth rates in England and Wales. The study population was live births and stillbirths in England and Wales between 2007 and 2012. The results noted that there was a significant downward trend (p=0.03) in stillbirth rates between 2007 and 2012 in England to 4.81/1000, the lowest rate recorded since adoption of the current stillbirth definition in 1992. This drop was due to downward trends in each of the three English regions with high uptake of accreditation training, and led in turn to the lowest stillbirth rates on record in each of these regions.

In contrast, there was no significant change in stillbirth rates in the remaining English regions and Wales, where uptake of training had been low. The three regions responsible for the record drop in national stillbirth rates made up less than a quarter (24.7%) of all births in England. The fall in

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stillbirth rate was most pronounced in the West Midlands, which had the most intensive training programme, from the preceding average baseline of 5.73/1000 in 2000–2007 to 4.47/1000 in 2012, a 22% drop which is equivalent to 92 fewer deaths a year. Extrapolated to the whole of the UK, this would amount to over 1000 fewer stillbirths each year. They concluded that a training and accreditation programme in customized fetal growth assessment with evidence-based protocols was associated with a reduction in stillbirths in high-uptake areas and resulted in a national drop in stillbirth rates to their lowest level in 20 years (Gardosi, et al., 2013).

Dassah, Odoi and Opoku (2014) in their study noted that data pertaining to risk factors associated with stillbirths is very sparse. The objective of their study was to determine the prevalence of, and examine the socio-demographic and obstetric factors associated with stillbirths among vaginal births in a tertiary health facility in Ghana. With a retrospective cross-sectional review of vaginal deliveries conducted at a teaching hospital in Ghana from 1st January to 31st December, 2009. Background characteristics and obstetric history of the mother as well as the vital status of the baby at birth were extracted. Risk factors associated with stillbirths and very low Apgar scores were examined using binomial regression with a log-link function, and population attributable fractions calculated for significant risk factors.

The result of the study of Dassah, Odoi and Opoku (2014) noted that of the 8,758 deliveries which met the inclusion criteria, 5.9% of the babies were stillbirths, and 6.5% and 1.9% of live births had very low Apgar scores in the first and fifth minutes respectively. Preterm delivery, hypertensive disorders in pregnancy, breech delivery and vacuum extraction were significant risk factors for stillbirths. They concluded that the prevalence of stillbirths were high. They recommended that improving the quality of obstetric care during labour and delivery may help improve these adverse vaginal birth outcomes.

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CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter describes the methods employed in the conduct of the study. It covers the background of study area, study type, study design, study variables, population, sampling size, sampling technique and the tools employed to gather data from the respondents. How data was analysed, and the methods used in analysing the data are outlined in this section.

3.1 Study area

The Asante Akim South District is one of the 27 districts in the Ashanti Region. It was carved out of the then Asante Akim District in 1988 in furtherance of Government's decentralization policy. Juaso is the District Capital.

It has a land area of 1149.5 km^2 (449.02.4sq. miles) drained by the Bosompra, Kume, Subin and Anum rivers and a number of perennial and seasonal streams. The Kwahu-Mampong - Kintampo ridge passes through the district in the east. The district is situated in the eastern part of the region and is the 'GATEWAY TO ASHANTI' from the Eastern and Greater Accra Regions.

It is bounded in the north and northwest by the Asante Akim North Municipal and in the west by the Ejisu-Juaben Municipal and Bekwai Municipal, Bosome-Freho is on its southwest border; and the eastern border which coincides with the boundary between the Ashanti and Eastern Regions is shared with the Kwahu South, Kwahu West and Birim North Districts all in the Eastern Region.

There are three main rivers, which drain the district, namely Pra, Kume and Subin Rivers. Additionally, there are a number of perennial and seasonal streams in the district. River Pra flows

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along the eastern border and also forms the boundary between the Ashanti Region and the Eastern Region.

The district has uniformly high temperature throughout the year. The district records a maximum temperature of about 30°C in March and April. The minimum temperature of about 26°C is recorded in August, the coolest month of the year. The mean monthly temperature is about 33°C. The temperature range supports agricultural production. The District experiences a double maxima rainfall. The major rainy season usually occurs between April and July. It reaches its peak in June. The minor season occurs between September through to the end of November. The mean annual rainfall ranges between 1500mm and 1700mm.

The Asante Akim-South district falls within the moist semi-deciduous forest region where different species of tropical hard woods with high economic value are located. Most of the trees in this forest remain evergreen throughout the year in the district based on the climatic factors in the District. The types of trees found in the district include; Wawa, Onyina, Mahogany, Asanfena and Dahoma.

Currently, the district has four forest reserves which cover a total of about 109.6 sq km include, Formangsu, Prakow, Domi River and Mirasa Hills.

There are in all, one hundred and three (103) settlements; the major ones being Juaso, Obogu, Adomfe, Dampong, Morso, Kurofa, Asankare, Banka, Bompata and Ofoase. The people are mainly Akans (Akuapems, Kwahus, Akims, Fantes and Ashantes) playing host to other ethnic groups like Ewes, Krobos, Guans, Gas and people from the northern part of Ghana.

The district population is 117245 with a density of 102 persons per square kilometres representing 2.7% of the Ashanti Regional population (3,612,950). Juaso, the district capital, has a population of 10192. 50.57% of the population is female and the 15-54 age cohorts constitute 52% of the

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population yielding a significant labour force. (Ghana Statistical Service 2012). Children under five years formed about 15.3% of the population.

With 83.5% of the population being rural, and like most rural districts in Ghana, agriculture employs about 72.4% of the labour force in the production of cocoa, oil palm, citrus, coffee, plantain, cassava, cocoyam, maize, rice and vegetables. The rearing of sheep, goats and cattle; Poultry and fishing are also undertaken on a significant scale.

21.6% of the economically active population is engaged in the services sector dominated by trading in agricultural produce and manufactured goods. Industry, mostly agro-processing, pottery, wood works, etc. employs only 6% of the working population.

Social Amenities

The road network in the district is generally poor, the only first class road in the district the Kumasi Accra highway which passes Juaso Asankare,Breku and Yawkwei, it covers 2.48km and constituted 10.2% of the entire road network. Most of the roads are unmotorable in the raining season. There are also three secondary schools and one vocational institute and good number of basic schools in the district. Ghana Commercial Bank and four rural banks provide banking services for people in the district.

3.1.2 Health Facilities

The health of the population is basic pre-requisite for its development. In view of this, the analysis on health considers variables such as the availability of health facilities, adequacy of health personnel, top ten diseases and immunization coverage.

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Table 3.1: Health Facilities in the District

Health Facility	**Number**
District Hospital	1
Health Centres	9
Community Clinics	3
RCH/FP Clinic	14
Private Maternity Home	1
Community Based Surveillance Volunteers (CBSV).	100
Trained TBAs	85

Source: Ghana Health Service Annual Report 2011.

Table 3.2: Health Personnel in the District

Personnel	Number
Medical Officer	1
Medical Assistants	3
Pharmacist	1
Anaesthetist	1
Laboratory Technologist	1
Laboratory Assistants	2
Midwives	15
General Nurses	16
Ophthalmic nurse	1
Health Care Assistants	6
Dispensing Technicians	3
Dispensing Assistant	1

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Biostatician Assistants	3
Community Oral Health Officer	1
Technical Officers	4
Field Technicians	3
Community Health Nurses	24
Administrator	1
Accountants	2
Executive Officer	1
Typist	1
Ward Assistants	11
Orderly/Labourers	19

Source: Ghana Health Service Annual Report 2011.

In 2011, 80.7% of the children had Penta 3, 75.9% OPV, and 69.4% measles and yellow fever. 65.1% of pregnant women had full dose of Tetanus Toxoid. Skilled delivery is about 42.4% and maternal mortality were 3 deaths.

Malaria is the number cause of morbidity in the district followed by acute respiratory tract in infections. Anaemia and diarrhea diseases are among the top ten diseases in the district

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3.2 Study type/Design

The study is a retrospective study of mothers who delivered in health facilities between 1st January 2010 and 31st December 2012 in the Asante Akim South District in the Asante Region of Ghana. It was a population-based study of stillbirths.

3.3 Study population

The study population included all women who delivered in health facilities between the period of 1st January 2010 and 31st December 2012 in the Asante Akim South District. These included one district

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hospital at Juaso, health centres at Obogu, Ofoase, Komeso, Banka, Nnadieso, Adomfe, Bompata and a private maternity home at Obogu.

3.4 Study unit

The study was carried in all Health Centres where deliveries take place, Private Maternity Home and the District Government Hospital in Juaso of the Asante Akim South District of the Ashanti Region of Ghana.

3.5 Sample size

This was a population based study of all stillbirths in the district of the period under review. The records of all women who delivered stillbirth within 1st January 2010 – 31st December 2012 in the Asante Akim South District in the Ashanti Region of Ghana were included in the study.

The total sample used for study was141 stillbirths recorded between 1st January 2010 and 31st December 2012 in health facilities in the district.

3.6 Variables and data sources

The study was based mainly on secondary data. The births records of women in health facilities in the district were the main source of data in relation to the live and stillbirths situation in the district. The variables collected included socio-demographic characteristics of mothers, such as maternal age, occupation, educational level and parity, foetal characteristics such as gestational age, sex, birth weight and type of stillbirth, as well as clinical factors such as ANC attendance, number of SP taken and mode of delivery and possible factors associated with stillbirth.

3.7 Study instruments

Data were collected through a review of the obstetrical medical records of 141 stillbirths that occurred between January 2010 and December 2012, in health facilities in Asante Akim South

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District in the Asante Region of Ghana. The delivery report books as well as the partographs used in conducting deliveries were retrieved and relevant data extracted and recorded in a predesigned form.

3.9 Statistical Analysis

Patient's information were made anonymous and de-identified prior to entering the data for analysis. The numbers of fresh and macerated stillbirths are presented as a proportion of all deliveries. Categorical variables (mode of delivery, baby's gender and weight) were displayed as frequencies and proportions and compare using Chi- Square Continuous variables (maternal age, gestational age, birth weight and parity) was reported as mean and compare using unpaired student t-test. In all statistical tests, a value of $P<0.05$ was considered significant

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CHAPTER FOUR

RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the results of the study. The results are presented in the form of tables and figures under the research objectives of the study.

4.2 The prevalence of stillbirth in the Asante Akim South District

From table 4.1 below the age distribution of women indicated that most of them 70 (49.7 %) were between 20–29 years, followed by 15–19 years and more than 35 years, of 26 (18.4%) each. The least was those between 30-34 years, which is 19 (13.5%). The mean age of the women is 26.7 years and P-value of 0.1.

More than half of the respondent 87 (60.7%) had completed only JSS. The next higher figure is 36 (25.3%) for those who do not have any formal education. Only 2 (1.4%) had completed tertiary education with 5 (3.6) being SHS leavers. The women were mostly Traders, (51 (36.2 %), followed by 42 (29.8%) being farmers. 19 (13.5%) were unemployed, teaching formed only 2 (1.4%) .

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Table 4.1: Socio-Demographic Characteristics

Variable	Number	Percentage	P Value
Maternal Age			0.10
15-19	26	18.4	
20-24	33	23.4	
25-29	37	26.2	
30-34	19	13.5	
Above 34	26	18.4	
Total	141	100	Mean=26.7
Parity			0.00
0	51	36.1	
1 - 4,	71	50.4	
>4	19	13.5	
Total	141	100	
Education			
No Formal Education	36	25.5	0.00
Primary	11	7.8	
JHs	87	61.7	
SSS	5	3.6	
Post secondary	2	1.4	
Total	141	100	
Occupation			0.00
None	19	13.5	
Trading	51	36.2	
Farming	42	29.8	
Seamstress	7	5	
Hair dresser	14	9.9	
Teaching	2	1.4	
Student	4	2.8	
Others	2	1.4	
Total	141	100	

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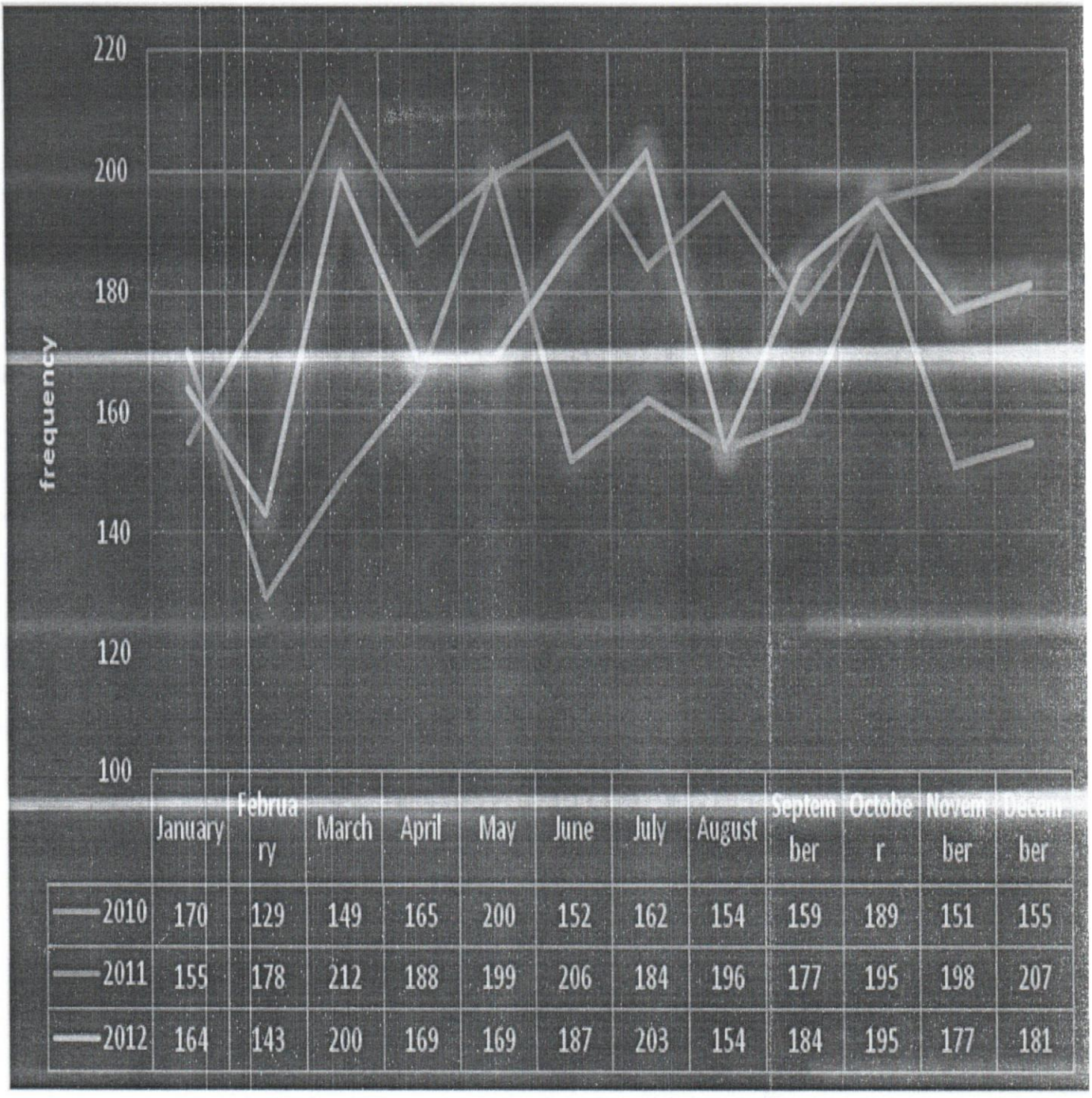

	January	February	March	April	May	June	July	August	September	October	November	December
2010	170	129	149	165	200	152	162	154	159	189	151	155
2011	155	178	212	188	199	206	184	196	177	195	198	207
2012	164	143	200	169	169	187	203	154	184	195	177	181

Figure 4.1: Trend Analysis of Deliveries (2010-2012)

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Figure 4.1 above illustrates the trend of deliveries in the district on a monthly basis in the years under review. The highest births were recorded in 2011, which was followed by 2012 then 2010. A total of 6356 births were recorded within 2010-2012. October recorded the highest of 579 births followed by May with 568. The least was February with 450 birth followed by January with 489.

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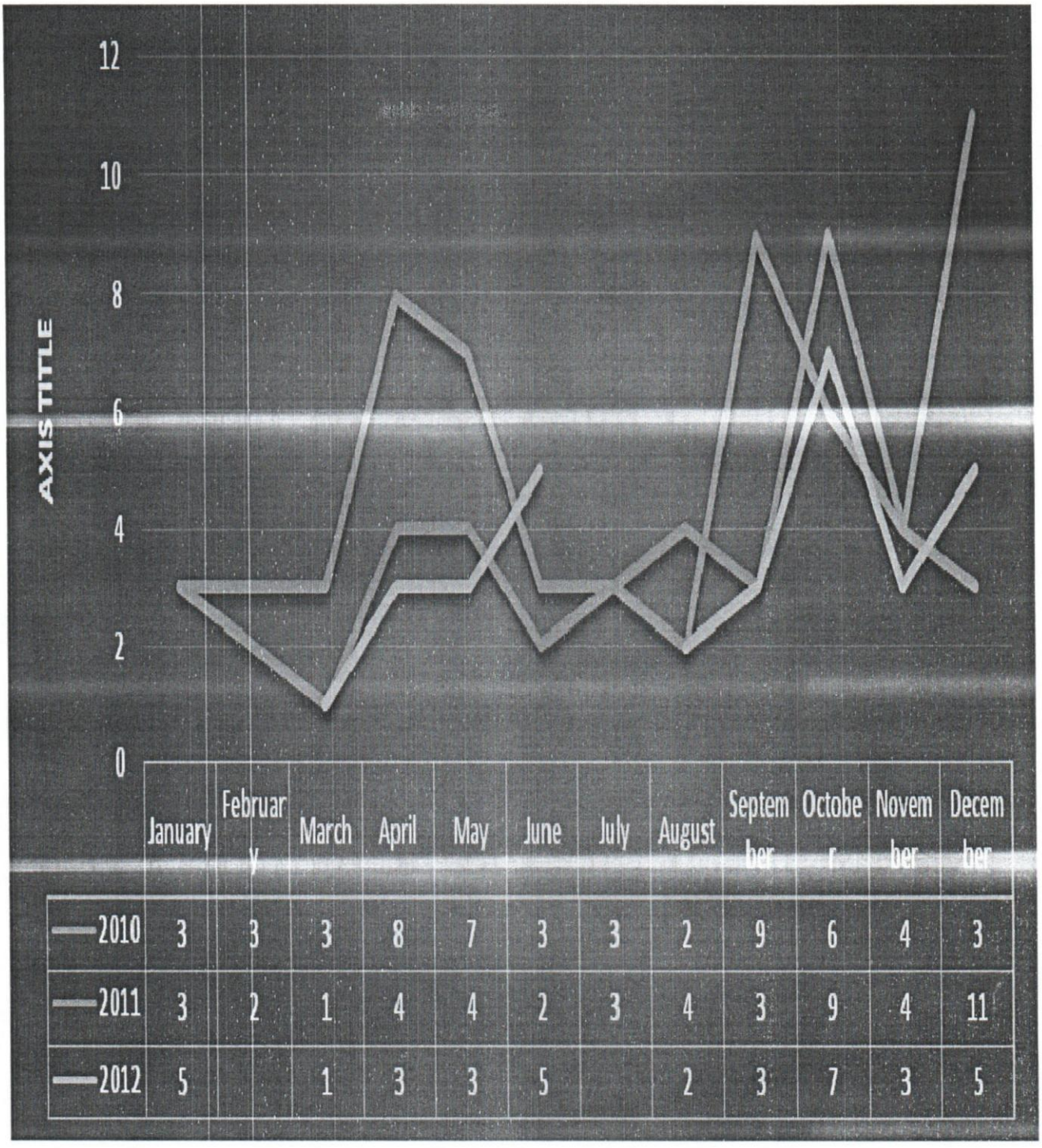

Figure 4. 2: Trend Analysis of Still Birth (2010-2012)

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The figure 4.2 above illustrates the trend of stillbirth on monthly basis with the three years under study. It can be noted that throughout the three years, October seem to have recorded on the average the highest number of stillbirths. The highest number, 11, however was recorded in December 2011. Much improvement seems to have been made in the year 2012 with February and July recording no incidence. Comparatively the incidence was low in 2012.

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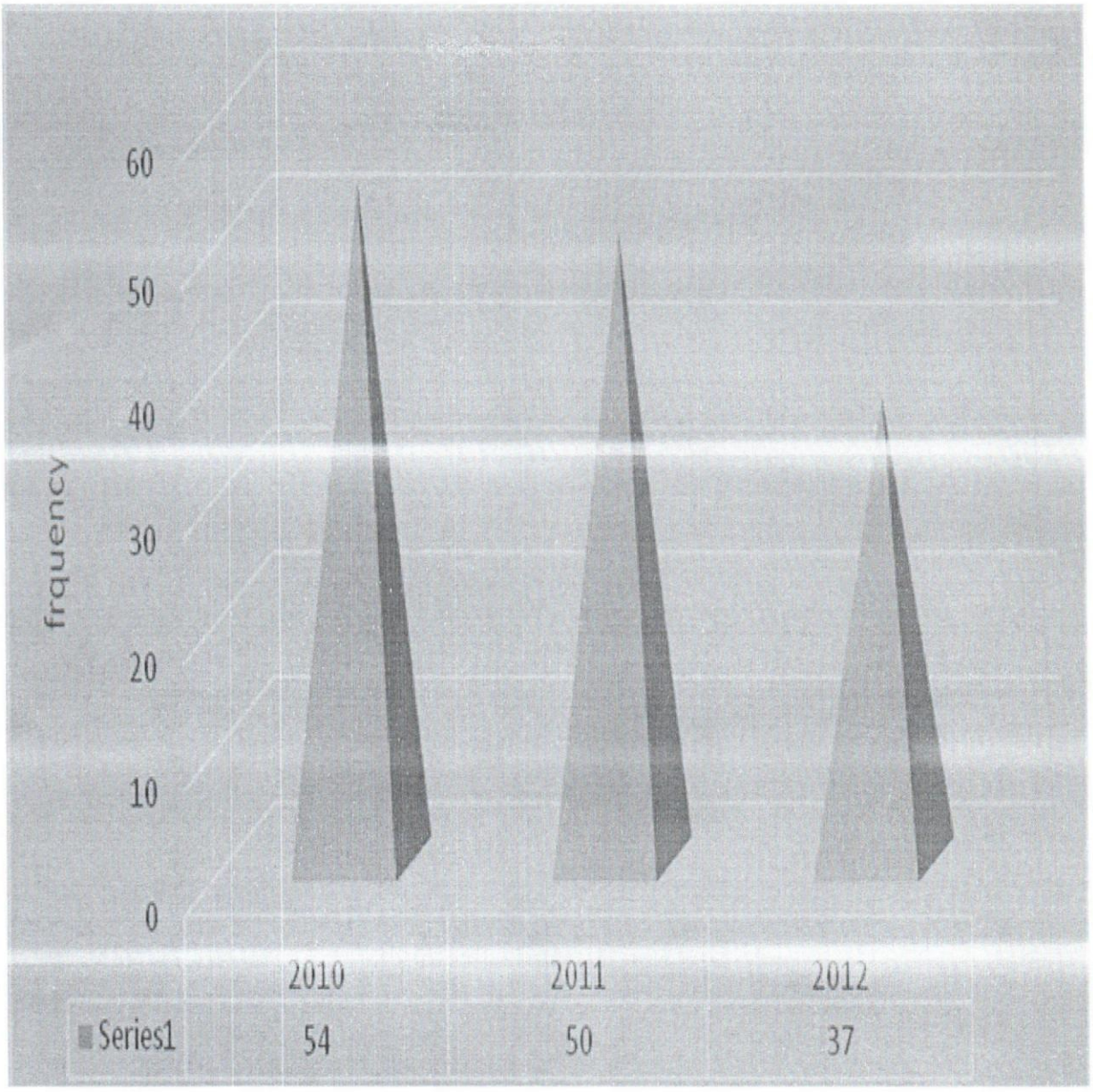

Figure 4. 3: Total Number of Still Birth (2010-2012)

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The figure 4.3 above gives a distribution of the total number of stillbirths across the years. While 54 were recorded in 2010, 2011 recorded 50 and the lowest was 37 in 2012.

Prevalence of stillbirth is the number of stillbirths per 1000 total births. Hence the prevalence of stillbirth in the Asante Akim South District from 1st January 2010-31st December 2012 stood at 22.2/1000 births.

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Table 4.2: Foetal Characteristics

Gestational Age in weeks	Number	Percentage	P-value	Mean
Below 28	12	8.5		
28-35	39	27.7		
36-41	85	60.3		
More than 41	5	3.5		
Total	141	100	0.00	35.0
Sex of Baby				
Male	94	66.7		
Female	47	33.3		
Total	141	100	0.00	
Birth Weight in kg				
<2.0	17	12.06		
2.0-2.4	29	20.57		
2.5-2.9	40	28.37		
3.0-3.5	47	33.33		
3.6-4.0	7	4.96		
>4.0	1	0.71		
Total	141	100	0.00	2.7
Type of Stillbirth				
Fresh	80	56.74		
Macerated	61	43.26		
Total	141	100	0.11	

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From table 4.2 above the gestational age distribution of the stillbirths indicated that 85 (60.2%) were between 36 – 41 weeks. 39 (27.7%) were between 28 – 35 weeks, 12 (8.5%) were less than 28 weeks and the least 5 (3.5%) were above 41 weeks. Most of the stillbirths were males 94 (66.7%) while the rest 47 (33.3%) were females. The birth weight distribution of the stillbirths indicated that 46 (32.6%) were below 2.5kg, 87 (61.7%) were between 2.5kg-3.5 kg, and 8 (5.7%) were above 3.5 kg 2. The mean birth weight was 2.7. Fresh stillbirth topped the type of stillbirth with 80 (56.7%) followed by macerated with 61 (43.3%).

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Table 4.3: Clinical Factors of Women with stillbirth

Number of SP Taken	Number	Percentage	P-value
0	38	27	
1	19	13.4	
2	28	19.9	
3	56	39.7	
Total	141	100	0.00
ANC Attendance			
None	21	14.9	
1-2,	35	24.8	
3-4,	49	34.8	
>4	36	25.5	
Total	141	100	0.01
Mode of Delivery			
SVD	123	87.3	
C/S	15	10.6	
Vacuum	2	1.4	
Forceps	1	0.7	
Total	141	100	0.00
Total	141	100.0	

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From table 4.3 above the number of SP taken among the stillbirths indicated that 56 (39.7%) took all 3 doses, 19 (13.4%) took only one dose, 28 (19.9) took two doses and 38 (27.0%) never took a single dose of SP during their pregnancy. In assessing ANC visits, it was noted that 34.8 percent had between 3 – 4 visits, 24.8 percent had between 1 – 2 visits, 25.5 percent had more than 4 visits, 14.9 percent never attended ANC. Most of the deliveries 123 (87.2%) were by means of spontaneous vagina delivery (SVD) followed by Caesarean section 10 (10.6%). Vacuum extraction and forceps delivery were 2 (1.4%) and 1(0.7%) respectively.

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Table 4.4: Medical/Obstetric Factors

Condition	Number	Percentage
Hypertension	7	5
Eclampsia/Preeclampsia	7	5
Infections eg malaria/sepsis	12	8.5
Obstructed Labour	10	7.1
Premature Rapture of Membrane(PROM)	5	3.6
Pronged labour	11	7.8
No contraction	3	2.1
Cord prolapse	6	4.3
APH	8	5.7
Unexplain	26	18.4
Growth Restriction	6	4.3
Delay at Home	8	5.7
Breech	4	2.8
Diabetes	1	0.7
Unable to push	3	2.1
HIV	2	1.4
Placenta Abruptio	3	2.1
Deformity	1	0.7
Anaemia	4	2.8
Post Maturity	7	5
Polyhydaminious	1	0.7
Use of herbs	6	4.3
Total	141	100

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From table 4.4 above, the medical conditions that were mostly associated with stillbirth were hypertensive conditions ie hypertension and eclampsia/preelampsia, malaria in pregnancy, prolonged labour and obstructed labour that recorded 14 (9.9%), 12 (8.5%) and 11 (7.8%) percent and 10 (7.1%) respectively, and use of herbs during pregnancy accounted for 6 (4.3%) whereas 26 (18.4%) case could not be explained.

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CHAPTER FIVE

5.0 DISCUSSION OF RESULTS

5.1 Introduction

This chapter discussed the findings of the study. The results obtained at the analysis section are discussed with reference to the literature reviewed.

5.2 Socio-Demographic Characteristics

The prevalence of stillbirth is affected by several factors including the socio-demographic characteristic of the population in question, access to obstetric care, the medical history of the woman and the socioeconomic status of the population.

In a number of studies like Kunzel et al. (1996); Feresu et al (2004) and Watson-Jones et al (2007) noted that in most geographical areas, in addition to access to obstetrical care at delivery, various other socio-demographic factors, including rural residence, low socioeconomic status, lack of education, lack of a partner, and poor nutrition had been associated with increased stillbirth rates. In addition, advanced maternal age is a stillbirth risk factor in all areas of the world. For example, in one study in Latin America, women >35 years of age were twice as likely (31/1000 vs.16/1000) to have a stillbirth as younger women. Finally, short inter- pregnancy intervals, prior stillbirths and a history of adverse pregnancy outcomes have been associated with increased risk of stillbirth (Fretts 2005). This was however contrary to the results of this study, which noted that the age distribution of women indicated that most of them 26.4 percent were between 25–29 years. This is normally the age group, which young women give birth. Mention can be made of the 18.6 percent who were noted to be between the ages of 15–19 years. This somewhat indicates a high rate of teenage pregnancy. Majority of the women in the study had low or no formal education. About 62.0% of the studied subject could only achieve Junior High School level of education with as many as 26.0% of the subjects having no

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formal education. This is however lower than both the national and regional literacy rate which is 46.0% and 48.2% respectively. The results confirm the findings of several studies (McClure, et al. 2007; Engmann et al., 2012; Williams et al., 2008; Andrade et al., 2009) which show that low educational level of women is associated with stillbirth. The nature of the job or employment of the woman is said to have a direct impact on the health of the woman and possibly that of the unborn child. The results of the study showed that most of the women were unemployed with majority of them self employed and only an insignificant number of them were in the formal sector. Analysis of the employment status and the prevalence of stillbirth showed that those who were employed, apart from a substantial number that were found to be unemployed, none of the women were identified to be in the public sector or cooperate institution There were mostly either traders or farmers, which do not require much of academic achievements to embark on. Low socio-economic status has been reported by several studies as contributing to stillbirth in developing countries. In a systematic review of risk factors for stillbirth in developing countries, Di Mario et al. (2007) identified maternal socio-economic disadvantage as one of the factors with a population attributable fraction of higher than 50%. This association was reported recurrently from other developing countries (Engmann et al., 2012; Cripe et al., 2007; Lee et al., 2011).

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5.3 Prevalence of Stillbirth

The yearly distribution of birth from the records of the district seems to suggest that the figure shot up extremely in 2011. Considering the three years under review, 2010 recorded the least figures of births. Much improvement was made in the year 2012 with February and July recording low births. Comparatively the incidence was low in 2012 and this was because the only medical officer in the District was on study leave and complicated cases were referred to Agogo Presbyterian Hospital or

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Konongo Government Hospital. A comparative analysis of the months under review seems to suggest that pregnancies delivered in the month of October seem to be highly at risked of stillbirth 38/1000. This was followed by the month of May. The least month was February, which was followed by January. This could be anticipated since Asante Akim South is predominantly a farming community and May, October is the peak period of farming activities, which women hardly have time to attend antennal clinic whereas January and February have less activity. Prevalence of stillbirth in the Asante Akim South District in 2010 – 2012 stood at 22.20 per 1000. In a study of Stanton et al (2006) estimated a stillbirth rate of 25.5 per 1000 births for developing countries in the year 2000, with sub-Saharan Africa representing the highest rate (32.2 per 1000 births or a total of 889,697), followed by South Asia (31.9 per 1000 or a total of 1,286,231 births). A study of stillbirths in Zambia by Chi et al (2007) found stillbirth rates to be 32.9 per 1000 births. In Latin America, with both middle-income and lesser-developed countries, stillbirth rates generally range from 15 to 25/1000 births (Conde-Agudelo et al., 2000), (Engmann et al., 2012).

5.4 Factors Associated with Stillbirths

5.41 Foetal Characteristics

Most of the babies were noted to have gone through the normal gestation period of approximately 9 months. The sex distribution of stillbirths was mostly males compared to females. The birth weight was noted to be mostly around 3.0 kg-3.5 kg, which was closely followed by 2.5 kg- 2.9 kg, the mean weight was 2.7 kg and 32.6% were under weight. Those babies below 2.5 kg and those above 3.5 kg account for 38.3 % of the stillbirths. In the study of Stringer et al., (2011) a study of 2109 stillbirths in Zambia, reported that extremes of birth weight increased the risk for stillbirth. Fresh stillbirth topped the type of stillbirth 56.7 %. This finding disagreed with (Okeudo, Ezem and Ojiyi 2012) whose findings in a study in a tertiary hospital in South-Eastern State in Nigeria showed that 25% of

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the stillbirths were fresh, however it conformed with Jammeh (2010) whose results in the Gambia showed that 57.8% of the stillbirths were fresh.

5.42 Clinical Factors of Women with Stillbirth

The antenatal care (ANC) visit of women to antenatal clinics is one of the major issues that affects maternal and child healthcare. In most of the cases, some complications that might endanger the health of women and their foetuses can be identified with regular visits. At the prenatal stage, ANC is paramount that cannot be ignored in every maternal health services. The number of ANC attendance indicated that 34.8 % had between 3 – 4 visits, 24.8% had between 1 – 2 visits, 25.5% had more than 4 visits, 15.9% never attended ANC. An inferential analysis done suggested that there is a strong relationship between the number of ANC visits and the case of delivery be it still or live births. This analysis was reported with a Pearson Chi-Square of 0.001.Nouaili et al. (2010) found that inadequate antenatal care increased the risk of stillbirth in a Tunisian population. Similar results were reported from Peru by Gilbert et al. (2010), Nigeria by Olusanya, Afe, &Solanke (2009), Jamaica Del Rosario et al. (2004) and Vietnam by Grane et al. (2009).

Aside the 10.6 percent of cases that was noted to have been delivered through Caesarean section, the rest, 87.2 percent, was through Spontaneous Vagina Delivery (SVD) which seem to suggest that there were not much complications in the course of childbirth that warranted Cesarean Section (C/S).

5.43 Medical/Obstetric Factors

Malaria in pregnancy was the main challenge that was mostly associated with stillbirth in the year under review. It must be noted that malaria in pregnancy is a known cause of fatalities in terms of maternal and child health care. The condition of pregnant mothers make them prone to a lot of disease and with the nature of malaria, it can easily affects them. The results confirmed earlier studies that

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almost half of all stillbirths worldwide occur in areas with endemic malaria, where there are particularly high rates of stillbirth. Although malaria is generally not associated with higher stillbirth rates in multigravidae, women infected for the first time in pregnancy are at higher risk for stillbirth (Wort et al., 2006). Placental damage is the likely cause for stillbirths associated with maternal malaria.

The practice of traditional medicine practitioners in the healthcare delivery cannot be overlooked. Some of the women took various concoctions and herbs during pregnancy with good intentions of addressing the needs of their pregnancy but it turns out that some of them end up worsening the already bad situation of some of the pregnant women in the localities. The activities of herbalist however can be monitored and regulated in order to ensure that the right things are done.

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CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The Prevalence of stillbirth in the Asante Akim South District in 2010 – 2012 was 22.2/ 1000 births with October recording the highest incidence in the three year period.(38.0 per 1000 birth.

Low ANC attendance, parity, level of education, occupation, gestational age, sex of the baby, and birth weight were significantly associated with stillbirth (P = 0.00.)

More than half 80 (56.7%) were fresh stillbirth. The study also revealed that most 26 (18.4%) were teenagers.

Over 90% of the mothers had very low educational level, only 37 percent of the mothers took the full dose of SP anti- malarial prophylaxis, and this correlated with the high number of malaria cases recorded.

6.2 Recommendations

- The DHMT must institute health promotion programmes to educate potential mother on the need to attend ANC and the importance of taking prophylactics treatment especially for malaria.
- Adolescent reproductive health should be given serious attention to reduce the number of teenage pregnancy in the district in particular and that of the nation as a whole.
- The District Assembly, in consultation with the Traditional Council, parents and teacher should organize extra classes for Junior High School student to improve their performance at

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the Basic Education Certificate Examination so that most of the student can gain admission to Senior High School and beyond.

- The activities of herbalist should be regulated in district.

6.3 Suggestion for further research

- A Prospective research into this area involving larger scope is very much needed.
- A qualitative research to identify actual problems that expectant mothers encounter during pregnancy.

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