

**UNIVERSITY FOR DEVELOPMENT STUDIES, TAMALE**

**EVALUATING THE TREND OF CAESAREAN SECTION FROM  
(2011 - 2016) IN THE KASENA NANKANA MUNICIPALITY,  
GHANA**

**BY**

**MOSES SALIFU DUUT**



**2018**

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(BED HEALTH SCIENCE)  
(UDS/CHD/0230/18)**

**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF  
COMMUNITY HEALTH, SCHOOL OF ALLIED HEALTH  
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PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE  
AWARD OF MASTER OF SCIENCE DEGREE IN COMMUNITY  
HEALTH AND DEVELOPMENT**



**2018**

## DECLARATION

Student

I hereby declare that this thesis is the result of my own original work that no part of it has been presented for another degree in this university or elsewhere:

Candidate's

signature.....Date.....

Name.....

Supervisors

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

Principal Supervisor's

Signature.....Date.....

Name.....



The trend of caesarean section (CS) rate continues to increase worldwide. This trend of increasing CS has raised a lot of concerns among health professionals and countries world over. The World Health Organisation in 2007 reached a consensus around the world with the recommendation of an acceptable Caesarean Section rate of 10---15% among countries. This study evaluated the trend of Caesarean Section in the Kassena-Nankana Municipal of the Upper East Region, Ghana. The study evaluated a six (6) years trend of Caesarean Section in the municipality using secondary data of clients and a few of primary data collected from clients who had Caesarean Section. The study design was medical records review or prospective study and the setting was the Kassena –Nankana municipality. The data collection was done using secondary data extraction forms and semi structured questionnaire. The objectives were to estimate the annual Caesarean Section rate in the Municipality, to identify the factors that influenced Caesarean Section in the Municipality and lastly, to assess the maternal and fetal outcomes of Caesarean Section in the Municipality of Kassena-Nankana in the Upper East Region, Ghana. The study found that, the annual Caesarean Section rate in the Kassena-Nankana Municipality was high (16.7%). This rate according to the Ghana Demographic and Health Survey (2014) is higher than the rate of Caesarean Section in the Upper East Region (7.6%). Among the main indicators of Caesarean Section for the fetus was fetal distress which accounted for 54.4% that was fetal factors that determined Caesarean Section. The majority of maternal indicators were primary Caesarean Section (82%) and those with the indication of previous Caesarean Section (27.6%). A majority of the babies who survived after the Caesarean Section (84.7%) indicated greater number of the babies survived and those who died were (15.3%). The percentage of mothers who survived (96.4%) went through the Caesarean Section successfully and 3.6% died after the Caesarean Section. Primary Caesarean Section has been the common cause of the increasing Caesarean Section in the Municipality. From the study women who underwent primary Caesarean Section have had normal delivery without Caesarean Section before. There is the need to review majority of the indications for Caesarean Section. Again there is the need to train staff to do proper diagnosis for all the clients to prevent needless surgeries on the pregnant.





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**DEDICATION**

To the memory of SujabkaTamban

UNIVERSITY FOR DEVELOPMENT STUDIES



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ANC	Antenatal Care
BMA	Bolgatanga Municipal Assembly
BMSD	Bolgatanga Metrological Survey Department
CPD	Cephalopelvic Disproportion
CS	Caesarean Section
DHMT	District Health Management Team
EmOC	Emergency Obstetric Care
FTP	Failure to progress
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Service
KNM	Kassena-Nankana Municipal
MOH	Ministry of Health
NICE	National Institute of Health and Clinical Excellence
OPD	Outpatient Department
WHO	World Health Organisation
WHS	World Health Statistics
WMH	War Memorial Hospital



## **INTRODUCTION**

### **1.1 Background**

Since ancient times, Caesarean Section (SC) has evolved through western and non-western culture (Lurie 2005). The process evolved from keeping the baby alive when the mother is dying to keeping both mother and baby alive and now serving as an alternative to the natural birth process where women can make a choice as to the delivery process (Lurie 2005). Therefore, Caesarean Section has evolved from being a last resort to saving the life of the fetus to one in which both the physician and the patient participate in the decision-making process that benefits both the mother and baby (UNFPA, WHO, UNICEF & WORLD BANK 2012). According to Greek mythology Apollo removed Asclepius, founder of the famous cult of religious medicine, from his mother's abdomen. Numerous references to caesarean section appear in ancient Hindu, Egyptian, Grecian, Roman, and other European folklore (Gupta 2008). In the sixteenth and seventeenth centuries, there are more reports by obstetricians about this operation. The medical education was improving in the era of the renaissance, numerous works illustrated the human anatomy in detail, Andreas Vesalius' publication on human anatomy in 1543 (O'Sullivan 1990).

In the eighteenth and nineteenth centuries anatomists and surgeons expanded their knowledge by having more access to human cadavers for indebt study of the human anatomy and physiology (Lurie 2005; Gupta 2008). In Africa, Egypt is known to have had religious decrees which encourage postmortem caesarean section. In 1826, the first documented caesarean section was performed in South African (Canterino et al., 2004).



Delivery is an automatic mechanism and without the need for intervention. It is a spontaneous process that has been done for years with its natural course (Azamiaghdash et al., 2014; Shatifiradet et al., 2007). Caesarean Section is predicated to exit the foetus, placenta and membranes by cutting the wall of the abdomen and uterus (Dehghani et al., 2007). Caesarean sections is one of the most frequently performed operations in women (Gita 2008). Caesarean section is defined as a surgical procedure in which incisions are made through the woman's lower abdomen and the uterus to deliver a baby (Robson 2015). Caesarean Section (CS) is an operation mainly evolved to save a maternal life during difficult child birth (Subhashini & Uma, 2015). In the history of obstetrics, episiotomies come second to caesarean section and it said to be the oldest surgical procedure. The ancient surgeon performed the procedure post-mortem to deliver a dead or alive fetus, but today, caesarean section is performed ante-mortem with the objective of saving the life of the fetus and the mother. In the nineteenth century caesarean sections were carried out by clergymen and midwives (Lurie & Glezerman, 2003). From the dark beginning, the procedure CS was used as a last resort, but the evolution of the procedure has made it refined and now it its performed more safely and frequently (Canterino et al., 2004).

CS has evolved with more advantages as a second choice to vaginal delivery and the prevention of all the adverse complications related to vaginal deliveries that may pose threat to the mother and baby. Again medical advancement in the study of obstetrics and gynecology especially in the field of anaesthesia, infection prevention and diseases control have made this operation safer than ever (Ukeme, 2014).





In the 21st century, CS is dominating the global stage as a popular mode of delivery. This rate has increased in various parts of the world both in the developed country and developing countries (Ecker 2013). The phenomenon of rising caesarean rates is registered in most countries (WHO 2015). It is estimated that at the beginning of the 21st century, the average CS rate was 3.5% in Africa, 14.9% in Oceania, and in all over the continents the rate is above the 15% mark set by the World Health Organization (WHO) in 1985(WHO 2015). The rate in Asia is 15%, 19.0% in Europe, 24.3% in North American, and 29.2% in the Caribbeans and the Latin America (Betran et al., 2007). From countries of the same continents, there has been significant variations in the trends and rate. According to the recent data published by the ministry of health in Brazil, the percentage of CS deliveries was 40% in the public network, reaching 84% in the health insured population (Eckstein, 2015).

This goes along with the improvement in maternal health in terms of declining maternal mortality rate (Laboissiere, 2012). In addition, some countries in South East Asia, such as Indonesia, Malaysia, Philippines and Thailand have 27.0% of women undergoing CS, with varied rates between 19% and 35% among countries and 12.0% and 39.0% among health facilities in the countries (Festin et al., 2009) The proportion of CS births in the USA increased from 20.7% to 31.0%, this increase occurred between 1996 and 2006 (MacDorman et al., 2008). The developing countries too have seen some rising trend in CS deliveries in the last two decades (Ibekwe 2004; Sufang et al., 2007; Padmadas et al., 2008).

According to the World Health Statistics (2005), the average caesarean section delivery in Africa is 3.5%, but the highest CS rate is in South Africa (15.4%), Egypt



(11.4%) and Tunisia (8%), [www.udsspace.uds.edu.gh](http://www.udsspace.uds.edu.gh), Chad(0.4%), Madagascar, Niger, and Ethiopia have CS rates below 2%. Since the proportions of birth by CS also serves as a bench mark for measuring access, availability and appropriateness of medical care as well for monitoring changes in maternal mortality in developing countries, it is clear some parts of Africa are not improving with regards to maternal and child health ( Tomeo et al., 1999).

In Ghana, 13.0% of births are delivered by caesarean section, an increase from 7.0% in 2008. Delivery by CS is highest among births to women age 35-49 (17%) first-order births, (18%) births for whom mothers had four or more Antenatal visits, (15%) births in urban areas, (19%) and in the Greater Accra region (23%), births to mothers with a secondary or higher education (27%), and those in the richest households (28%) (GDHS, 2014). Three-quarters of births in Ghana (74%) are delivered with the assistance of a skilled health professional: 14.0% are assisted by a doctor, 57.0% by a nurse/midwife, and 3.0% by a community health officer/nurse. Data further show that 16.0% of births are delivered by a traditional birth attendant, 7.0% are assisted by a relative or other person and 3.0% of deliveries are not assisted by anyone. Though nationally, only 3.0% of births are assisted by a community officer/nurse, while almost one in five births (18 %) in Upper West Region (GDHS, 2014). District hospitals in Ghana, where skilled deliveries are provided including emergency obstetric care for both the mother and neonates. This is in line with the recommendations of WHO in providing comprehensive emergency obstetric care. The proportion of CS to the total births serves an essential indicator of emergency obstetric care (WHO, 2009).

## 1.2 Statement of the Problem

According the WHO, it is established that caesarean section (CS) being an essential treatment in pregnancy should apply at the rate of 10 to 15% as the recommended level of all births (EmOC, 2009; WHO, 2007). However, a recent WHO publication reports that between 1990 and 2014, the global average of CS rate increased from 12.4% to 18.6% (WHO 2015). For many developed countries, CS rates have increased and continue to increase as such strategies are being planned to control the trend because of the concerns that higher CS rates do have health benefits but may have effect on future pregnancies (Wagner, 2000; Thomas et al., 2001). However, in developing countries the trend is the opposite since there is lack of availability of and access to maternal health services and the corresponding underuse of CS leading poor delivery of maternal health care (Weil1, 999). The merits of CS in the district hospital cannot be overlooked, however the procedure is not risk free because there are risks associated with drugs used during the procedure (Tadesse, 2016). In the case of spontaneous vaginal delivery, the client has a short length of stay in the hospital as compared to CS client. Again caesarean section comes at a higher cost as compared to spontaneous vaginal delivery and in 2011 the CS rate was 13.0% (War Memorial Hospital annual report, 2016). Cesarean Section has been applied as a life saving alternative for mothers and newborns in the Kassena-Nankana Municipality. However, there has not been a study to evaluate the trend, maternal and fetal outcomes and the contributory factors leading to its application in the Kassena-Nankana Municipality. Some of these trends appear higher than the WHO recommended threshold therefore appears to indicate abuse in the application of caesarean section (CS) as a mode of delivery and emergency obstetric care (EmOC) (EmOC 2007; WHO, 2007). The CS trends as a preferred mode of delivery by health



institutions, pregnant women are not giving the option to decide on their preferred delivery method in recent times. For this reason, there is the need to investigate contributory factors necessitating caesarean section deliveries in the Kassena - Nankana Municipality.

### **1.3 Research questions**

1. What is the annual CS rate in the Kassena-Nankana Municipal (KNM)?
2. What are the factors contributing to the increasing CS in KNM?
3. What are the maternal and fetal outcomes of CS in KNM?

### **1.4 Objective of the study**

The general objective of the study is to evaluate the trend and factors that are used as indicators of caesarean section in the War Memorial Hospital of the Kassena-Nankana Municipality, of the Upper East Region of Ghana. Specifically, the study was aimed at achieving the following objectives:

#### **1.4.1 Specific research objectives**

1. To estimate the annual caesarean section rate in the Kassena-Nankana municipality (2011 – 2016).
2. To identify the indications or reasons for caesarean section in the Municipality.
3. To assess fetal and maternal outcomes of caesarean section in the Municipality.



### **1.5 Purpose of the study**

The purpose of the study was to evaluate the trend of caesarean section in the Kassena-Nankana Municipality. Look at the trend of annual caesarean section rates from the period of January 2011 to the end of December, 2016. The study considered the demographic characteristics of the women who underwent caesarean section for the period under consideration, the indication that influence the decision for caesarean section, the fetal factors that influenced the indication for CS and the maternal and fetal outcomes of caesarean section. Thus, the findings of this study may lead to the improvement in the provision of emergency obstetric care in the municipality and the region at large.

### **1.6 Significance of the study**

The study provided insight into the utilization of caesarean section as an emergency obstetric care in the Kassena-Nankana Municipality since the municipal hospital is the main referral point. The knowledge acquired in this study will help to provide adequate information to clients for informed decision-making regarding caesarean section in future. In addition, the study gives women the knowledge and appreciation of the natural delivery process as the appropriate birth process. It also eliminates negative perceptions about CS. Though caesarean section as a mode of delivery has its own associated risk to the mother and baby if the guideline is not adhered. Understanding the trends and factors affecting CS delivery may benefit the assessment of effects on both maternal and health care providers. Through the researcher's interaction with the clients and staff, new knowledge was discovered as to the strategies to put in place to effectively utilize CS as a life saving procedure both to the mother and baby. Lastly, it serves as foundation for future research into the field of caesarean delivery and obstetric care for the student and future researchers.





### 1.7 The theory of health belief model

It is a theoretical model on the function of beliefs in decision making, the model was originally the work of Rosenstock (1974) and modified by Becker et al (1980). This model has been used to predict protective health behavior such medical screening and uptake and compliance with medical advice (Rosenstock 1974). According the theory of health belief model, whether or not people change their behavior will be influenced by an evaluation of its feasibility and its benefits weighed against its costs. In other words, people considering changing their behavior engage in cost—benefit or utility analysis. This may include their beliefs on the possibility of illness and injury occurring to them that is to say how susceptible they may be, and the efficacy of the action and if it will have some personal benefits or how likely it is to protect the person from the illness or injury. According to Becker et al (1974) for a behavior change to take place, individuals:

1. Must have an incentive to change
2. Feel threatened by their current behavior
3. Feel a change would be beneficial in some way and have few adverse consequences
4. Must feel competent to carry out the change.

Becker suggests that individuals are influenced by how vulnerable they perceive themselves to be to an injury, danger, or illness (vulnerability/susceptibility) and how serious they consider it to be (severity). People's perception and assessment of risk is central to the application of this model. Many people will make a rough profiling about their risk status. This appears to be influenced by three factors:



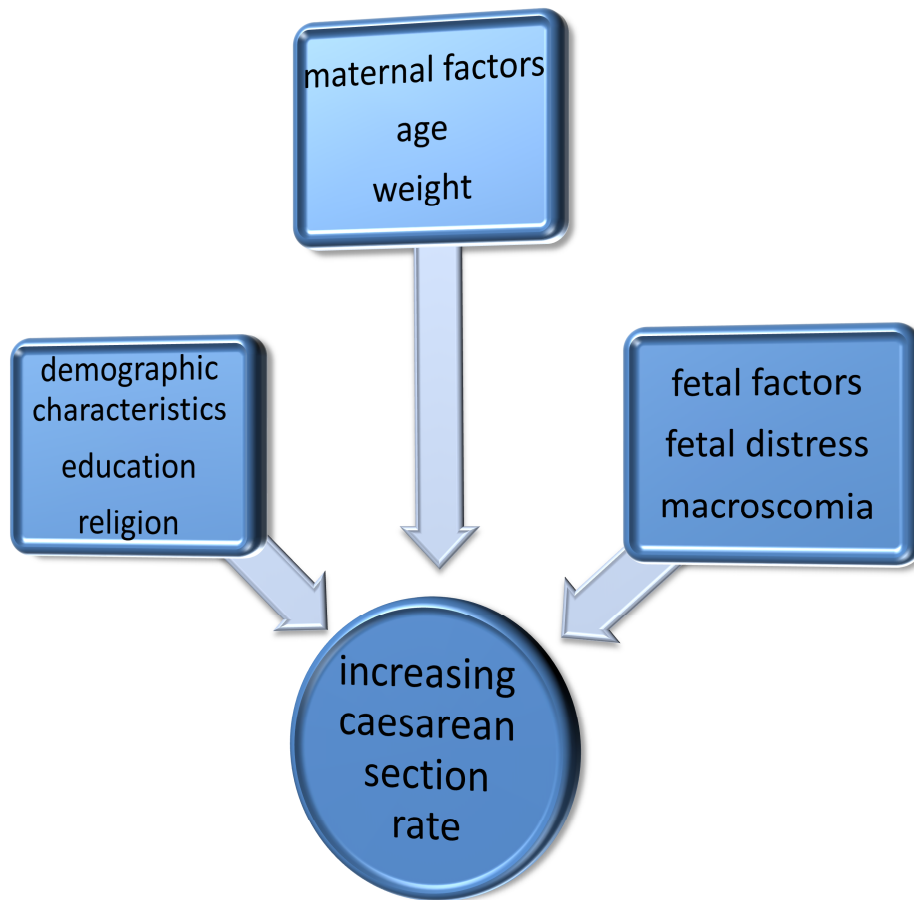
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1. one's personal experience
2. ability to control the situation
3. the kind of general feeling that the illness or danger is thoroughly nasty and able to kill quickly

(British Medical Association, 1987).

Consideration of these variables in relation to Caesarean Section shows how clients have to deal with this as a mode of delivery other than having to deliver without an operation. However, in many situations people have an unrealistic optimism that it would not happen to me' (Weinstein, 1984). Since beliefs may be affected by experience, direct contact with those who have a condition can strongly affect attitudes exposing stereotypes and prejudice. For example contact with a client who has undergone CS can change beliefs about the operation CS as a mode of delivery and whom is affected and how.





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**Figure 1: Conceptual Framework on Predictors of Caesarean Section**

The explanation of the conceptual frame work above with the theory of health belief model.

1. The client's personal experience and having the incentive to change will be seen in the area of her demographic characteristics for example religion, education, place of residence, occupation, and marital status.

2. The ability to control the situation and also feeling threats will be seen in the areas of maternal weight, antenatal attendance, parity and choice of mode of delivery.
3. The client's view of danger and having a feeling of being competent for the change will be seen in the client's willing to access medical care and accepting medical advice in the area of getting assisted delivery in the form of caeseraen section.



## **LITERATURE REVIEW**

### **2.1 Introduction**

This chapter deals with reviewing of literature on the various variables that bring about the changing trends in the use of caesarean section. The literature review is on the indicators of CS including demographic characteristics, maternal and fetal indicators. These variables have a direct bearing on the varying trend on caesarean section in the municipality.

The chapter looked at the general overview of the stages of labour and caesarean section as a procedure. The work was organized according the research objectives: estimation of the annual Caesarean Section rate in the Kassena-Nankana municipality, identification of the contributory factors serving as indications for caesarean section, and lastly fetal and the maternal outcomes of the CS in the municipality.

A caesarean section is a surgical procedure in which one or more incisions are made through abdomen and uterus of the pregnant mother to deliver one or more babies, or to remove a dead fetus (Myles, 2000). This surgery has been performed at least as far back as 715 BC following the death of the mother with the occasional baby surviving.

Description of the mothers surviving dates back to the 1500s. It was during this era that physicians became interested in obstetrics and reports of the caesarean deliveries were published in various countries. The surgery was performed if the woman had been through several days in labour after midwives and physicians have failed to deliver such women.

The first operation was performed by Jeremias of Wittenberg in 1610 and reported in a medical journal. During this surgery, the mothers were not surviving because they





[www.udsspace.uds.edu.gh](http://www.udsspace.uds.edu.gh) probably died of infections later. Another one was performed by Doctor Trautmann, here the baby survived but the mother died on the 25th post- operative day (O'Sullivan, 1990).

The introduction of aseptic techniques and anaesthesia in the 1846 and 1861 respectively made survival of the mother and baby common (Todman, 2007). By the early 1900s, blood transfusion became available in specialist units, penicillin and sulphonamides were introduced in 1941 and 1935 which greatly reduced sepsis and maternal death related to deliveries (O'Sullivan, 1990; Lurie, 2005; Todman, 2007). The first modern CS was performed by German gynecologist Ferdinand Adolf Kehler in 1881 ([www.wikipedia](http://www.wikipedia), accessed on 15 may, 2015)

Before then, the true picture of the origin of the procedure is shrouded in myths and uncertainties (Todman, 2007). It commonly believed to be linked with the surgery leading to the birth of Julius Caesar, however this seems unlikely since his mother Aurelia is reputed to have lived to hear her son's invasion of Britain (Todman, 2007). Again then the procedure was performed at the death of the mother with the rational of saving the baby for state wishing to increase its population.

Caesarean sections were also made because of religious beliefs, so that the baby could be buried separately from the mother. The operation was not intended to preserve the life of the mother. It was not until the 19th century that saving the mother really was a possibility (WHO, 2000). CS has become part of the safe motherhood initiative which measure access to emergency obstetric care and also serves as a measure to reduce maternal mortality (GDHS, 2014).

## **2.2 Caesarean section as a mode delivery.**

According to the American College of Obstetricians and Gynecologists (ACOG, 2013) Caesarean Section as a major obstetric surgery is defined as the incision through the mother's abdomen and the uterine wall to remove the fetus. This definition was further expanded by (ACOG, 2013), that the procedure is performed when vaginal delivery was not possible due to the risk it will subject the life of baby to. Caesarean section in modern times have been performed by maternal request without medical indication this does not involve any life threatening condition to both mother and baby (Sunday, 2014).

Cooper (2009), added that the procedure is carried out at a gestational age of 24 weeks on wards. Again for a woman to achieve normal delivery, the following criteria will have to be met thus, the pelvis must be a gynaecoid in shape, and upon examination: sacral promontory not reached, sacral curve and ischial spines should be normal, sub-pubic angle should admit two fingers and the sacral tuberosities should admit four knuckles. These features allow the fetus a passage without any complications (Cooper, 2009). Anatomical variations and other factors has made it impossible for some women to achieve normal delivery. Therefore, the application of CS as a procedure is carried out to ensure the safety of the mother in women who do not meet the standard female pelvis (Shabnam, 2011).

## **2.3 Caesarean section rates**

Caesarean section rate is said to be the total number of CS performed divided by the total number of deliveries multiplied by 100% and the proportion of CS to the total births is considered as an essential indicator for emergency obstetric care (World Health Statistics, 2005;WHO, 2009). Globally, CS rate has been on the rise, with the incidence high among middle and high income countries where women choose to





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deliver through caesarean section without any medical indications (Crowther et al., 2012).

According to a World Health Organization's consensus conference in 1993, the criteria for CS for all was between 10 and 15% and that regions with CS figures below 5% means that a greater numbers of women do not have access to emergency obstetric care in the times of difficult labour requiring emergency surgical procedures to save the life of both mother and baby. On the other hand a CS rate higher than 15% indicates the non-beneficial application of the procedure other than the purpose rescuing the life of both mother and baby (WHO, 1992). Again the Pan American Health Organisation (PAHO) and the World Health Organisation together recommended an ultimate CS rate of 5—15% for a country. The aim is to restrict the needless operations to minimize the effect of the surgical procedure on women (Worjolah, 2012).

Worldwide, it's estimated that 18.5 million CS occurs annually. Approximately 10% of the countries in the world have a CS rate of 10—15% (Gibbons et al., 2010; WHO Report 2010). In the United States, the rate of CS has been reported through a study between 1996 and 2008. The rates were 20.7% and 32.3%, this marked a 12<sup>th</sup> consecutive year of rise (Menacker & Hamilton 2008; MacDorman et al., 2008). In Canada, CS rate quadrupled from 6%—26% between 1970 and 2006. Many of the developing countries have seen an increase in CS birth in the past 20 years (Ibeke, 2004; Sufang et al., 2007; leaone et al., 2008).

In Africa, though the continent has a total CS rate of 3.5%, South Africa has the highest CS rate of 14.5%, North Africa being 7.6%, East Africa 2.3%, West Africa having 1.9% and central Africa having 1.8% (Landon, 2004). In Ghana, the highest





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CS rate is observed across areas with larger referral hospital as compared to areas without these health facilities (GDHS, 2014). Ghana has a CS rate of 13% as at 2014 which indicates an increase of 7% from 2008 but a region like Greater Accra has a regional rate of 23%. Upper East Region has a CS rate of 7.6% (GDHS, 2014).

## **2.4 Demographic characteristics**

There is a significant association between the rate of CS and the demographic characteristics of women who undergo caesarean section. The number of caesarean sections carried out can easily be recorded but their indications have been difficult to define and implement consistently (Barber, 2011). Among the medical reasons in the indications of CS, fetal distress, delayed first and second stage, breech presentations, previous CS, Postdate and antepartum haemorrhage form part of the major indications for the performance of CS (Shamshad, 2008).

### **2.4.1 Education**

Knowledge and skills lead to employment opportunity and a better quality life are acquired through education. The level of education of women is closely associated with their health and that of the health of children as well as the reproductive health behavior of women (GDHS, 2014). The GDHS (2014), reported that 19.0% of women age 15—49 years have never been to school, 13.0% have primary school education, 5.0% have completed primary school, 46.0% have secondary education 11.0% have completed secondary school, and 6.0% have attained more than secondary education. According to research findings, women with good education are less likely to accept procedures that will be a source of danger to their health especially causing pregnancy related complications (Gazali, 2004). Some studies have shown a positive association between CS and socioeconomic position as measured by education (Braveman et al.,

1995). Other studies found no relationship between CS and education (Padmadas et al., 2000).

### 2.4.2 Religion

According Meckonnon and Meckonnon (2002), maternal religion has a significant influence on utilization of maternal health care services. This is based on the religious practices of the individual woman. Addai (1998), has observed a correlation between religion as an essential predictor of health care utilization. According the classic medical arguments, the medical systems are related to cultural systems and like kinship and religion they are woven with meanings, values and behavioural norms (Kleinsmann et al., 2006). Kleinsmann et al., (2006), described the medical systems as composed of multiple play field in which people experience and manage sickness. They noted that many health problems are resolved in the playfields of families and social networks. According Kleinsmann et al., (2006), these playfields hold different beliefs, expectation roles, relationships and are characterized by explanatory models (EM) or social construction. These EMs are composed of ideas about diseases causation, onset of symptoms, pathophysiology, course of illness and the accepted treatment.

Based on these concepts, a biomedical professional may provide treatment for a disease but illness which is the society's reaction to a disease may not be cured. Therefore, the application of CS to alleviate an obstetric complication (disease) will not be viewed by the society as a cure to the illness that is normal delivery per vagina. The utilisation of modern health service is said to be influenced by the perception of the individual of the efficacy and the religion and belief of the individual woman (Adejunti, 1996). Akonofua (2006), some religious groups are of the view that when a woman undergoes any mode of delivery other than vaginal delivery then, the





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meaning is that, there is a reproductive function failure on the part of the woman from that part of the community and the desire for many women from such backgrounds to avoid CS but rather experience vaginal delivery irrespective of the outcome.

Religion has reshaped the antenatal care and the delivery process by promising outcomes based on faith and divine intervention rather than childbearing skills. Again women in the developing countries, caesarean is still being perceived as a curse of an unfaithful woman (Adeoye and Kalu 2011). These group of providers have a common characteristics of promising divine and supernatural protection of the mother and child. A study in Pakistan revealed that women especially older mothers with Islamic backgrounds are more likely to give birth by CS (Rchatapantanakorn & Tongkumchum, 2009).

#### **2.4.3 Antenatal attendance**

Antenatal care is more beneficial in preventing adverse outcomes when it is sought early in the pregnancy and is continued until delivery. Under normal circumstances, the World Health Organization (WHO) (2004), recommends that a woman without complications make at least four antenatal care visits, the first of which should take place during the first trimester. According Mishra and Ramanathan (2001), antenatal care attendance has an association with institutional delivery, from their view point the services provided at these clinics include the identification of maternal risk factors and pregnancy related complications which result in high incidence of caesarean section. Again this was adopted by the ministry of health to ensure that all antenatal care clinics in Ghana practice focus antenatal care which give the clients and providers the opportunity to interact openly and allow clients access to comprehensive individualized health care (MOH/GHS, 2008).

The current strategy of ANC, is focus antenatal care services. This geared towards the provision of individualized client centered and comprehensive services and the improvement of skilled delivery (WHO, 2009). Here again the focus is ensuring that clients are able to make four complete visits. This allows for helping the client to have indepth knowledge into birth preparedness and planning for delivery. There has been a good association between women making four (4) visits or more in the antenatal attendance and institutional deliveries, maternal and fetal outcomes and that has link with the access of emergency obstetric care in the form of CS (War Memorial Hospital annual report, 2015). Given the increasing trend in institutional deliveries and antenatal care measures for early recognitions of potential obstetric problems, it is expected that problems related to child delivery and CS should be on the decline. However there is a worldwide increasing trend in CS deliveries (Biggs 1984, Nortzon 1990).

#### **2.4.4 Clinician factors**

According to the policy of the ministry of health in the practice of obstetrics in Ghana, it is opened to the general practitioners as part of their experience on the job (MOH 2007). Obstetrics and gynecology (O&G) are a subspecialty concerning the delivery of medical and surgical care to women. This field is a combination of two specialties: “obstetrics, which focuses on the care of women before, during, and after childbirth; and gynaecology, which involves the diagnosis and treatment of disorders of the female reproductive system, breasts, and associated disorders” The specialty of obstetrics as a branch in medicine involves pregnancies and child birth (Myles, 1996). The process of child birth is said to be one of the intimate moments in the life of the mother and baby. The process of labour and delivery is expected to end in a healthy baby and mother (Chandrahara & Arulkumaran, 2008).





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According to Kim (2007), he observed; “Many ob-gyn doctors follow a “when in doubt, cut it out” philosophy, which encourages C-sections whenever the doctor has any concerns that a vaginal delivery may threaten the health of an infant”. In 2012 American College of Obstetricians and Gynecologists (ACOG) reported that for the risk or fear of professional liability claims or litigation, there has been increasing trend in the performance of CS.

The low threshold of CS among some doctors is attributed to the fear of litigation but others who have suffered litigations and high premium insurance have been associated with higher CS rates than others without such experiences (Murthy & Grobman, 2007). Obstetricians are not obligated to carry out caesarean deliveries if they morally disagree, as the National Institute of Health and Clinical Excellence report emphasizes (NICE, 2011). Respect for autonomy is a core ethical obligation of the clinician, but it is not an absolute obligation. It must be balanced against beneficence-base obligations to the pregnant woman and fetus. Autonomy-based, beneficence-based, and justice-based considerations do not support routinely recommending or offering caesarean delivery. Obstetricians should adhere to the professional responsibility model of obstetric. Ethics indicates that the client should benefit from the natural delivery process first (Chervenak et al., 1983). However, in Ghana from the point of view of the researcher, CS is done without fear of litigation due to the application of patient consent forms as such the practitioners are covered (GHS, 2009).

The literature on doctor-patient relationships focuses on the power imbalance with doctors as the authority figures with medical expertise and patients as owning their subjective illness that they must communicate with doctors in order to receive a proper diagnosis and treatment. The unequal power relationship is dependent in part



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on the different type of expertise (Gill 1998). Parker argues that informed consent and the shared decision-making model between patients and doctors was intended as a way to help empower patients in making medical decisions, but there is also the possibility that it reinforces the doctors' authority because the information is disclosed by the expert, who is the doctor (Parker, 2002).

Doctors possess legitimate medical knowledge while patients' expertise is in their illness experience (Gill, 1998); however, the effectiveness of this relationship is highly dependent on the patient explanation – doctor response communication, in which the patient provides the doctor with the valuable information that doctors want to know in order to fulfill their role to diagnose and treat (Gill 1998). Parker (2002), who studies the bioethics of doctor-patient relationships, also supports the idea that the doctor-patient relationship is based on information sharing (Parker 2002)

Nurses are often able to develop a more personal relation with patients as opposed to doctors. In contrast to the science and technology based medical profession of doctors, nursing is the “expert in caring, humanity, human kindness, empathy” (Määttä, 2006). In the area of sharing and explaining procedure to the clients, nurses display more empathy and emotions in their interactions with patients. However, nurses must negotiate the emotional boundary of closeness and distance to reach a decision point for a client to undergo a procedure (Määttä, 2006)

#### **2.4.5 Maternal age**

Women aged 35 or more have an increased risk of CS. In a Finnish study in 2008 birth outcomes in primiparous women were compared by age. The CS rate was 20%, 35% and 41% in women aged <34 years, 35-39 years and  $\geq 40$  years respectively (Klemetti et al., 2014). A study by Mylonas & Friese (2015) discovered that the mean

maternal age appears to have a substantial role in the CS rates because pregnancies in women aged above 35 years is considered a high risk pregnancy. According to their findings, age is not an indication for CS, rather it is the specific risk associated with this age groups that may lead to an indication for CS. Maternal age has a strong relationship with the outcome of pregnancies. However, Yassin & Saida (2012), have found that CS deliveries are significantly greater among the women with younger age, first pregnancy. According to Gupta et al., (2003) although sub-Saharan Africa has the highest fertility rate in the world including that for adolescents. Some countries in this same region have begun a transition towards lower fertility with an upward trend in the age at first birth. This has been an important contributor in the performance of CS in health facilities across the country. Maternal age has an adverse outcome on pregnancy (Khalil, et al., 2013).

The adverse outcome of pregnancy associated advance maternal age according Khalil et al., (2013), is seen in the increasing abortions, pre-eclampsia, gestational diabetes, and increasing CS rate. In recent years, changing risk profile among increasing primiparae are cited as the reason for rise in caesarean deliveries (Frenz & Husslein, 2010; Guihard & Blondel, 2001).

Studies have shown a strong association between the age of the mother and her risk of CS. Studies conducted by Bowes et. al (1996), they found that as maternal age increases so does the risk for C-section. Delivery by C-section is highest among births to women age 35-49 (GDHS 2014).

According to kozinszky et al., (2002), there is a strong association between maternal age and CS rate, for this age group the risk is 6.54 fold higher. Controlling for other factors, CS delivery is more likely to occur among mothers aged 35 years compared





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with mothers below 20 years. This is because the chances of pregnancy complication are more at higher age. Advance maternal age is associated with preterm birth (Luke & Brown, 2007) still births, low birth weight (Nybo et al., 2000), birth weight and high caesarean section rates (Muganyizi et al., 2008).

#### **2.4.6 Parity**

Parity may be a contributory factor in the increasing trend. According to Dennett (2003) nulliparous women have the fear of the unknown for the delivery process that is undergoing labour as a natural delivery process. This fear include pain, and loss of control and parous women have also opted for CS due to their previous birth experiences. In the context of CS preference, a study found that nulliparous women of all ages are more fearful than multiparous women of all stages of pregnancy, increasing with gestational age (Rouche et al., 2008). Number of births has been used as an explanatory variable in the indications for C-section delivery. It is said to be a significant determinant of primary C-section, first time mothers and mothers delivering infants weighing over 3.5kg are at risk of CS (Braveman et al., 1995; Parrish et al., 1994). Women who have already had a normal delivery are likely to go through normal delivery while women who are going to deliver their first baby are more likely to undergo CS (Pang et al., 2008). Birth order is a significant determinant of CS because primiparity is associated with greater pregnancy complication (Mishra & Ramanathan, 2002).

#### **2.4.7 Maternal height**

Maternal height is one of the indicators that can easily be measured. It has been recorded in various studies as a useful measure of difficult labour and failure to progress (FTP), therefore leading to the performance of CS (Rozenholc et al., 2007). In the prediction of failure to progress(FTP) as an indication of CS, the following



variables were employed as predictors which include maternal and paternal height, maternal and paternal head circumference, maternal pelvic metric measurement circumference and even maternal shoe size (Rozenholc, et al., 2007).

Another study found a correlation between maternal height and assisted delivery such as CS (Merchanta et al., 2001; Kirchangast & Hartmann, 2000). Whilst other studies found no correlation between maternal height and CS (MC Guinness & Trivedi, 1999; Lavender 2006). A study in singleton nulliparous in Saudi pregnant women who had a maternal height of 151—154 cm were associated with a more likelihood of CS due to FTP (Noura et al., 2013).

#### **2.4.8 Maternal weight**

The study of women in Britain, found that women who are obese are at two-fold risk for the induction of labour (Sebire et al., 2001). Comparing normal weight women and obese women, those who are obese are at an increased risk of having a CS than the normal weight women. This risk is relative to the degree of obesity: the odd ratio is 1.5, 2.1, and 2.9 for overweight, obese, and the extremely obese accordingly (Dinatale et al., 2010). An obese expectant woman who is up to term stands the risk of ending up into an emergency CS in an attempted normal vaginal delivery (Sebire et al., 2001; Wiess et al., 2004; Fyfe et al., 2012). Meyer also suggested that C-sections are a preferred alternative because women who gained more weight during their pregnancy making vaginal delivery difficult, as well as C-sections allowing for older and high risk pregnancies (Meyer, 1997). Recently reports from well-resourced countries indicated that increasing CS has a greater association with increased maternal obesity (Deneux-Tharaux et al., 2005; Samuelsson 2007; Kuklina et al., 2009; Schutte et al., 2010). Further research have shown that maternal weight has a health implication for the baby and the mother (Heslehurst et al., 2008; Bhattacharya





et al., 2007 ). Increased weight in pregnancy has the potential of increasing the risk of CS delivery at term (WHO, 2004). Increased maternal weight affects the mode of delivery because this decreases the space in the pelvic region due increased in the tissues as such decreases vaginal delivery and increases the risk of CS delivery (Malabary & Balayla, 2012). A number of studies have revealed that the likelihood of CS delivery is high in overweight women and obese (Berghel et al., 2005).

## **2.5 Obstetric history**

### **2.5.1 Gestational age**

There is a significant association between gestational age and the outcome of the neonate (Mylonas & Friese, 2015). In neonates, either spontaneous delivery or elective CS, morbidity and mortality are significantly associated with the gestational age (Tita et al., 2009; Jenifer & Murthukumar, 2009). CS conducted at 39—40 weeks of gestational age is associated with low complication to the neonate (ACOG, 2007; Tita et al., 2009).

Caesarean section rates increase with gestation from 37 weeks and upwards (Robson et al., 2009). Women with pregnancy at 42 weeks of gestation are commonly ear marked for an arranged CS with the indication of post-date (War Memorial Hospital annual report, 2009).

### **2.5.2 Elective – Maternal choices**

The American College of Obstetricians and Gynaecologist recommends that in the absence of any medical indication vaginal delivery should be recommended. This was due to the concern about the rising CS rates. According to the association, there has been an increase in the number of women opting for elective CS delivery (ACOG, 2013). According to this published guidelines, CS by request should only be



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performed after 39 weeks of gestation but should be avoided in women who have the desire to have many children (ACOG, 2013). There has not been any agreement as to an appropriate CS rate (Betran et al., 2007). Many women enquire about CS as an option for delivery, and a significant number of them request a caesarean section.

Most women do not want an operation, they request a CS because they do not want to labour and deliver vaginally (Robson & Hartigan, 2012). The decision making processes in relation to child birth may be influenced by fear of vaginal birth and previous birth experiences and prior CS, need for choices and control as well as social and cultural factors (Lavender et al., 2012). There has been rapid institutionalization of pregnancy and child birth. The reason for this action has been to improve the safety pregnancy and delivery. Elective caesarean section is safer for a woman than undergoing and emergency caesarean section (Baxter 2007). The number of women opting for elective CS is unknown (Klein, 2004).

There has been an increasing trend in the CS based on maternal request (elective CS\maternal choice). Research has suggested that the reason mostly accounting for the increasing trend of CS upon maternal request is tocophobia (Lavender, 2012). Tocophobia which is defined as the intense fear of vaginal childbirth. This accounts for most CS by elective\maternal request. The incidence of primary tocophobia is between 6 to 10% (Wikilund et al., 2007). This is believed to stem from self-doubt on the ability to physically achieve a vaginal birth or unresolved problems related to the genital area (NICE 2011) or related to an unpleasant birth experiences (Karlstrom et al., 2009).

The fear of delivery per vagina is due to one's own as well as the child's wellbeing. The course of labour and delivery, and a lack of trust in the obstetrical staff. Previous



experience at delivery with unbearable pain, losing control of the situation (incontinence of stools), incapacity to manage, not being provided with enough emotional and psychological support, not being involved in the decision—making process, prolong labour, that the baby's head remains stuck due disproportion of cephalic and pelvis, death of baby, perineal tear and even dying in the process of delivery (Fisher et al., 2006; Geissbuehler & Eberhard, 2002; Melender, 2002; Ryding, 1993; Saisto, et al., 1999; Sjogren 1997).

However, a prior positive birth experience has been identified as an indicator of higher childbirth self-efficacy (Drummond & Rickwood, 1997; Sinclair & O'Boyle, 1999). According to the National guidelines (2011), there is the reinforcement of the right of women to decide the mode of delivery provided they have been appropriately counselled appropriately. If an obstetrician disagrees with the woman's decision to deliver by CS, then she should be referred to an obstetrician who would be prepared to carry out the CS.

Lastly, the definition of the term elective CS according to Robson and Hartigan (2012), the terms elective and emergency CS are difficult to define and are rarely applied in a standard way. An elective CS can be best defined as a planned procedure (greater than 24 hours), carried out during routine working hours, at a greater than 39 weeks, in a woman who is neither in labour or has had labour induced.

### **2.5.3 Previous caesarean section**

The risk of complications in the mother rises with increasing number of caesarean deliveries, especially the risk of placenta accreta. Although previous caesarean is not a condition that qualifies for repeat CS, it is normal practice to do it again. Previous CS increases the risk of placenta previa and uterine rupture (Silver et al., 2006). Previous



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CS contributes about 29% to the overall caesarean section rate. The repeat due to previous CS has an association with the increasing trend of caesarean section.

There is the argument that women who have undergone CS before will repeat the process with the aim of ensuring the safety of the baby because vaginal delivery is considered risky. So CS is said to be the best option. This makes previous CS and the repeat of the process a major public health concern (Dhillon et al., 2014). Van Bogaert (2004), was of the view that previous CS has been considered one of the indications of CS in the subsequent pregnancies.

This reflects a concern that uterine scar tissues may rupture during labour. There has been a revision to the routine that once a caesarean section, always a caesarean section, therefore women with the history of caesarean section have been allowed to try normal vaginal delivery as an attempt to reduce the trend of the CS rate. This contradicts Cragin who said once a CS always a CS (Cragin, 1916). Raphael et al (2016), are of the view that past CS does not set new indication for a repeat caesarean section. The opportunity to try vaginal delivery operative morbidity and mortality are eliminated and fetal safety is assured and the duration of hospital is reduced (Landon et al., 2004).

In all reported cases in Africa, previous CS delivery has been the leading indication for CS operation, again, any measure that aims at reducing incidence of CS will need to review previous CS as indication leading overall reduction in the incidence of CS operation. In Ghana for a period of 12 years (1988—1999), previous CS averaged 21.1% of the total number of CS performed (Enyonam, 2000).

## 2.6 Maternal diseases

Maternal diseases with pregnancy have been factors increasing the trend of caesarean section around the world (Penn & Ghaem-Maghani, 2000). It has been a matter of policy to advocate caesarean section for acquired cardiac disease, however current evidence favours vaginal delivery because it has been noted in some studies that caesarean delivery worsens some maternal diseases (Connolly et al., 1999; Weiss et al., 1998). Diseases like gestational diabetes is associated with increased rates of caesarean due to the fact that CS prevents intrauterine deaths of the fetus at term and reduce fetal injuries with fetal macrosomia (Boulvain et al., 2000). Caesarean section is also performed in women with certain diseases to prevent mother to child transmission and this true for areas with high HIV prevalence, Hepatitis B (Ghana sentinel survey report 2012).

## 2.7 Fetal indication of caesarean section

### 2.7.1 Preterm as fetal indication

Preterm birth is before 37 gestational weeks. Choice of delivery method when a baby is preterm is dependent on duration of the pregnancy, the position of the neonatal child and the current situation. The main focus is that the birth should be as harmless as possible. Preterm babies have an increased risk of intracranial bleeding, and the passage through the birth canal can be rough (Henriksen & Molne, 2010).

Robson (2001), noted that 12.0—18% of all deliveries is made of preterm, breech presentation, and twin deliveries. In preterm, CS delivery has a comparative advantage over normal vaginal delivery of preterm infants (Biswas et al., 2012). The merits of CS may be seen in the area of preventing prolong labour and the promotion of a trauma free delivery of the preterm infant. According Malloy (2008), among the





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preterm groups the most vulnerable babies are within with gestational age less than 26 weeks.

A review conducted by Malloy in the United States of all preterm deliveries within 22—25 weeks of gestation, this was independent of maternal risk for CS, the conclusion of the review was that survival merits of CS delivery for very early preterm babies (<26 weeks) does not appear to extend to immediate babies. Thus, those with gestation age of between 32—33 weeks and 34—36 weeks babies respectively (Malloy 2008). Another analysis of data from the US linked birth and infant certificate files between 2000—2003. The results suggested that low risk preterm infants at 32—36 weeks of gestation are independent of any reported risk factors will be predisposed to an increased risk of neonatal mortality and morbidity if primary CS is conducted (Malloy 2009). Therefore, the lack of evidence in favour of CS does not mean there is a clear evidence in favour of normal vaginal delivery (Drife, 2006).

### **2.7.2 Cephalopelvic pelvic disproportion (cpd)**

The expression Cephalopelvic Disproportion (CPD) came into use prior to the 20th century to describe obstructed labor due to disparity between the dimensions of the fetal head and maternal pelvis that preclude vaginal delivery. This term, however, originated at a time when the main indication for caesarean delivery was overt pelvic contracture due to rickets (Olah & Neilson, 1994). CPD can be due to a contracted pelvis or a disproportionately large fetal head and is thus not limited to primary caesarean delivery only (Carbone, 2000).

Cephalopelvic disproportion is the common indication for CS in Ghana, it accounts for about 21—53% of all CS births in the country (Elkins et al., 1988). The reason

could be that in the black African countries, women generally have narrower pelvic dimensions than women from other parts of the world (Cowan et al., 1994; Kolawole et al., 1978). In a systematic review of caesarean delivery for maternal indication, Dumont et al., (2001) found that cephalopelvic disproportion was the commonest indication, and 1.4% to 8.5% of all deliveries resulted in caesarean birth for this indication. Similarly, a large population based study in West Africa reported that 1.0% of all deliveries were complicated by CPD (Ould El Jouda et al., 2001).

When there is contraction of the pelvic inlet ,mid pelvis, or the pelvic outlet or a combination of any these pelvic abnormalities these can result into fetal pelvic disproportion during labour and delivery (Cunningham et al., 2010). According to Cunningham et al., (2010), a contracted pelvis inlet causes abnormal fetal presentation and makes it difficult to allow the fetus to descend into the pelvic cavity before the onset of labour as it is in the situation of normal labour. In women with fetal pelvic disproportion, it is suggested that fetal weight of 4000—5000g should be delivered through prophylactic caesarean section to prevent prolong labour that could lead injuries to both mother and infant (Irion & Boulvan, 2000).

### **2.7.3 Fetal macrosomia**

Macrosomia is defined as excessive weight gain of the fetus due to gestational diabetes (Mitanchez, 2010). Macrosomia is defined as a birth weight that is greater than 4.5kg (Campbell, 2014; Dixon, 2009; Olmos et al., 2012, & Thorsell et al., 2010).

In recent studies, the prevalence of macrosomia ranges from 6.3% to 10.9% in mothers without gestational diabetes (Campbell, 2014; Elnour et al., 2008; Najaafian







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& Cheraghi, 2012). In a study conducted by Najaafian and Cheraghi (2012), a total of 201,102 mothers gave birth to 1800 (9.0%) babies with macrosomia.

Fetal birth weight- is also stratified as extremely very low birth weight (<1000gm), very low birth weight (1000 —1499gm), low birth weight (1500—2499gm), normal birth weight (2500 —3999gm) and macrosomia (> 4000gm), fetal weight constitutes one of the indication for caesarean section (Robson, 2015). Fetal macrosomia is common with mothers with underlying medical condition such as gestational diabetes. According to the Norwegian clinical protocol, a birth weight of 4500g is the limit for a large baby.

A baby weighing more than 4500g has an increased risk of causing vaginal tear and perianal damage and bleeding in the mother (Kiserud, 2010). Caesarean section has been recommended for babies with estimated fetal weight of more than 5000g, particularly in nulliparous women (Bryant et al., 1998; Rouse et al 1996). Fetal birth weight more than 4000g is positively associated with CS delivery (Tsega et al., 2015).

#### **2.7.4 Fetal distress**

The fetus react to the onset of asphyxia. This can lead to a series of responses. The most common reaction in the fetus is changes in fetal heart rate patterns with late deceleration, variable deceleration or prolonged bradycardia (Parer & Livingston, 1990). Fetal distress is monitored by surveying the heart rate using a Pinard horn. In the hospital they used a Pinard horn. If hypoxia occurs during birth the fetal heart rate will fall below 100. Cord prolapse happens in 0.5 % of all births. If one continues towards vaginal birth, it must happen within minutes. If that is not possible, an emergency section should be done (Henriksen & Molne, 2010).

## **METHODOLOGY**

### **3.1 Study setting**

The country Ghana, centrally located on the West African coast of Africa. The country has a total land area of 238,537 square kilometres. The country share boarderS with three French-speaking West Africa countries: Burkina Faso in the North and Northwest, Togo on the East and Cote d'Ivoire on the West. The country is boarded at the south by the gulf of guinea and stretches across the 560 kilometre coast line (GDHS, 2014).

Ghana is a lowland country with a range of highlands on the Eastern border. The highest point in the country is mountain Afadjato which is 884 metres above sea level, The country has three ecological zones: the low sandy coastal plains with many rivers and streams; the middle and western parts of the country which is characterized by a heavy canopy of deciduous rain forest; and the northern savanna which is drained by the two major rivers, the Black and the White Volta (GDHS, 2014).

The rainfall and temperatures of Ghana varies according to the distance to the coast and the elevations. The northern part of the country is hot and dry, the southern part is also hot but high levels of humidity and eastern coastal area is relatively dry. The average annual temperature is 26°C (79° F), the southern and middle parts of the country have two distinct rainy seasons, these rains start from April to June and from September to November. The northern parts of the country experience eight months of dry season and four months of rainfall. These four months of rains starts from May and peaks in August, this last till the end of September. The annual rainfall is between 1015 and 2030 mm (Ghana Metrological Survey Department, 2014).





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The Ghanaian economy is divided in agricultural, service sector and industry. The leading sector is the service area which contributes 52.0% of the gross domestic products (GDP), followed by the industrial sector which contributes 27.0% of GDP and the agricultural sector contributes 22.0% of GDP (GSS, 2015).

In Ghana the seat of government is located in the Greater Accra. The country practice multiparty democratic systems with an executive president who is elected to run a 4-year term of office and a maximum term of eight (8) years. The country has 10 administrative regions and 216 districts. (GDHS, 2014).

The Upper East Region was carved from the then upper region which was made up of northern upper east region and upper west region. The region shares boundaries in the North by Burkina Faso, south by Northern region, west by Upper West Region and in the east by Togo. The region has thirteen districts with thirteen district hospitals (Bolgatanga Municipal Assembly 2005). The main ethnicity in the municipality is Frafra, but there smaller ethnic groups such Dagabas, Kassenas, Kusasi, Bulisa, and other minority groups. The people are predominantly Catholics and protestants groups of various denomination and there Muslims too. The people also celebrate various festivals such adaakoya, bugum and other Christian festivals mainly by the Catholics (BMA, 2005).

### **Profile of Kassena-Nankana Municipality**

The Kassena-Nankana Municipality is one of the thirteen (13) Districts in the Upper East Region. The Municipality shares boundaries to the North with Kassena-Nankana West District and Burkina Faso, to the East with Kassena-Nankana West District and Bolgatanga Districts, to the West with Builsa North District and to the South with West Mamprusi District (in the Northern Region). The predominant ethnic groups in



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the municipality are Kassena, Nankana and Builsa with few migrant workers from southern areas of the country. The settlement pattern of the population is generally dispersed. This settlement pattern has effect on the distribution of facilities especially those of water and sanitation. Agriculture is the mainstay of the local economy and accounts for about 68% of the employable population. The remaining is made up of public servants, traders, food processors and small-scale artisans.

The Kassena-Nankana Municipal has an estimated population of 115,318 from the 2010 census. The Municipality has seven (7) sub-municipalities, one (1) Hospital, two (2) Health Centres, twenty one (22) functional CHPS, two (2) nonfunctioning private clinics and one (1) CHAG facility (KMHD annual report 2015). The War memorial hospital is considered the municipal hospital in the Kassena—Nankana Municipality. It is located 30 km from the regional capital Bolgatanga. The hospital in 1914--1918 as a missionary hospital and later handed over to the government. It is a referral hospital in the municipality and its surrounding sub-municipal health facilities (War Memorial Hospital annual report 2015). The hospital has a total staff population of 400, one surgeon, one general practitioner, one anaesthetist, 50 nurses the rest are paramedical staff. There are a 195 beds in the accident and emergency unit, medical ,surgical , pediatric, maternity, recovery unit, and outpatient department. Currently the hospital has no gynaecologist therefore all surgical procedure related to obstetrics and gynaecology are carried out by the general practitioner and the surgeon (KMHD annual report, 2015).

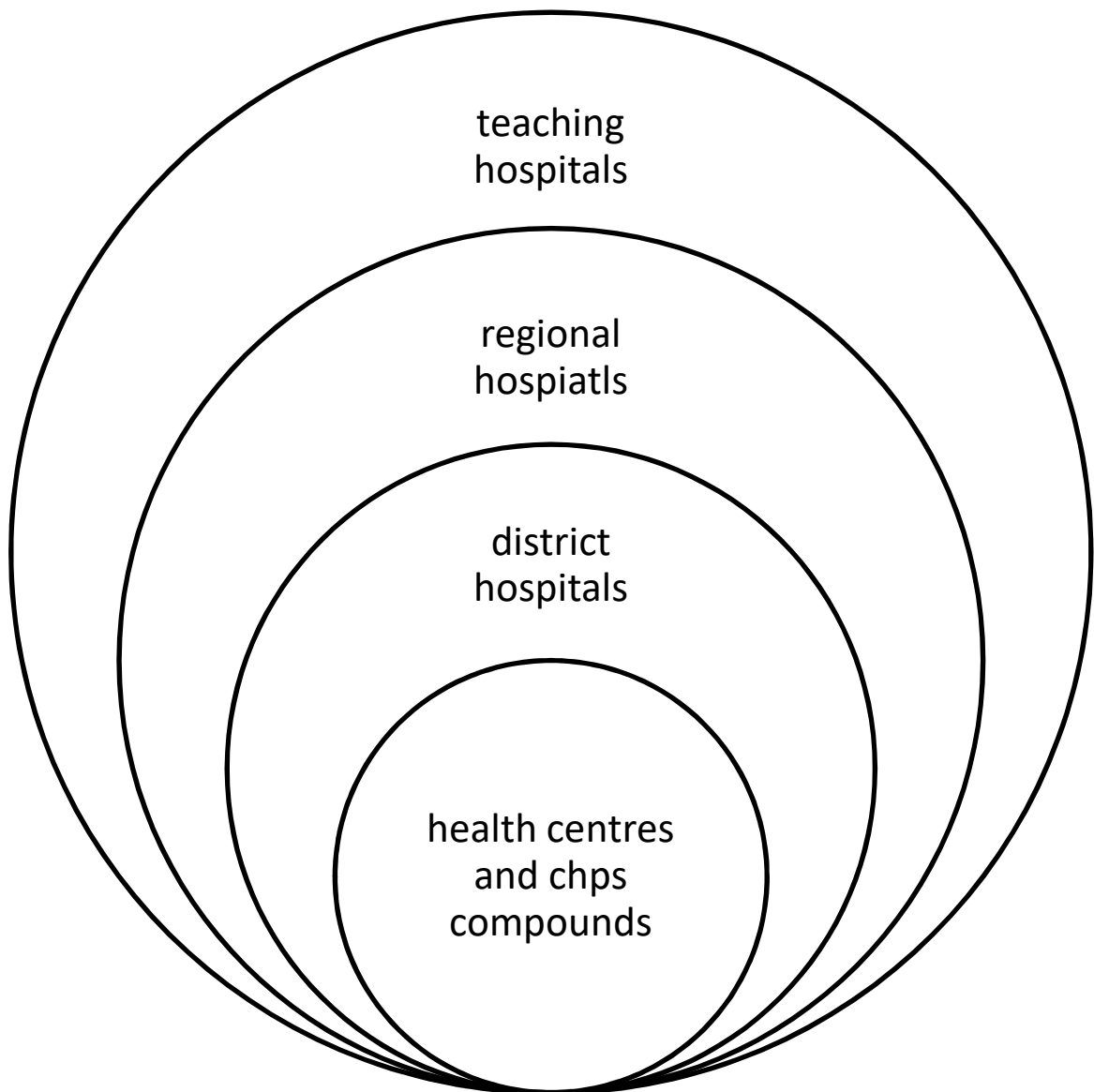
The municipality has six (6) secondary schools, a teacher training college, one university and health training institution. In the municipality the population eleven (11) years and above: 56.3% are literate and 43.7 percent are non-literate. The proportion of literate males is higher (64.0%) than that of females (49.1%). Four out



of ten people (46.9%) speak and write both English and the Ghanaian languages ([www.udsspace.uds.edu.gh](http://www.udsspace.uds.edu.gh)) (GSS, 2010).

In Ghana, between 1997—2000 there was a new policy that saw to the restructuring of the health delivery system. Before then, the ministry of health was in control of the health delivery system. However the new policy saw to the decentralization of health care nation wide (MOH 2000). Out of the decentralization process the MOH assumed the responsibility as a policy maker and the Ghana health service created in the process became the policy implementation body.

The health system in the KNM is the bottom up system where by community health compounds are the least among the categorization and the municipal hospital is said to be the highest point of referral in the municipality. The CHPS community refer their difficult cases to the health centre then the health centres refer their patients who need advance medical attention to the district and municipal hospitals and they intend refer their cases to the regional hospitals and teaching hospitals accordingly (Ministry of Health Reports, 2000). In the municipality, health services are provided at the district level by doctors, medical assistances, specialized nurses and general nurses, whilst at the CHPS and health centre level, services are provided by midwives, general nurses and medical assistances. At the lower level of services provisions nurses and midwives are given some level of autonomy to do prescription (KMHD, 2015).



**Figure 3. 1 Structure of referral in health delivery system in KNM**

From the figure above, the referral systems of clients needing health care flow from the bottom to the top. From the bottom, the caliber of staff define the services the level of facility can and should provide. Mostly, CHPS compounds are facilities where the staff are community health nurses and midwives and they provide services related

to maternal and child health and to some extent basic health care (first aid). Their referral points are the health centres and district and municipal hospitals where general practitioners and physician assistance are available to provide high level service. In situations where the clients need the further attention they are sent to the regional hospitals. This is where they require specialist services. They are referred to teaching hospitals where almost all the specialist are available for additional management and attention.

### **Population of Kassena-Nankana Municipality**

According to the 2010 population and housing census, males constitute 48.8% of the population of the Kassena--Nankana municipality and females form 51.2% of the population. About 72.7% of the populations live in rural localities. The population of the municipality is youthful (under 15 years) that is 39.2%, depicting a broad base population pyramid which and a small number of elderly persons 60 years and above make up 8.8% (GSS, 2010). The total age dependency ratio for the municipality is 84.0% but the age dependency ratio for males is higher (85.3%) than females (82.8%) (GSS, 2010).

About 44.8 percent of the populations aged 15 years and older are married and 41.6% have never married. By age 25—29 years, more than half of females (71.8%) are married compared to 40.2% of males. At age 65 and above, widows account for as high as 65.4% while widowers account for only 15.0%. . Among the married, 62.9% have no education while about 15.3% of the never married have never been to school. About 84.1% of the married population are employed, 1.9% are unemployed and 14.1% are economically not active. About half of those who have never married



(56.5%) are economically not active with 2.1% unemployed (GSS, 2010; KNM annual report, 2012).

The municipality has a total fertility rate of 3.4. The general fertility rate is 97.9 births per 1000 women aged 15-49 years which is slightly higher than the region's figure of 97.5. (GSS, 2010).

The Kassena Nankana Municipal Assembly is the highest administrative and political authority in the municipality and is charged with the responsibility of formulating and implementing development plans, programmes and projects.

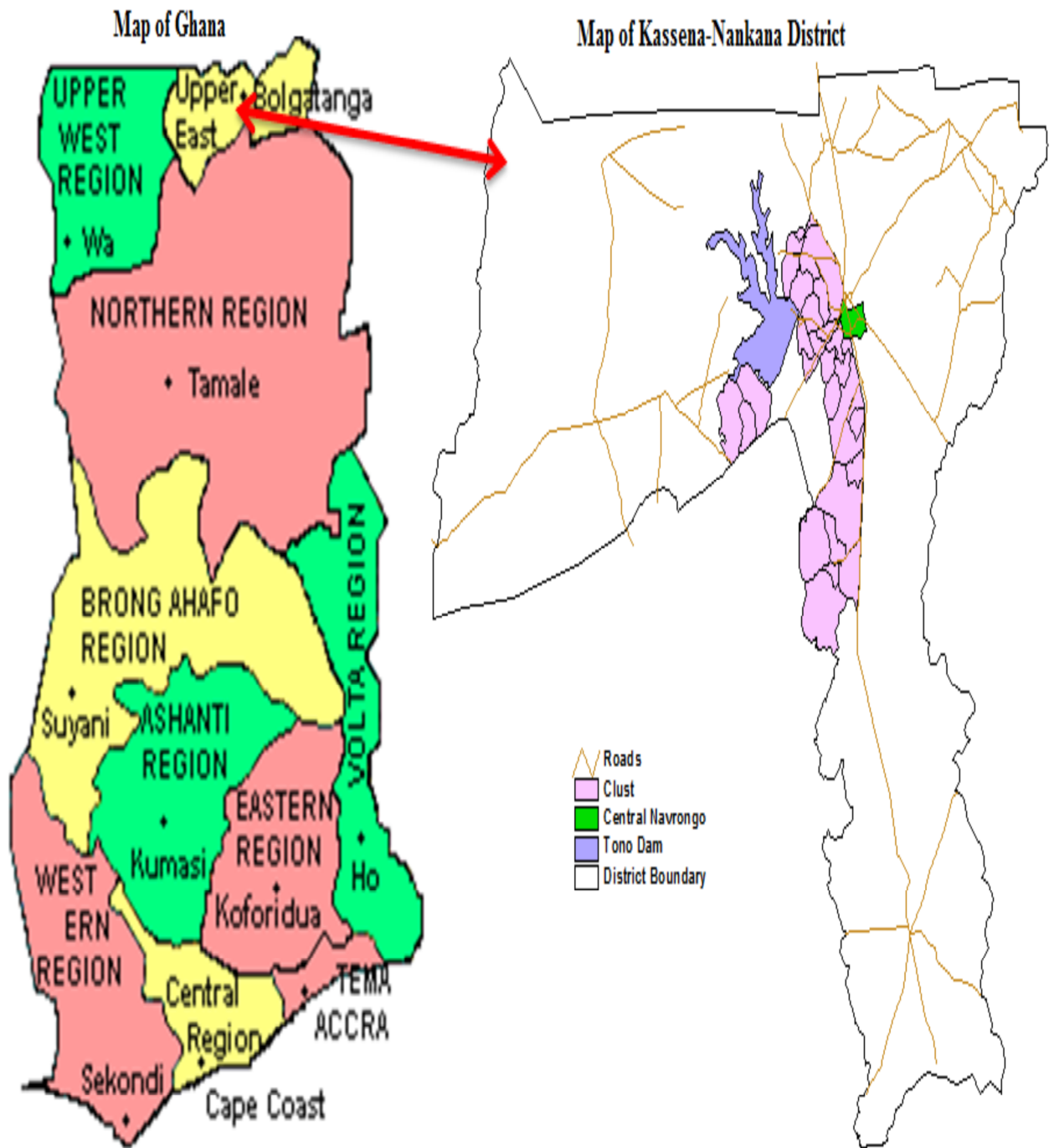
There are a total of 19,790 households with average household size of 5.4 persons per household. Children constitute the largest proportion of the household composition accounting for 44.%. Extended households (head, spouse(s), children and heads relative) constitute 40.2% of the total number of households in the Municipality and this is followed by nuclear households (head, spouse(s) and children) (20.7%). In the municipality, 82.7% of households are engaged in agriculture. In the rural localities, 93.1% of households are agricultural households while in the urban localities, 56.8% of households are into agriculture. Most households in the Municipality (96.1%) are involved in crop farming with Poultry (chicken) as the dominant animal reared in the municipality.

The dominant economic activity in the municipality is agriculture. The staple food crops grown are millet, sorghum, rice, groundnuts, leafy vegetables, cowpea, bambara beans, okro, cotton, tomatoes and onions. Livestock reared in the municipality include cattle, sheep, goat, pigs, guinea fowls, fowls and other domestic animals like donkeys. There are few dams and dugouts which are being used for dry season farming. This has implications for food in security.





**Figure 3. 1The map of Kasena Nankana Municipality**



**Figure 1:** A) Map of Ghana showing Upper East Region, B) map of Kassena - Nankana East Municipality Map of Ghana showing Upper East Region.

### 3.2 Study setting

The study was conducted at the War Memorial Hospital. It is the largest health care facility in the Kassena-Nankana Municipality. It is the only referral facility second to the regional hospital in terms of government health care facilities in the region.. It receives women with obstetric conditions throughout the municipality. The focus of the study was on the following units, the maternity where all the delivery records are located, the theatre where all surgical records of women who have undergone CS are kept and the antenatal and postnatal clinic where demographic data can be extracted.

### 3.3 Study design

The study was a quantitative study which involved the collection of secondary data from the records of clients who underwent Caesarean section from 2011—2016 in the Kassena-Nankana municipality and literature review. The study is a retrospective chart review or medical records review that reviewed medical records of women who have undergone Caesarean section (CS) at War Memorial Hospital between the years of January 2011 and age, type of caesarean delivery, gestational age, parity, maternal diseases, and antenatal December 2016.

### 3.4 Study population

The study population was made up of women who have undergone CS in the War Memorial Hospital (WMH) from the beginning of January 2011 to the end of December 2016. The Kassena-Nankana West District refers their emergency obstetric clients to the War Memorial Hospital.

#### 3.4.1 Inclusion criteria

Women who have undergone CS in the Kassena Nankana Municipality from the period of 2011 to the end of December 2016.



### 3.4.2 Exclusion criteria

All women who had their CS delivery outside the Kassena Municipality and those who delivered in the municipality through caesarean section with incomplete information such as socio-demographic data

### 3.5 Study sample

The study sample was 1078 that is the total number of women from the period of 2011—2016.

### 3.6 Sample size and sampling method

The sample size was 1078 and no sampling was applied. Also sample size for this study involves all secondary data on CS within the study period. Again hundred women who have undergone CS were interviewed on their previous experience of CS and nine (9) health staff from various units that is Antenatal staff, labour ward, post-natal, theatre, the head of surgery and lastly the district public health nurse in-charge of reproductive health in the municipality. The method that was used for the study was data extraction which involves the usage of secondary data of all pregnant women who have undergone CS in the Kassena-Nankana Municipality. This method was chosen because target population of the study are women who have undergone caesarean section in the Kassena-Nankana municipality for the period of 2011 -- 2016. Therefore, all secondary data with complete information was used, only those without complete information were excluded.

**Measurement of outcome variables:** the caesarean section rate will be calculated as annual CS divided by total annual delivery multiplied by 100%.



### 3.7 Data collection tools

A patient data collection questionnaire for individual patient folders and a summary sheet of statistics of caesarean sections per month for twelve months. The data was collected from patients folders and antenatal, postnatal registers, and theatre records. The first part of the data collecting sheet was made of demographic characteristics of the client, the second portion had maternal factors determining caesarean section as a mode of delivery, and the third portion had to deal with foetal factors determining the choice of CS as a mode of delivery

### 3.8 Data collection procedure

The structured questionnaire was used as a guide for the extraction of data from the register. The information required were ticked on the questionnaire. The research team requested for approval in the usage of the tools.

### 3.9 Data quality control measures

The quality of data was ensured through the training of data collectors, the researcher investigator conducted regular supervision and follow up. In addition regular checkup for completeness and consistency of the data was made on daily basis. The researcher worked together with two research assistants to ensured accuracy of the data collected.

**3.10 Data analysis :** this was done using SPSS and the data was analysed using frequencies and percentages.

**Data Capture:** data from patients files were captured in the SPSS version 22 template for coding and data cleaning.



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**Data cleaning:** for missing values, the researcher retrieved information from the patients' folder for confirmation; if they had missing information on the study variable.

### **3.11 Data collection techniques and tools**

The data collection was made of data extraction questionnaire which were structured and questionnaire designed with opened ended questions to get firsthand experience of clients who have undergone caesarean section. 3

### **3.12 Pretesting of the questionnaire**

The researcher and three (3) research assistants carried out the pre-testing in the neighboring Bulisa district hospital which is not part of the study area but has a similar character in terms of functions in the district. Some of the questions on the questionnaire were dropped and the questionnaire was revised.

### **3.13 Data extraction form and interview guide**

Majority of the data was collected using this form. The form is divided into socio demographic data, maternal determinants of CS, and fetal indication of CS and the interview guide was used to gather data on client experiences through decision making towards CS and information given them and strategies to improve CS.



### 3.14 Study variables

**Table 3. 1Definition of Variables and their Scale of Measurements**

Variable	Operational Definition	Type of Variable	Scale of Measurement
Maternal religion	Religious denomination	independable	Nominal
Maternal age	Mothers age at conception	Independent	Discrete
Marital status	This is be defined as married,single, divorce	Independent	Nominal
Level of education		Independent	Ordinal
Place of residence	The place where the woman lives	Independent	Nominal
Stage of labour	The defined as the 1 <sup>st</sup> and 2 <sup>nd</sup> stages of labour	Independent	Ordinal
Antenatal Care	The number of pregnancy visits to a healthcare institution	Independent	Discrete
Maternal weight parity	The weight of the woman during the pregnancy	Independent	Discrete
Type of caesarean section	This is defined as elective or emergency	Independent	Nominal
Maternal condition	The diagnosis of any disease before labour	Independent	Nominal

Dependent variable: **Caesarean Section**



### 3.15 Operational definition of terms

**Apgar score** —the score given to a fetus at or immediately after birth to assess the status of oxygenation. In this study the final score was assessed.

**Cephalopelvic disproportion**—a disproportion between fetal head and maternal pelvic

**Caesarean section**—an operative procedure whereby the fetus/es after the end of 28th week is delivered through an incision on abdominal and uterine walls.

**Elective CS** —when operation is done at prearranged time during pregnancy to ensure the best quality of obstetrics, anesthesia, neonatal resuscitation and nursing services.

**Emergency CS** —when the operation is done due to unforeseen or acute obstetric emergencies.

**Fetal birth weight**—stratified as extremely very low birth weight (<1000gm), very low birth weight (1000-1499gm), low birth weight (1500- 2499gm), normal birth weight (2500-3999gm) and macrosomia (> 4000gm).

**Fetal distress**—term used to express intrauterine fetal jeopardy, as a result of intrauterine fetal hypoxia.

**Indication**—a reason/s that make the mother illegible for caesarean delivery

**Primary CS**—the first operation performed on a patient

**Parity**—the number of deliveries after 28 weeks of pregnancy despite the outcome



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**Previous CS**— when operation is performed in subsequent pregnancies

**Maternal weight**—the weight of the woman during the pregnancy

**Antenatal attendance**—the number of pregnancy visits to a healthcare institution

**Stage of labour** —the defined as the 1<sup>st</sup> and 2<sup>nd</sup> stages of labour

### 3.16 Ethical consideration

Ethical clearance was obtained from the Navrongo Health Research Centre (NHRC).

Official permission was sought from the regional health directorate and the War Memorial Hospital. The study was done using secondary data and a questionnaire with open ended questions for client interview for client who have undergone caesarean section and staff.





## PRESENTATION OF RESULTS

### 4.1 Introduction

This chapter presents the results of the data gathered from the field. This was the analyzed data on the socio-demographic characteristics of the clients as well as the stated objective of the study.

### 4.2 Demographic characteristics

From table 4.1 below, the analyzed data indicates the socio-demographic characteristics of clients who underwent CS from January 2011 to December 2016. A total of 1079 clients underwent CS and out of that number, majority of them (64.8%) were Christians and only 10.3% were traditionalist. In terms of marital status, majority of the clients (69%) were married whilst 2.3% were divorced. Again, majority of the clients were without education 43.2% and 5.3% had primary education. Finally, the occupational status of the clients also indicated that majority of the clients who underwent CS (49.500%) were self-employed and 14.8% were salaried workers. Again majority of the clients who underwent the CS were within the age brackets of 25—29 years (28.7%).



**Table 4. 1 Demographic Information of Respondents**

Variable	Frequency	Percent(%)
<b><u>Religion</u></b>		
Muslim	271	25.1
Christian	697	64.6
Traditionalist	111	10.3
<b>Total</b>	<b>1079</b>	<b>100.0</b>
<b><u>Marital Status</u></b>		
Single	311	28.8
Married	740	68.6
Divorced	28	2.6
<b>Total</b>	<b>1079</b>	<b>100.0</b>
<b><u>Occupation</u></b>		
Salaried worker	160	14.8
Self employed	534	49.5
unemployed	385	35.7
<b>Total</b>	<b>1079</b>	<b>100.0</b>
<b><u>Place of Residence</u></b>		
Urban	472	43.7
Rural	607	56.3
<b>Total</b>	<b>1079</b>	<b>100.0</b>
<b><u>Level of Education</u></b>		
No Education	464	43.0
Primary School	60	5.6
JHS	137	12.7
SHS	183	17.0
Tertiary	234	21.7
<b>Total</b>	<b>1078</b>	<b>100.0</b>
<b><u>Maternal Age Group</u></b>		
15 --- 19	114	10.6
20 ----24	265	24.6
25 ----29	310	28.7
30 ----34	231	21.4
35-----39	112	10.4
40 ----44	40	3.7
45-----49	6	.6
<b>Total</b>	<b>1078</b>	<b>100.0</b>



## 4.2 Obstetric history

Table 4.2 below presents the obstetric history of clients that were included in the study. From the table, primiparous women were the highest with 421 clients, representing 39% and the least were the grand multiparous women with only 97 (9%) women having five or more children. With regards gestational age in their last pregnancy, majority of the clients (65.2%) were in the range of the 38 – 40 weeks with the least (2.3%) being those in the 37 weeks and below. Again, ANC attendance was universal in this study with all 1079 clients attending ANC before delivery. However, not all the respondents attended the minimum number of four ANC attendances before delivery as recommended by the WHO, whilst others had more than four attendances. With regards to the number of attendance, majority of the clients (89.3%) had four or more attendances and 10.7% had less than four attendances. In terms of history of CS, the current CS was the first for majority of the clients (76.5%) whilst 23.5% has had a previous CS before the current one. Moreover, the findings reveals that majority of the CS in this study (69.6%) were emergency whereas 30.4% were elective.



**Table 4. 2 Obstetric history of study respondents**

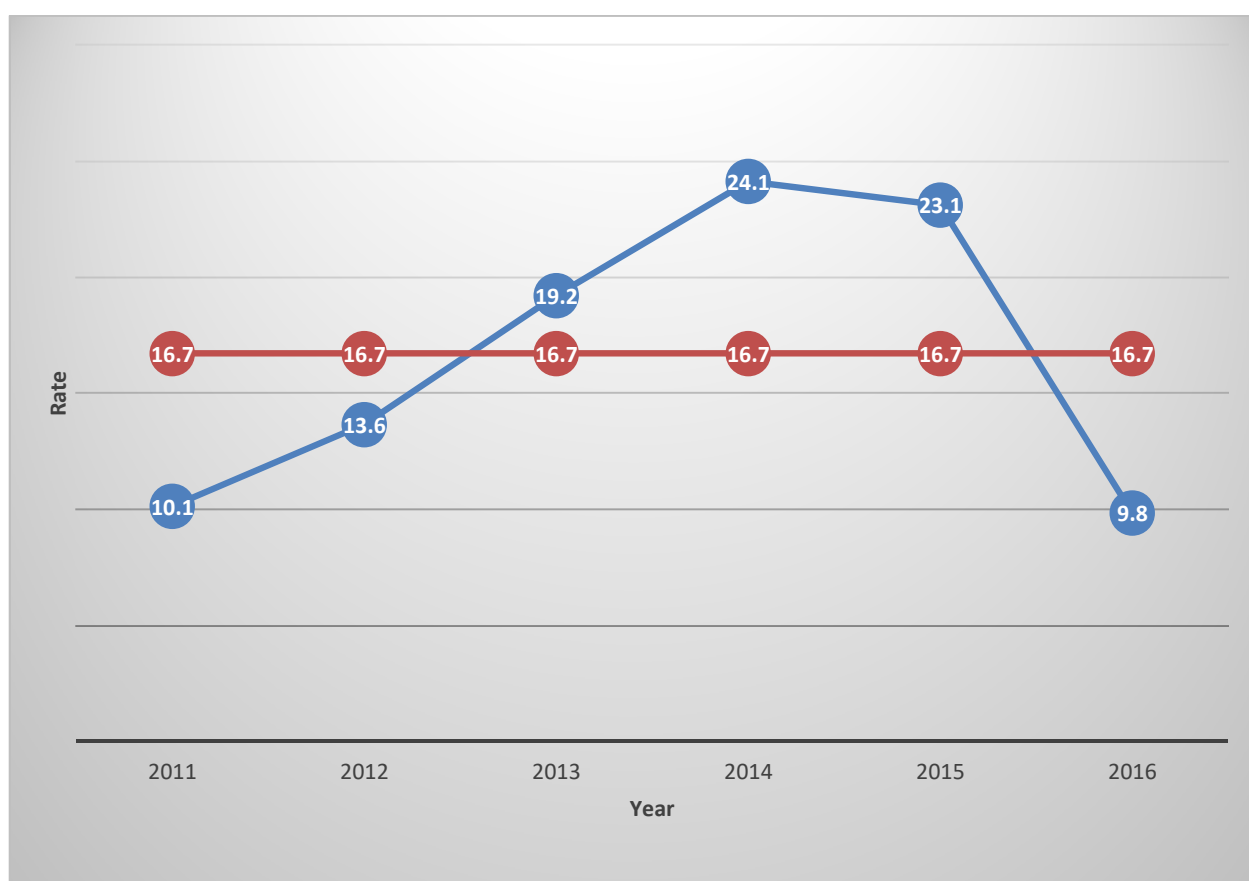
Variable	Frequency	Percentage (%)
Parity		
Nullipara	237	22.0
Primiparous	421	39.0
Multiparous	324	30.0
Grandmultiparous	97	9.0
<b>Total</b>	<b>1079</b>	<b>100</b>
Gestational age		
37 and below	25	2.3
38- 40	703	65.2
41 and above	351	32.5
<b>Total</b>	<b>1079</b>	<b>100</b>
ANC Attendance		
No attendance	000	0.0
1–3	115	10.7
4 and above	964	89.3
<b>Total</b>	<b>1017</b>	<b>100</b>
History of C/S		
Previous C/S	254	23.5
Primary C/S	825	76.5
<b>Total</b>	<b>1017</b>	<b>100</b>
Type of C/S		
Emergency C/S	751	69.6
Elective C/S	328	30.4
<b>Total</b>	<b>1017</b>	<b>100</b>

Source: Field data, 2017



#### 4.4 Trend of Caesarean Section

Figure 4.1 below shows the covered shape trend of annual caesarean rate in the Kassena-Nankana municipality which shows a rate of 10.0% in 2011. As shown in the figure, there was a sharp increase in the rate of CS over a four year trend (2011 – 2014), from 10% in 2011 to 24.8% in 2014. However, there was a little decline in the figure from 24.8% in 2014 to 24.6% in 2015; then a sharp decline to a little below 10% in 2016. The mean rate of caesarean sections was 16.7% which is above the WHO minimum rate of 15%.



**Figure 4. 1Six year trend of Caesarean Section (2011 - 2016)**

- Total average of CS for 6 years
- Annual CS rate



### 4.3 Trends in the Contribution Clinical Indication of Caesarean

#### Section

Table 4. below presents the reasons or indications for CS in this study. From the table, the major indication for CS was fetal distress (54.4%). The second highest indicator of CS was cephalopelvic disproportion (22.4%) and the least was breech presentations (7.5%).

**Table 4. 3 Trends in the Contribution Clinical Indication of Caesarean**

		YEAR					
INDICATOR		2011	2012	2013	2014	2015	2016
Fetal Distress	n(%)	33(34.4)	95(53.4)	97(58.1)	163(61.0)	143(59.3)	56(43.1)
Cephalopelvic Disproportion	n(%)	37(38.5)	28(15.7)	38(22.8)	44(16.5)	67(27.8)	30(23.0)
Breech Presentation	n(%)	6(6.3)	21(11.8)	13(7.8)	25(9.4)	17(7.1)	4(3.1)
Other	n(%)	20(20.8)	34(19.1)	19(11.4)	35(13.1)	14(5.8)	40(30.8)
Total	n(%)	96(100)	178(100)	167(100)	267(100)	241(100)	130(100)

#### Section

Source: Field data, 2017

#### 4.4 Fetal and maternal outcomes of caesarean section

From table 4.4, out of the 1079 CS that were performed 84.7% of the babies survived and 15.3 % of the babies died. Again from the same table, out of the 1079 Of the CS performed 96,4% of the women survived and 3.6% died.



**Table 4. 4 Fetal and maternal outcomes of caesarean section**

Variable		Frequency	Percentage (%)
Fetal outcomes	Dead	165	15.3
	Alive	914	84.7
	Total		
Maternal outcomes	Dead	39	3.6
	Alive	1040	96.4
	Total	1079	100

4.5 Cross Tabulation of Educational Level with Parity of Respondents The educational level of respondents with respect to parity revealed that majority (463 out of the 1072) had no education as compare to those who had some form of educational background. The least educational background of the respondents with respect to parity was those with primary education (60 out of 1072). For the 463 respondents with no education with respect to parity, 164 (35.4%) of them constituting the majority had parity of one and less than 12% had at least 3 parity for CS. Out of the 60 respondents who had attained primary level education, almost half of them (46.7%) had zero parity for CS whilst just 3.3% had at least 3 parity for CS. In the case of JHS level of education, exactly half (68 out of 136) had one parity and 30.9% had zero parity. Similarly, 47.5% of those who had SHS education were more with one parity whilst those with tertiary level of education rather saw most of them (37.9%) with two parity followed by those with one parity (36.2%). Using the Chi-square test of independence, a P-value of 0.00 at showed a significant association between level of education and parity of the clients.



**Table 4. 5 Educational Level with Parity of Respondents**

Educational Level		Parity				Total n(%)	P-value
		Zero	One	Two	At least 3		
No Education	n(%)	100(21.6%)	164(35.4%)	146(31.5%)	53(11.4%)	463(100%)	<0.001
Primary School	n(%)	28(46.7%)	19(31.7%)	11(18.3%)	2(3.3%)	60(100%)	
JHS	n(%)	42(30.9%)	68(50%)	21(15.4%)	5(3.7%)	136(100%)	
SHS	n(%)	35(19.3%)	86(47.5%)	51(28.2%)	9(5%)	181(100%)	
Tertiary	n(%)	31(13.4%)	84(36.2%)	88(37.9%)	29(12.5%)	232(100%)	
Total	n(%)	236(22%)	421(39.3%)	317(29.6%)	98(9.1%)	1072(100%)	

#### 4.6 Cross Tabulation of Educational Level with Stage of Labour on Admission

A Chi-square test was done to determine the relationship between level of education and stage of labour. From the table above, clients with no education who were admitted with prolong first stage constituted 60.3% and those with no education who reported in prolong first stage made up 39.7%, this indicates that more of those without education had CS. However, it has been indicated from the table that clients with primary education were those who reported less in the prolong first stage 51.1% and prolong second stage 48.3 %). A P-value of 0.10 at  $\alpha = 0.05$  indicates that there is no significant relationship between respondents educational level and the clients stage of labour on admission.





**Table 4. 6 Educational Level with Stage of Labour on Admission**

Educational Level		Stage of Labour on Admission		Total n(%)	P-value
		Prolonged 1st Stage	Prolonged 2nd Stage		
No Education	n(%)	184(39.7%)	280(60.30%)	464(100%)	0.10
Primary School	n(%)	31(51.10%)	29(48.30%)	60(100%)	
JHS	n(%)	63(46.0%)	74(54.0%)	137(100%)	
SHS	n(%)	91(49.7%)	92(50.30%)	183(100%)	
Tertiary	n(%)	98(41.90%)	136(58.10%)	234(100%)	
Total	n(%)	467(43.30%)	611(56.70%)	1078(100%)	

#### 4.7 Type of Caesarean Section with Religion

From table 4.7 below, majority of Christians underwent elective CS 69.8% and those with the traditionalist background were the least group who patronized elective CS with 11.0%. Again majority of Christians 62.3% underwent CS and here again the least were those with traditionalist background with 10.0 percent. %). Using the Chi-square test, a P-value of 0.01 at  $\alpha = 0.05$  indicates that there is a significant relationship between respondents type of CS and client's religion.



**Table 4. 7 Type of Caesarean Section with Religion**

Type Caesarean Section		Religion			Total n(%)	P-value
		Muslim	Christian	Traditionalist		
Elective Section	n(%)	63(19.20%)	229(69.8%)	36(11.0%)	328(100%)	0.01
Emergency Section	n(%)	208(27.7%)	468(62.3%)	75(10.0%)	751(100%)	
Total	n(%)	271(25.1%)	697(64.6%)	111(10.3%)	1079(100%)	

#### 4.8 Maternal age and type of CS

From table 4.8 below, majority of the clients (28.7%) who underwent CS were within the age groups of 25—29 years and 0.6% of them were within the age group of 44—49 years. With a Chi-square test performed, a P-value of less than 0.001 at  $\alpha = 0.05$  indicates that there is a significant relationship between respondents age groups and type of CS.

**Table 4. 8 Maternal age and type of CS**

Maternal Age Group		Type of CS		Total n (%)	P-value
		Elective	Emergency		
15 - 19	n(%)	21(18.4%)	93(81.6%)	114(100%)	< 0.001
20- 24	n(%)	66(24.9%)	199(75.1%)	265(100%)	
25 - 29	n(%)	93(30.0%)	217(70.0%)	310(100%)	
30- 34	n(%)	89(38.5%)	142(61.5%)	231(100%)	
35- 39	n(%)	42(37.5%)	70(62.5%)	112(100%)	
40- 44	n(%)	17(37.0%)	29(63%)	46(100%)	
Total	n(%)	328(30.4%)	750(69.6%)	1078(100%)	



#### 4.9 Fetal weight and type of CS

From table 4.9 below, majority of the babies delivered by CS (82.7%) were of the birth weight of 2.5—3.9 kg and 0.28% were within the birth weight of 1.0—1.4 kg.]. A P-value of less than 0.001 at  $\alpha = 0.05$  indicates that there is a significant relationship between fetal weight group and type of CS.

**Table 4. 9 Results of fetal weight and type of CS**

Fetal Weight Group	Type of CS		Total n(%)
	Elective	Emergency	
1.0 - 1.4 n(%)	0(0.0%)	3(100%)	3(100%)
1.5 - 2.4 n(%)	19(11.0%)	154(89.0%)	173(100%)
2.5 - 3.9 n(%)	300(33.6%)	592(66.4%)	892(100%)
4.0 - 5.5 n(%)	9(81.8%)	2(18.2%)	11(100%)
Total n(%)	328(30.4%)	751(69.6%)	1079(100%)

#### 4.10 Maternal weight and type of CS.

The Chi-square test of independence was done to determine the relationship between maternal weight and type of CS. As presented in table 4.10, majority of the women (35.0%) who underwent CS were within the weight of 60—69kg and those who were within the weight 30—39(0.20%). A P-value of  $< 0.001$  at  $\alpha = 0.05$  indicates that there is a significant relationship between respondents groups and type of CS.



**Table 4. 10 Results of maternal weight and type of CS.**

Mothers' Weight Group		Type of CS		Total n(%)	P-value
		Elective	Emergency		
40 - 49	n(%)	25(24.0%)	79(76.0%)	104(100%)	< 0.001
50 - 59	n(%)	90(25.7%)	260(74.3%)	350(100%)	
60 - 69	n(%)	112(29.7%)	265(70.3%)	377(100%)	
70 - 79	n(%)	68(42.8%)	91(57.2%)	159(100%)	
80 - 89	n(%)	21(35.0%)	39(65%)	60(100%)	
90+	n(%)	11(40.7%)	15(55.6%)	27(100%)	
Total	n(%)	327(30.4%)	749(69.6%)	1076(100%)	

#### 4.11 History CS and type of CS

Table 4.11 below presents the results of a Chi-square test to establish the relationship between history of CS and type of CS. From the table, majority of the CS performed (76.5%) were primary CS and previous were 23.5%. A P-value of < 0.001 at  $\alpha = 0.05$  indicates that there is a significant relationship between respondents' history of CS and type of CS.



**Table 4. 11 History CS and type of CS**

History of CS	Type of CS		Total n(%)	P-value
	Elective	Emergency		
Previous n(%)	184(72.4%)	70(27.6%)	254(100%)	< 0.001
Primary n(%)	144(17.5%)	681(82.0%)	825(100%)	
Total n(%)	328(30.4%)	751(69.6%)	1079(100%)	

#### 4.12 Disease Condition Reported by Clients

Table 4.12 below presents the disease conditions reported by clients in the study.

From the table, out of 1079 of the women who had CS 68.3% of them were without any diagnosis of any maternal disease and 0.3 had seizure disorders.

**Table 4. 12 Disease Condition Reported by Clients**

Disease	Frequency	Percentage (%)
Diabetes mellitus	3	0.4
HIV infection	3	0.4
Hepatitis B	3	0.4
Seizure Disorder	2	0.3
Hypertension	24	3.0
Pre- Eclampsia	36	4.5
Maternal Distress	64	8.0
Antipartum Haemorrhage	94	11.8
Placenta Abruptio	68	8.5
Cord Prolapse	36	4.5
Obstructedlabour	9	1.1
Others(no diagnosis)	737	68.3
<b>Total</b>	<b>798</b>	<b>100</b>

Source: Field data, 2017



#### **4.13 Information flow between Clients and Health Staff**

From table 4.13, majority of the clients (24.0%) mentioned prolonged labour has the medical teams' explanation of risks and merits of CS and 1.0% indicated that no explanation was given. Again, majority of the clients (59.0%) said the attending midwife explained the risk and merits of CS to them and 1% did not get any explanation about the procedure. Here again the major indication for CS was prolong labour 22.0% and the least was placenta separation making 2.0%.



**Table 4. 13 Information flow between Clients and Health Staff**

<b>Indicator</b>	<b>Percentage (%)</b>
<b>Please describe how the medical team explained the risk and merits of CS</b>	
They only told me my labour was prolonged	24.0
They said I risk losing blood so should get blood ready	17.0
That my baby was tired and couldn't move along the birth cannal	22.0
They only told me I couldn't be delivered the normal way	15.0
It was emergency	8.0
I did not see them before the CS	11.0
That the placenta had separated early and the baby could die	2.0
Non-respondents	1.0
<b>Please how did the attending midwife explained the risks and merits of CS</b>	
That CS is safe, however I might experience over bleeding	59.0
That the baby could be saved only by immediate CS.	22.0
That since my first delivery was CS this one must also be CS	2.0
It was an emergency	5.0
That there was a breach presentation	10.0
Non-respondents	2.0
First experience and how the decision was made to undergo the procedure	
The Midwife, Doctor and I agreed to do CS but I was scared	45.0
I was assessed by the Doctor and we agreed to have CS. Safe	28.0
I pushed hard but the baby didn't come out so the Dr. did C	22.0
The midwife only told me she was preparing me for the CS.	1.0
I had body pain( Head and neck) after the CS	4.0
<b>Please describe the indication that was explained to you</b>	
That the labour was too long and the baby was not coming out	22.0
Elective CS	11.0
Foetal distress	13.0
Don't know; I was not told	18.0
That due to obstruction I have to go through CS	18.0
That it was an emergency	1.0
That since my first delivery was CS this one must also be CS	5.0
Hypertension	2.0
That the baby was lying across the birth canal	8.0
That the placenta had separated	2.0



#### 4.14 Barrier of Interaction between Midwives and Clients in CS Decision Making

From table 4.14 Majority of the clients, 38% did not respond on barrier between clients and midwives on CS decision making and those who reported lack of communication were the majority 16% and negative of midwives as a barrier were the least with 7%.

**Table 4. 14 Barrier of Interaction between Midwives and Clients in CS Decision Making**

Barrier of Interaction	Frequency	Percentage (%)
Language Barrier	13	13.0
Lack of Communication	16	16.0
Negative Attitude of Midwives (e.g Shouting)	7	7.0
Work load	15	15.0
Knowledge deficit	11	11.0
Non-respondents	38	38.0
<b>Total</b>	<b>100</b>	<b>100</b>

#### 4.15 Suggestion of Clients to Improve CS as mode of delivery

From table 4.15 majority 52% reported that they needed a resident anesthetists as a way of improving CS as a mode of delivery and those who reported for discomfort and the need for change of the operation bed were the least with 2%.





**Table 4.15 suggestions of clients to improve CS as a mode of delivery**

<b>Suggestion</b>	<b>Frequency</b>	<b>Percentage (%)</b>
They need more anesthetist and they should be resident	52	52.0
The Doctor's response to the emergency situation was poor	11	11.0
Lack of communication	15	15.0
Involvement of family members	9	9.0
The bed on which the operation was carried out was so bad	2	2.0
Non-respondents	11	11.0
<b>Total</b>	<b>100</b>	<b>100.0</b>



## DISCUSSION OF THE STUDY RESULTS

### 5.0 Introduction

This chapter discusses the results presented in chapter four. It provides detailed explanation of the study results. This discussion is in line with the socio-demographic characteristics and the study objectives.

### 5.1 Demographic characteristics

#### 5.1.2 Maternal Age distribution

Table 4.1 presents the sociodemographic features of the clients such as age, marital status, religious background, occupational status, level of education, place of residence, and parity. The highest age group among the clients were 25—29 years, years and this groups were also found as those who underwent primary CS. This finding is similar to Yassin and Saida (2012) who found that CS deliveries are significantly high among women with younger age (25—29 years) and first time pregnancy. This finding contradicts the findings of Khalil et al (2013) who found out that advanced maternal age (35—49 years) was responsible for increasing CS trend. This is because women in that age category encounter difficulty during delivery with many complications. From the GDHS 2014 that majority of women who were vulnerable to undergo CS were within the group of 35—49 years above, however, in the current study those with age 35—49 were the least among the study findings.



### 5.1.3 Educational level

Education provides people with the knowledge and skills that can lead to better employment opportunities and a better quality of life. Education level is closely associated with the health of women and children as well as reproductive health behaviours of women and men (GDHS, 2014). Education has a pivotal influence on women especially when it has to do with women having to deliver. The study found out that majority of the women who underwent CS were without education (43.2%). This show that those with education are less likely to accept procedures that will be a source of peril to their health especially pregnancy related in future as researched by Gazali et al (2012). Again, from the GDHS (2014), that majority of women within the age brackets 15 – 49 years were without education. It contradicts the findings of this study that majority of the clients were in the age category of 25—29 and were without education.

### 5.1.4 Religious background

In relation to clients religious affiliation, the study found out that out of the 1076 clients who did CS, majority were Christians (64.8%), Muslims constituted 25.1 % and traditionalist were 10.1%. This outcome of clients' religious background supports classic medical argument that the medical systems are related to cultural systems and like kinship and religion they are woven with meanings values and behavioral norms Kliensman et al (2006). Again, majority of the clients were Christians. This supports the finding of Meckonnon (2002) and Addai (1998) that maternal religion has a significant influence on the utilization of maternal health service. This finding is similar to what Adejunti (1996) found that the utilization of modern health service is influenced by the perception of the individual and religion and belief of the individual woman.



## 5.2 Obstetric history

### 5.2.1 Antenatal Attendance

From figure 4.4 , antenatal care attendance according this study showed that majority of the women who underwent CS had at least four times ANC services and a few of the clients were in the range of six times or more. This findings is in tune with the WHO (2004), recommendations that women without complications should make at least four ANC visits. Similarly, the findings supports that of Mishra and Ramanathan (2001), antenatal care attendance has an association with institutional delivery especially CS delivery because by the end of the fourth visit, the client would have had the full assessment of her pregnancy risks.

### 5.2.2 Parity

Parity may be a contributory factor in the increasing trend of CS rate. From the finding of the study, majority of the women who underwent CS were primipara (39 %). This findings is not in tune with that of Dennett (2003), who found that primiparous women for the fear of undergoing labour most of them are seen opting for CS and that parity is significant determinant of primary CS (Braveman et al 1995 and Parrish et al 1994). Pang et al (2008), said that women who have had normal delivery are likely to deliver normally whilst those who are yet to deliver their first baby are likely to undergo CS is also not associated with the current findings because majority of them (69.0%) had delivered before. However, the study finding supports the findings of Mishra and Ramanathan (2002) that birth order is a significant determinant of CS.



### 5.2.3 Gestational age

Gestational age is a major determinant of CS. From table 4.3 the findings were that out of 1079 clients who had CS, 860 (79.7%) were between the 39 – 40 weeks of gestation. This supports the findings that gestational age has a significant association between gestational age and neonatal outcome (Mylonas & Friese 2015). The findings are similar to the research findings that the appropriate gestational for CS is 39 – 40 gestational age (ACOG 2007:Tita et al., 2009). Again the finding revealed that 351 (32.5 %) of the clients were of the post date groups that were arranged for CS that group also increased the trend of CS in the municipality and this confirmed with the War Memorial Hospital annual report (2009). The report indicated majority of the women who under went CS had a reached the 39—40 weeks of gestation and a significant number of them according to the current findings were post-date.

### 5.2.4 Maternal weight

From table 4.10, majority of the women who had CS were in the weight group of 60 – 69 kg (35.0%) and those with lower weight groups (30—39 kg) were among those who had CS done (2.0%).

This finding supports Dinatale et al (2010), who found that normal weight women as compared with overweight women, those who are obese were likely to have CS done. Again the study finding is similar to the research findings that an expectant mother who has more weight in the course of the pregnancy stands the risk of ending up undergoing CS (Sebire et al., 2001; Wiess et al., 2004; Fyfe et al., 2012). The findings of Berghel et al (2005) that overweight women are likely to have a CS as a mode of delivery also supports the research finding, that majority of the women being in this weight group (60 – 69 kg) were those who had CS done.



**5.2.5 Fetal Macrosomia**

The findings on fetal weight from table 4.12 revealed that majority of the babies delivered by CS 892 (82.7%) were in the fetal weight range of 2.5 – 3.9 kg. This findings are within the Robson (2015) classification range of normal weight babies. Again the finding indicates that fetal macrosomia that is babies of fetal weight of 4.0kg and above (11.0%) were seen as contributing to the rising CS trend. This support the studies that the prevalence of macrosomia ranges from 6.3% to 10.9% in mothers without gestational diabetes (Campbell, 2014; Elnour et al., 2008; Evans & Patry, 2004; Najaafian & Cheraghi, 2012). The findings of the current study also saw that fetal weight ranges of 2.5 – 3.9 being in the majority did not meet recommendation that fetal weight for CS as seen in study findings. CS is recommended for fetal weight of 4.0 kg and above (Bryant et al., 1998; Rouse et al., 1996; Tsega et al., 2015)

**5.2.6 Caesarean Section trend in KNM**

From figure 4.1 the trend of CS in the municipality was seen from the graph as a covered shape. The CS rate in 2011 was 10.0 %, this is not similar to what was presented in the War Memorial Hospital annual report (2016). The report stated that in 2011, the CS rate was 10%. However, in the findings of the study the rate was 11%. The trend started to rise between 2012 – 2015, then with a sharp decline in 2016. From the figure the mean CS rate in the Municipality was 16.7% which is high than the rate in the region (GDHS 2014) and again the municipality's mean CS rate is high than the average rate set by the WHO and EmOC at 10 – 15 % (WHO 2007 and EmOC 2009). The findings on the six year trend of CS mean (16.7) is above what the WHO has recommended. That is a Caesarean section rate of between 10 and 15% (average 12.5%) as an acceptable level. This recommendation, was a consensus of an



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expert committee more than two decades ago which has become the basis on which  
Caesarean rates have been considered normal, low or high (WHO, 2007).



## **SUMMARY OF KEY FINDINGS AND RECOMMENDATION**

### **6.1 Introduction**

This chapter presents the summary of key findings and policy recommendation that will promote effective and efficient application of CS as a mode of delivery in the Kassena-Nankana Municipality and beyond. This study is aimed at contributing to the emerging body of knowledge about the trend of CS in the municipality and the application of CS as a mode of delivery.

### **6.2 Summary of key findings**

Although caesarean section rate was 16.7 as observed, in this trend evaluation between 2011 and 2016, this is above the average of 12.5 recommended by World Health Organization (WHO) for developing countries. If unchecked, the rate might reach unacceptable levels. Caesarean sections performed for appropriate medical or obstetric indications are life saving for both the mother as well as the newborn. The study also revealed that the major indication for CS in the municipality was prolonged labour for the maternal indication and that of fetal indication was fetal distress. It was worth noting that there were many women who had CS with the indication of postdate. Again many women had CS with the indication of fetal macrosomia but majority of the babies delivered in the process of the normal weight range of 2.5 – 3.9. The clients' CS history were mainly primary CS and those with previous CS were few.

Gestational age used for the CS operation in the municipality were within the recommended range of 39 – 40 weeks and above. Those that were in the lower gestational age were almost negligible. The study also revealed that parity was a







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major indicator that has a bearing on the trend of CS in the municipality since majority of the women who had CS were in the parity of more than one.

The study also found out that majority of women in the Municipality who had CS were without education and again majority were married.

### 6.3 Recommendation

The findings of the study has policy implication on the health sector and therefore, came up with the following recommendations for policy formulation and proposal that when implemented will help improve the trend of CS in the municipality.

1. The ministry of health and the Ghana health service expectant mother should be given education on the various indications of CS in the common languages in the municipality to help them contribute meaningful in the decision making process instead of the doctor always taking the decision for the client.
2. The ministry of health and the Ghana health service should have a way of checking on the facility CS rate and the need to enforce the recommended CS rate as recommended by the World Health Organisation. This will ensure that the women are not subjects of needless CS.
3. The Ministry of Health and Ghana Health Service should provide the health facilities with modern diagnostic equipment to help the staff in giving accurate diagnosis and indication for CS. For instance some of the indication for CS were fetal macrosomia but the findings for the study were contrary to the indications.
4. In the area of communication, the health facilities will need to appreciate the fact that communication is important especially in the area of explanation diagnosis and indications for surgeries (caesarean section). Again staff should be given training in the area of customer care to help make the clients

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comfortable to participate in the decision making process. The facility will need to have more staff in the area of specialist especially anesthetists and obstetrician since CS is a specialized area.

5. Some of the contributory factors for CS should be reviewed by the Ghana health service, because when clients have a revelation that the indication for the CS was not correct it could lead to legal actions.
6. The study also found that a notable number of women were given postdate as indication, this implies the calculation of the gestation age could have problems therefore there is the need to calibrate the diagnostic equipment for the identification such situation. There is a need for a prospective study to evaluate the reasons for the increasing caesarean section trend in the Kassena-Nankana municipality. Since prolong labour and fetal distress are the common indication associated with increased CS rate. There should be training for staff in the area of the usage of diagnostic equipment.
7. Lastly, there should be a policy on the need to disclose all the associated risks with CS to the client instead of just using the consenting process as a cover for the health care professionals.

### **Limitation of the study.**

Funding of the study was a major limitation.



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**UNIVERSITY FOR DEVELOPMENT STUDIES GRADUATE  
SCHOOL**

**DEPARTMENT OF COMMUNITY HEALTH**

**SCHOOL OF MEDICINE AND ALLIED HEALTH SCIENCES**

**QUESTIONNAIRE FOR SECONDARY DATA EXTRACTION**

**EVALUATING THE TREND OF CAESAREAN SECTION IN THE KASENA  
NANKANA MUNICIPALITY FROM 2011—2016**

**Introduction and Consent.**

This questionnaire is designed for data extraction for academic work and the information extracted will be protected and confidentiality of client identity will be ensured.

**SOCIODEMOGRAPHIC DATA**

Q1. What is your age-----?

Q2. What is your religious denomination?

1. muslim ( )
2. Christian ( )
3. Traditionalist ( )
4. Others-----  
----

Q3. What is the marital status of respondents?

1. single ( )
2. Married ( )
3. Divorced ( )

Q4. What is the Level of education of respondent?

1. No Education( )
2. Primary ( )



3. SHS ( )
4. College ( )
5. Others-----  
-----

Q5. What is place of residence of respondents

1. urban ( )
2. Rural ( )

Q6. What is the health insurance status of respondent?

1. Insured ( )
2. Non-insured ( )

Q7. What your ethnicity

1. kasena ( )
2. Nankam ( )
3. Builsa ( )
4. Others-----  
-----

Q8. What is the occupation of respondent?

1. Teacher ( )
2. Simstress ( )
3. Nurse ( )
4. Head dresser ( )
5. Trader ( )
6. Unemployed ( )
7. others ( )

Q9. What is your height?-----  
---

Q10. What is your weight ( )

### **MATERNAL FACTORS DETERMINING CAESAREAN SECTION AS A CHOICE OF DELIVERY**

Q11. What is the parity of respondent

1. 0 ( )
2. 1 ( )
3. 2 ( )
4. > 3 ( )

Q12. What is the gestational age of respondent?.....



Q13. What is the number of antenatal attendance of respondent?

Q14. What type of caesarean section did respondent undergo?

1. elective section ( )
2. emergency section ( )

Q15 What was the stage of labour of respondent on admission?

1. First stage ( )
2. Second stage ( )

Q16. What is the disease condition of respondent?

1. Diabetes mellitus ( )
2. HIV infection ( )
3. Hepatitis b ( )
4. Seizure disorder ( )
5. hypertension ( )
6. Others.....

Q17. What is caesarean section history?

1. previous caesarean ( )
2. primary caesarean ( )

Q18.What is the status of pregnancy of respondent?

1. multiple pregnancy ( )
2. single pregnancy ( )

19. What is the outcome of CS for the mother?

1. Survived ( )
2. Died ( )
3. Others

#### **FOETAL FACTORS DETERMINING THE CHOICE OF DELIVERY BY CAESAREAN SECTION**

Q20. Was CS due to Cephalopelvic disproportion

1. yes ( )
2. No ( )

Q21. Was CS due to Fetal distress



1. yes ( )
2. No ( )

Q22. Breech presentation

1. yes ( )
2. No ( )

Q23. What was the foetal weight? .....

**Q24.** What was the fetal heart rate-----  
-----?

**Q25.** What was the outcome of the CS for the baby?

- 1. Survived** ( )
- 2. Died** ( )

Q26. What was the Apgar score at delivery-----  
-----?

Q27. What is the sex of the new  
born.....



*In case of reply the  
number and date of this  
letter should be quoted*

My Ref: App/CSinKNM/07/2017  
Your Ref:



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10<sup>th</sup> July, 2017

Mr. Moses Salifu Duut  
Nurses Training College  
P. O. Box 225  
Bolgatanga

**ETHICS APPROVAL ID: NHRCIRB272**

Dear Mr Duut,

**Approval of protocol titled 'Evaluating the trend of Caesarean Section in the Kassena Nankana Municipality from 2011-2016'**

I write to inform you that the Navrongo Health Research Centre Institutional Review Board (NHRCIRB) having reviewed the above named protocol finds the study relevant considering the objectives outlined. The Board therefore grants you approval to commence the study.

The following documents were reviewed and approved:

- Completed New Protocol submission forms
- Summary of Protocol
- Study protocol Version 2.0 dated 07/06/2017
- Consent forms – English Version 2.0 dated 07/06/2017
- Questionnaires
- In-depth Interview (IDIs) guides
- Curriculum Vitae of Principal Investigator

Please note that any amendment to these approved documents must receive ethical clearance from the NHRCIRB before implementation.



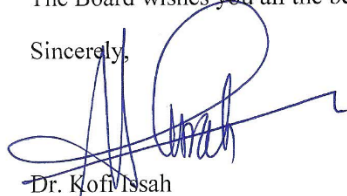


The Board would expect a report on your study, annually or at the close of same, whichever comes first. Should you require a renewal of your approval, a progress report should be submitted two (2) months before the expiration date.

The approval expires on **9<sup>th</sup> July, 2018.**

The Board wishes you all the best in the study.

Sincerely,



Dr. Kofi Issah  
(Board Chair, NHRC IRB)

Cc: The Director  
NHRC, Navrongo

