

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

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DETERMINANTS OF ESSENTIAL NEWBORN CARE PRACTICES AMONG

POSTNATAL WOMEN IN BAWKU MUNICIPALITY

BY

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DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

DECLARATION

I, Alem John Ndebugri, do hereby certify that, this thesis is the outcome of my original research and does not incorporate without acknowledgement any material previously submitted for any degree in any university. The study was conducted under the supervision of Prof. Ernestina Donkor, the Dean of School of Nursing and Midwifery, University of Ghana and Dr. Florence Naab, School of Nursing and Midwifery, University of Ghana. To the best of my knowledge, this work does not contain any material which is formerly published or written by any other persons except where due reference is given.

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(Candidate)

We hereby certify that this thesis was supervised in accordance with the procedures laid down by the University of Ghana. We therefore recommend for its acceptance.

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ABSTRACT

Globally, an estimated 2.7 million deaths, approximately 45% of under-five deaths occurred in the neonatal period in 2015. This trend led to the inability of many countries to achieve the Millennium Development Goal four (MDG 4) by 2015; hence the introduction of the Sustainable Development Goals (SDGs). Many studies have concluded that poor newborn care accounts for high levels of newborn deaths in low-middle income countries. This study therefore investigated the determinants of Essential Newborn Care (ENC) practices among postnatal women in Bawku Municipality. A cross sectional study design was employed using multistage sampling technique to select 407 participants. Statistical Package for Social Sciences (SPSS), version 20 was used for data analysis. Generally, knowledge of postnatal women on ENC was high (Mean = 33.78, SD = 5.32) and had a statistically significant correlation with age ($r = .306$, $p > .001$) and parity ($r = .582$, $p > .001$). A greater proportion of the respondents practiced safe cord care (69.7%) and good breastfeeding practice (77.4%). However, the practice of good thermal care was exceptionally low (22.3%). Mothers' level of education and place of delivery were significantly associated with all recommended newborn care practices. Level of education, ethnicity and place of delivery significantly predicted safe cord care; whereas good breastfeeding was predicted by place of delivery and knowledge on good breastfeeding. On the other hand, the significant predictors of good thermal care were mothers' level of education, place of delivery, ethnicity and socioeconomic class. These findings suggest that a substantial number of newborns still receive harmful newborn care practices which are determined by several factors. Therefore, the Ministry of Health (MOH) should take meticulous efforts to improve the uptake of recommended newborn care practices among postnatal women at the community level.

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DEDICATION

This work is dedicated to the entire Alem family, especially my lovely wife, Fauzia Alem Ayamga. She has been very caring and supportive throughout my journey on the academic ladder.

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LIST OF ABBREVIATIONS

ANC	Ante-Natal Care
CI	Confidence Interval
DHS	Demographic and Health Survey
NGO	Non-Governmental Organisations
EBF	Exclusive Breastfeeding
EmONC	Emergency Obstetric and Newborn Care
ENAP	Every Newborn Action Plan
ENC	Essential Newborn Care
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
JHS	Junior High School
MCH	Maternal and Child Health
MDG	Millennium Development Goals
OR	Odds Ratio
SBA	Skilled Birth Attendant
SDGs	Sustainable Development Goals
SEC	Socio Economic Class
SHS	Senior High School
SPSS	Statistical Package for Social Sciences
TBA	Traditional Birth Attendant
UNDP	United Nations Development Program
UNIGME	United Nations Inter-agency Group for child Mortality Estimation
USAID	United States Agency for International Development
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1 Background

The first one month of life (the neonatal period) constitutes the most unsafe and high-risk time in life because of the highest mortality and morbidity incidence associated with neonates. It is the most critical period for a child's survival and therefore, the risk of a child dying is very high if proper care is not taken. According to the United Nations Inter agency Group for Child Mortality Estimation (2015), about one million babies die on the day of birth and almost two million die in the first week of life. As indicated by Ameh and van den Broek (2015), the greatest risk of neonatal death is on the day of delivery and approximately 75% of neonatal deaths occur in the first week of life. Recently, there has been a major emphasis on the increasing burden of neonatal mortality worldwide with much attention on the Millennium Development Goals (MDGs) for maternal and child health. The consequence of poor newborn care is high rates of neonatal deaths which have contributed significantly to the non-achievement of Millennium Development Goal 4 (MDG 4) by many member nations.

Child mortality worldwide is decreasing and many countries made significant strides towards achieving MDG 4 which sought to reduce child mortality by two thirds from 1990 to 2015. However, the worrying trend is that, though there is significant improvement in child mortality, a greater percentage of these deaths occur during the neonatal period. Between 1990 and 2011 the proportion of child deaths in the neonatal period increased to 41% globally (Bhutta, Cabral, Chan, & Keenan, 2012). Again, an estimated 2.4 million newborns die globally each year, with the majority occurring during delivery (Ameh & van den Broek, 2015). Estimates from the

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United Nations Inter-agency Group for Child Mortality Estimation (UN IGM E) shows that the global neonatal mortality rate reduced from 36 deaths per 1,000 live births in 1990 to 19 in 2015. Despite this significant improvement, the decline in neonatal mortality from 1990 to 2015 has been slower than that of post-neonatal mortality (47% compared with 58% globally). According to the WHO (2016), approximately 45% of deaths of under-five children occurred in their first month of life in 2015. Due to less attention, newborn deaths now account for about 44% of all deaths among children under the age of five years globally, and a total 2.8 million deaths annually (Kinney et al., 2015).

In low-middle income countries, there had been slow progress towards achieving MDG 4 due persistent increase in neonatal mortality. According to World Health Organisation (2014), 99% of newborn deaths occur in low and middle income countries. Sub-Saharan Africa is the region with the highest risk of newborn deaths and is among the regions that showed little progress towards achieving MDG 4 (Liu et al., 2015). There was a little decline in the under-five mortality rate in sub-Saharan Africa with the average annual rate of reduction from 0.8% in 1990-1995 to 4.2% in 2005-2013 (WHO, 2014) but much is not seen in the area of newborn deaths. In all WHO regions, there has also been an increase in the percentage of child deaths which occur in the neonatal period over the last 25 years. According to the WHO (2016), the decline in neonatal mortality has been very slow in sub Saharan Africa over a three year trend, 994,000 deaths in 2013, 989,000 deaths in 2014 and 985,000 deaths in 2015. In Africa, Mauritius is the country with the lowest neonatal mortality rate (8 deaths per 1,000 live births) and Angola have the highest neonatal mortality rate of 49 deaths per 1,000 live births (UNICEF, WHO, World Bank, & UN-DESA Population Division, 2016).

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Ghana is one of the sub-Saharan African countries with a high neonatal mortality rate. Results from the Ghana Demographic and Health Surveys (GDHS) show a decline in childhood mortality with a greater proportion dying within the first one month of life. Data from the 2014 GDHS indicate that neonatal mortality has declined minimally by 3% over the 15-year period preceding the survey, from 30 to 29 deaths per 1,000 live births. The corresponding decline in post neonatal, infant, and under-five mortality over the same 15-year period are 4%, 21%, and 31% respectively (Ghana Statistical Service, Ghana Health Service, & International Classification of Functioning Disability and Health, 2015). Additionally, according to the Ghana Health Service (2014) annual report, neonatal mortality increased from 3,256 deaths in 2012 to 3,903 deaths in 2013. This has resulted in an increase in the contribution of neonatal deaths to infant deaths from 53% in 1998 to 71% in 2014. Moreover, progress in the reduction of neonatal mortality has been almost stagnant in Ghana over a 5 year trend. Ghana recorded neonatal mortality rates of 31/1,000 live births in 2011 and 2012, 30/1,000 live births in 2013, 29/1000 live births in 2014 and 28/1,000 live births in 2015 (UNICEF et al., 2016).

Infections during the neonatal period have been cited as one of the causes of neonatal morbidity and the second leading cause of the death of newborns globally. It has been estimated that, in low-middle income countries, infection in the first month of life causes about 1.6 million deaths per year (Mizumoto et al., 2015). Furthermore, the top three causes of neonatal death were prematurity (29%), newborn sepsis (28%) and birth asphyxia (27%) with an estimated 75% of these deaths occurring in the first week of life, and the greatest risk of death is in the first day of life (Ameh & van den Broek, 2015). That notwithstanding, quality of maternal and newborn care remains poor in many Countries (Campbell, Sochas, Cometto, & Matthews, 2016). In Ghana, several surveys conducted reported infections, birth asphyxia and injury, prematurity, and

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perinatal-related disorders as the major causes of neonatal deaths (Okawa et al., 2015). In all, the three major cause of neonatal deaths in the Kasena-Nankana District were neonatal sepsis (32%), birth injury and asphyxia (21%), and prematurity (18%) (Welaga et al., 2013).

As a response to the persistent increase in neonatal mortality, the WHO developed a minimum newborn care package (Essential Newborn Care) to help improve the health of newborns (World Health Organization, 2009). Among this minimum neonatal care package are: antenatal care (ANC) visit, health education during pregnancy, skilled care delivery and immediate newborn care including clean and safe cord care, timely and exclusive breast feeding and delayed newborn bathing. Almost all countries, including Ghana and other low-middle income countries, have adopted this strategy and have been implementing for the past one decade.

Again, evidence available points to the fact that a significant number of neonatal deaths are preventable by inexpensive and simple practices such as the Essential Newborn Care package and interventions along the continuum of maternal and newborn health (Bang, Lee, Chae, Debeb, & Kang, 2015; Bhutta et al., 2014). As indicated by Otolorin, Gomez, Currie, Thapa, and Dao (2015), universal access to essential newborn care is crucial in reducing neonatal mortality and requires that all pregnant women and newborns have easy access to well-equipped facilities. Moreover, there is evidence that universal coverage of maternal and newborn care would prevent about 71% of newborn deaths (Renfrew et al., 2014). However, according to World Health Organisation (2014), neonatal death is often associated with inadequate access to basic essential newborn care.

Consequently, great efforts have been made and more rigorous initiatives and interventions put in place to improve the health of newborns. These initiatives include: Every Newborn Action

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Plan (ENAP), Reproductive Maternal Newborn and Child Health (RMNCH), and MDG Acceleration Framework and Country Action Plan. Yet, achievements have not been as expected due to poor commitment by various Governments and shortage of skilled workforce. Between 1990 and 2015, 62 of the 195 countries had met the MDG 4 target of reducing two-thirds of under-five mortality rate (WHO, 2016). Among them, 12 are low-middle income countries including Niger, Ethiopia, Tanzania and Bangladesh. The persistent increase in neonatal mortality constitutes a major bottleneck that prevented some of these countries from achieving MDG 4.

Newborn Health has been a major priority in terms of health care delivery in Ghana since the inception of the MDGs. As a result, several internationally recommended as well as local interventions have been implemented by the Ministry of Health and GHS to promote newborn survival and reduce neonatal mortality. Since 2000, Ghana has been implementing several community based health care interventions; with which the Community-based Health Planning and Service (CHPS) delivers health care at the community level. Initially, a study in Northern Ghana indicated that the CHPS strategy led to an improvement of newborn health and a reduction in child mortality, through improved quality and increased utilization of health care services at the primary level (Okawa et al., 2015). Other initiatives include Ghana's Child Health Policy and Strategy (2007 -2015) which provides a framework for planning and implementing programs for improving the health of children. Although this strategy has highlighted interventions and strategies for addressing newborn health, the reality is that, there is little attention to interventions in the aspect of newborn care. This made the MOH, GHS and other development partners and NGOs to develop the National Newborn Health Strategy and Action

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Plan. The main aim of this strategy is to reduce neonatal mortality to 21/1000 live births and to reduce the institutional neonatal mortality by a minimum of 35% by 2018.

Despite these efforts, newborn care often receive less-than optimum attention and the uptake the ENC has been very low-middle income countries (Friberg et al., 2010). Several factors are believed to have an influence on the adoption of beneficial newborn care practices among postnatal women. These may include low income, poverty, illiteracy and sociocultural beliefs (Misgna, Gebru, & Birhanu, 2016; Sharma, Van Teijlingen, Hundley, Angell, & Simkhada, 2016). Other research also suggests that there is an association between the practice of beneficial newborn care and individual characteristics (mother's age, education and income) and place of delivery (Opara, Jaja, Dotimi, & Alex-Hart, 2012; Shiva & Asmi, 2014).

However, the major problem is lack of sufficient data about community level essential newborn care practices for program improvement (Ademuyiwa, Sowande, Ijaduola, & Adejuyigbe, 2009). Thus, it is crucial to have current information on the existing newborn care practices and its determinants at the community level, which will inform the design of more policies and successful interventions. This study therefore sought to investigate the determinants of essential newborn care practices among post natal women in the Bawku Municipality. Andersen's Behavioural Model of Health Services Utilization (Andersen, 1995) was used as an organizing framework for the study.

1.2 Problem statement

Newborns are very vulnerable in society and therefore need quality care for their safety and survival. Though the global trend shows significant progress towards reducing child mortality, majority of these deaths occur during the neonatal period. According to the UNICEF et al.

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(2016), neonatal mortality rate in Ghana was 28 per 1000 live births in 2015. On the other hand, the GDHS 2014 report indicates that the upper east region is recorded 24 deaths per 1000 live births). Though the figure looks encouraging, it constitutes 52.7% of infant mortality and 33.3% of under- five mortality in the region (Ghana Statistical Service et al., 2015).

With the end of the MDG era where most countries had failed to achieve some of the goals, member nations agreed on a new set of goals – the Sustainable Development Goals (SDGs). The proposed SDG target for child mortality is to end preventable deaths of newborns and children under-five years of age by 2030. All countries are aiming to reduce neonatal mortality to at least 12 deaths per 1,000 live births by 2030. However, if the current trends in neonatal mortality continue, meeting these goals will be a very difficult task for most nations. It has been projected that if current trends continue, around half of the 69 million child deaths between 2016 and 2030 will occur during the neonatal period and neonatal deaths will increase from 45% of under-five deaths in 2015 to 52% in 2030 (United Nations Inter agency Group for Child Mortality Estimation, 2015).

Several factors, such as home deliveries without Skilled Birth Attendants (SBAs), delay in seeking care during illness, lack of birth preparedness of families and care providers, harmful cultural practices, and socio-economic issues, contribute to neonatal deaths. The majority of researches on neonatal mortality have concluded that the adoption of traditional newborn care practices is a major reason for the increasing levels of neonatal mortality in low-middle income settings. Social exclusion, caste, illiteracy, negative parental attitudes and lack of basic prenatal, delivery, and postnatal services are the main contributors to poor newborn survival rates in low-middle income countries (Bhutta et al., 2012).

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Currently, the uptake of essential newborn care practices among postnatal women is low in Ghana (Saaka & Iddrisu, 2014) probably due to lack of resources, low commitment and inadequate planning and management of the newborn health workforce. According to Ameh and van den Broek (2015) poor newborn care practice is associated with poor implementation of evidence-based interventions, cultural and traditional beliefs, illiteracy, and low socio-economic status. Again, essential newborn care has become increasingly relevant among most countries in the sub region. This is not only because of the persistent increase in neonatal mortality, but the relevant interventions needed to address the causes of neonatal deaths are generally different from those needed to address the causes of post neonatal deaths.

Moreover, the essential newborn care package was launched in the Upper East Region in 2012 by the GHS in partnership with UNICEF, with Bawku Municipality being one of the implementation districts. The Bawku Municipality is predominantly rural with majority of women being illiterates and home deliveries still occur. In the rural areas, deliveries at home are largely assisted by TBAs, and other elderly women in the communities who have no adequate knowledge on recommended newborn care practices. Despite the implementation of the essential newborn care package, the Bawku Municipality recorded 18 neonatal deaths in 2014 which is an increase from the 2013 figure of 16 (Bawku Municipal Health Directorate, 2014). Moreover, there is no local data on the level of community ENC practices in the study area and little is documented on the factors influencing the practice of ENC. It is therefore imperative to investigate the determinants of essential newborn care practices among postnatal women in the Bawku Municipality.

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1.3 Purpose of the study

The purpose of the study is to investigate the determinants of essential newborn care practices among postnatal women in the Bawku Municipality.

1.4 Specific objectives

The specific objectives of the study are to:

1. Assess the predisposing characteristics of postnatal women in Bawku Municipality.
2. Describe the enabling resources of postnatal women in Bawku Municipality.
3. Examine the patterns of essential newborn care practices among postnatal women in Bawku Municipality.
4. Establish the relationship between predisposing characteristics and enabling resources of postnatal women in the Bawku Municipality
5. Determine the predictors of essential newborn care practices among postnatal women in Bawku Municipality.

1.5 Research questions

The study seeks to answer the following questions;

1. What are the predisposing characteristics of postnatal women in Bawku Municipality?
2. What are the enabling resources of postnatal women in Bawku municipality?
3. What are the patterns of essential newborn care practices among postnatal women in Bawku Municipality?

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4. Is there a relationship between predisposing characteristics and enabling resources of postnatal women in Bawku Municipality?
5. What are the predictors of essential newborn care practices among postnatal women in Bawku Municipality?

1.6 Significance of the study

The study sought to investigate the determinants of essential newborn care practices among postnatal women. By identifying the factors influencing the uptake of essential newborn care practices, the findings will help policy makers on newborn care to understand the factors influencing the practice of recommended newborn care; hence take necessary steps to improve newborn survival. Again, investigating the possible determinants of essential newborn care practices among postnatal women will add relevant knowledge to the existing literature on newborn care. This will broaden the horizon of knowledge of the nursing fraternity and other healthcare professionals about the factors that influence the uptake of good newborn care practices among postnatal women. Moreover, the study will also recommend programs for improving the level of awareness and knowledge of women about newborn care practices in the Municipality and Ghana at large.

Lastly, the study will identify gaps for future research in other areas of newborn health and make recommendations for further research in these areas. This will create an opportunity for other researchers to explore the area of newborn health and further make recommendations that may be considered for implementation to improve newborn survival.

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1.7 Operational Definitions

Essential Newborn Care: This is the care given to the newborn after delivery to 28 days of life at the community level which include cord care, thermal care and breastfeeding.

Postnatal women: Postnatal women are women with less than one year old babies.

Safe cord care: This refers dry cord care without applying any substance to the cord stump.

Good thermal care: The practice of delayed newborn bathing until after 24hours of delivery.

Good breastfeeding: Exclusively breastfeeding for the first 28days of after delivery.

CHAPTER TWO

LITERATURE REVIEW

This chapter gives a vivid description of the theoretical underpinnings of the study and review of relevant literature in relation to the study. It presents the theoretical framework that was used to study the possible determinants of newborn care practices. Subsequently, relevant literature related to essential newborn care practices among postnatal women was reviewed extensively.

2.1 Conceptual model: Anderson’s model of health service utilization

Andersen’s Behavioural Model of Health Services Utilisation is a model developed to explain and predict the use of health services at different levels. The model was originally developed in the 1960s to explain health service use among families and has since undergone several revisions, changing the unit of analysis from families to individuals, and expanding the model to include both individual-level and the external environment and health care system (Andersen, 1995).

The model explains that the use of health services by individuals is influenced by their susceptibility (predisposing characteristics) to those services, and also influenced by factors that enable or impede their efforts and the need for healthcare service. The factors that may predispose an individual to use a healthcare service include the characteristics such as age, gender, marital status, religion, and personal values. The enabling resources aspect of the model describes the means individuals have to use services, including knowledge and education or counselling on the health service. The need component refers to the perception of need by individuals or need, as explained by the health care system (Andersen, 1995).

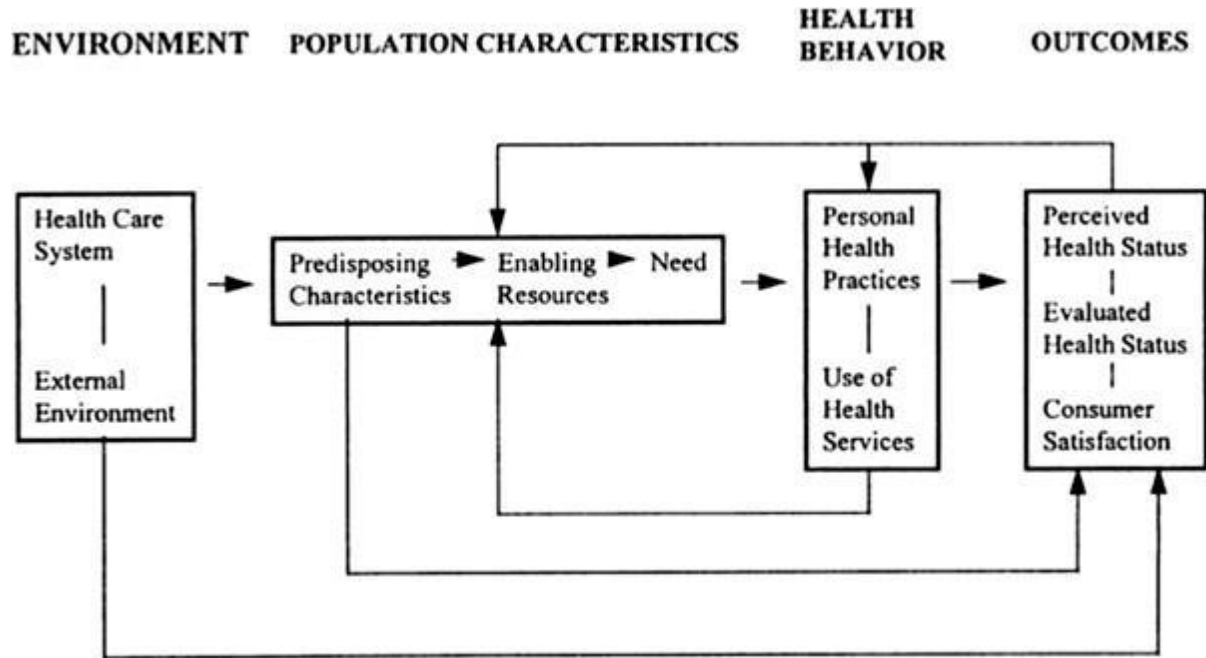
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This model has been used extensively in several studies that sought to examine the determinants of health services utilisation. A systematic review of literature on health service utilisation has revealed an extensive use of Andersen's model to investigate the determinants of utilization of health services in different settings; with the 1995 version being the most frequently applied one (Babitsch, Gohl, & von Lengerke, 2012). That notwithstanding, there was a substantial differences in the variables used in these studies.

Given the influence of multilevel factors, including individual and contextual determinants on essential newborn care practices in resource-limited or rural settings, this model was used to conceptualize determinants of essential newborn care practices in the Bawku Municipality. The focus of this study is on essential newborn care practices, therefore health status outcomes described in the model was excluded from the current study, making health behaviour (essential newborn care practices) the outcome of interest. Moreover, owing to difficulty in accessing information, the two variable sets under the environment (external environment and health system factors) and cultural factors were not considered in this study. Therefore, the study focused on predisposing factors (socio-demographic characteristics and use of maternal health services), enabling factors (knowledge of mother, socioeconomic status and education or counselling on ENC practices) and health behaviour (ENC practices). In the following section, specific and related literature on the determinants of ENC practices was reviewed extensively. Figure 2.1 below shows the diagrammatic presentation of the model.

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Figure 2. 1: Andersen’s model of health service utilisation



Source: Andersen (1995)

2.2 Review of related literature

Literature related to essential newborn care practices was reviewed comprehensively using Andersen’s Behavioural Model of Health Services Utilization (1995) as an organizing framework and in tandem with the study objectives and research questions. The sources of relevant literature include databases such as Google Scholar, Science Direct, PubMed, and MEDLINE.

2.2.1 Predisposing characteristics of postnatal women.

In this study, predisposing characteristics refer to the socio-demographic characteristics and the use of maternal health services. The following section reviews extensive literature on the predisposing characteristics of postnatal women.

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2.2.1.1 Demographic characteristics of postnatal women

A mother's health and that of her newborn cannot be separated from each other. As such, socio-demographic characteristics of women have an influence on newborn survival and similar relationships could exist between these factors and the practice of essential newborn care. Age of the mother at birth is one of the socio-demographic characteristics that have an influence on the practice of ENC. The relationship between early childbearing and health disadvantages of both mother and baby has been established (Jain & Kurz, 2007) and evidence from low-middle income countries shows that adolescent mothers are more likely to face severe consequences during delivery resulting in adverse outcomes, high maternal mortality and poor newborn outcomes (Fatusi & Hindin, 2010; Rasheed, Abdelmonem, & Amin, 2011).

Recently, the increasing number of child marriages in low-middle income countries has led to a significant number of postnatal women being teenagers. According to Ghana Statistical Service et al. (2015), 14% of women age 15-19 had begun childbearing as revealed by the findings of the 2014 Ghana Demographic and Health survey. It was also revealed in the same survey that 70% of women in their menopausal period were above 43 years. Corroborating the findings stated above, other studies among postnatal women yielded similar results. According to Gyesaw and Ankomah (2013), about 12% of adolescent girls between ages 15 and 19 years were pregnant or had already given birth in a suburb of Accra. Additionally, the youngest first-time mothers were also common in Angola, Bangladesh and Niger. However, in Asian countries, such as South Korea and Hong Kong, women tend to give birth to their first child at age 29 and above.

It is often asserted that mothers' educational level has an influence on maternal and newborn health services utilisation. Recently, mother's education has been widely reported as a factor having a strong influence on maternal and newborn health services utilisation. In Ghana, the

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2014 GDHS showed that only 6% of women had attained more than a secondary education. Similarly, a cross sectional study revealed that 10.4% of mothers had formal education in Northern Ghana (Saaka & Iddrisu, 2014). This is probably due to the rural nature of the study area where cultural predispositions towards gender inequality is an impediment to female education. According to Lambert, Perrino, and Barreras (2012), traditional Ghanaian culture does not always have a positive perception on females who aspire to attain higher educational levels, especially in the rural northern settings. However, Bloom, Canning, and Chan (2015) cited poverty as major obstacle for obtaining higher education in sub-Saharan Africa.

Though the level of education among Ghanaian women is discouraging, similar circumstances exist in other low and middle income countries. In Kenya, only 18.1% of women in a cross sectional study on institutional deliveries had formal education up to secondary level or higher (Kawakatsu et al., 2014). Since educated women are more likely to deviate from tradition to use modern ways of improving their health (Shoaib, Munir, Masood, Ali, & Sher, 2012), this trend may have an effect on the adoption of essential newborn care practices by postnatal women. For instance, in Ghana, where almost a quarter of school-aged girls do not attend school, policymakers point to low levels of women's education as an ultimate reason for the slow improvement in maternal and child health (Greenaway, Leon, & Baker, 2012).

Moreover, parity is also another socio-demographic characteristic that can influence the practice of essential newborn care and newborn survival. Evidence available have shown that parity has a linkage with facility delivery; hence could influence the practice of essential newborn care and newborn survival. A cross-sectional household survey conducted in Sudan showed a significant influence of parity on institutional deliveries (Abbaker et al., 2013). Similarly, parity was found to have a significant influence on facility delivery in Tanzania (Ndao-Brumblay, Mbaruku, &

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Kruk, 2012) and in south Asia (Das et al., 2016). These findings indicate that parity could have an influence on the practice of essential newborn care because women who deliver in institutions will receive better education on essential newborn care practices than women who deliver at home. It is therefore imperative to consider parity of women in a newborn care research.

A cross sectional study on factors affecting newborn care practices in Bangladesh was conducted by Shahjahan, Ahmed, Rahman, and Afroz (2012). Of their total sample size of 6,150 postnatal women, 33.2% were primiparous and 66.8% were multiparous women. Similarly, Samayam and Krishna (2016) found that 41.1% and 58.9% of their respondents were primiparous and multiparous women respectively. On the contrary, Kabwijamu et al. (2016) in a cross sectional study on newborn care practices in Uganda found that 72% of the respondents were primiparous whereas 28% were multiparous women. However, this contradiction is not surprising since the respondents in the study by Kabwijamu et al. (2016) were adolescents.

Furthermore, marital status of postnatal women could have an effect on the practice of essential newborn care; hence a socio-demographic characteristic that should be assessed in every newborn care research. According to the 2014 GDSH, less than half (42.2%) of the women included in the survey were married. However, subsequent studies among postnatal women revealed otherwise. According to Saaka and Iddrisu (2014) 89.4% of postnatal women were married in rural areas of Northern Ghana. Similarly, Nti, Gadegbeku, Dodoo, Ofosu, and Mabel Agbi-Dzorkar (2014) found that 64.3% of postnatal women in Ghana were married whilst 35.7% were either single or cohabitating. Again, 89.6% of postnatal women were married in Uganda (Ayiasi, Criel, Orach, Nabiwemba, & Kolsteren, 2014) and 91.4% married in Nigeria (Somefun & Ibisomi, 2016).

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Though marriage may be a source of support for the care of the newborn baby, the demerits of early or child marriage outweighs its importance. According to Svanemyr, Chandra-Mouli, Christiansen, and Mbizvo (2012), child marriage is not only a violation of fundamental human rights, but also served as a barrier to achieving some of the MDGs. Globally, over 700 million women alive today were victims of early or child marriage (Nguyen & Wodon, 2015). In a cross sectional study among postnatal women, Kabwijamu et al. (2016) found that more than half of adolescents (55.4%) were married and had given birth in Western Uganda. Similarly, early marriage and childbearing are still quite prevalent in India, especially in rural areas; 18% and 47% are married before 15 years and 18 years respectively (Sinha et al., 2016).

Despite tremendous progress made on the efforts in reducing the number of children that are usually given out for marriage in many countries (Loaiza & Liang, 2013); the global rates of child marriage, especially in low and middle income countries remain very high. This trend necessitates the need for rigorous policies and pragmatic efforts informed by evidence to curb this menace.

Finally, ethnicity or caste could be an important determinant for the practice of essential newborn care, especially in areas where the caste system exist and some castes are considered as superior over others (Tuladhar, 2010). Often the castes that are considered as inferior are disadvantaged in terms of education and this may influence their propensity to practice recommended newborn care. Ethnicity and maternal education was found to be associated with safe cord care practices, breastfeeding practices and thermal care (Kaphle et al., 2013).

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2.2.1.2 Use of maternal health services (ANC attendance and place of delivery)

Antenatal care is an important component of the continuum of maternal health care and refers to the care given to a pregnant woman from conception to the point of delivery. Though there is no consensus about the number of antenatal visits for pregnant women (Beeckman, Louckx, Masuy-Stroobant, Downe, & Putman, 2011), the WHO has recommended for all pregnant women to have at least four antenatal care (ANC) visits before delivery.

Antenatal care visits provide an opportunity where important information and education about the health of the mother and her unborn child is given by healthcare professionals. ANC visits also afford the health worker an opportunity to detect and treat asymptomatic diseases such as pregnancy-induced diabetes and hypertension. As indicated by Sinha et al. (2016), these interventions received by the pregnant woman during ANC visits have the potential to improve the chances of survival of the women and her newborn baby. Additionally, other benefit of ANC is that women who utilize ANC may eventually deliver at a health facility with a skilled birth attendant (Pervin et al., 2012).

However, in spite of the benefits associated with the use of antenatal care services, many countries do not seem to be making progress in terms of the utilization of these services as recommended by the WHO. Consequently, several studies have sought to assess the level of ANC utilization and identify factors that may be influencing ANC utilization in both high and low-middle income countries. The measurement of ANC utilisation is different across studies; therefore findings should be interpreted with great caution. These include the initiation of visits (Baker & Rajasingam, 2012; Boerleider, Wiegers, Manniën, Francke, & Devillé, 2013; Choté et al., 2011), the number of antenatal visits (Feijen-de Jong et al., 2011; Heaman et al., 2013) and

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the timing of initiation of ANC (Beeckman, Louckx, & Putman, 2012; Martínez-García et al., 2012).

The utilisation of ANC services is universal in high income countries, with every pregnant woman having to attend ANC before delivery. According to Beeckman, Louckx, and Putman (2010), the median number of antenatal visits was 12 with a range between 3 and 41. This indicates that every pregnant woman had at least three ANC visits before delivery. Similarly, Feijen-de Jong et al. (2011) revealed that ANC utilization was universal in high income countries. However, the situation is quite different in low-middle income countries where poverty is endemic.

In a cross sectional study by Pell et al. (2013) in Northern Ghana, 97% of pregnant women had at least one ANC visit before delivery. Likewise, another cross sectional study found that 96% of Ghanaian women had at least one antenatal care visit while pregnant (Afulani, 2015). Though ANC attendance was almost universal in Ghana, contrary findings have been reported in other African countries. In Kenya, 29.7% of pregnant women never attended ANC before delivery (King'oo, 2015), and over one third of pregnant women in Nigeria do not attend ANC service during pregnancy (Fagbamigbe & Idemudia, 2015). Given that ANC attendance influences women's decision for a facility delivery (Wilunda et al., 2015), this trend may have a negative influence on the adoption of good newborn care practices since mothers are usually educated or counselled on these practices after delivery and discharge.

Despite higher numbers reported to have initiated ANC before delivery in some sub-Saharan African countries, the number of pregnant women who are able to attend the recommended number of ANC by the WHO are still discouraging. In Nigeria, it was found that 51% (Dahiru &

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Oche, 2015) and 56.2% (Fagbamigbe & Idemudia, 2015) of pregnant women had adequate number of ANC visits during their last pregnancies. This situation is not peculiar to Nigeria as similar findings have been reported in other low-middle income countries. According to Ayiasi, Kasasa, Criel, Orach, and Kolsteren (2014) 42.3% of respondents had a minimum of four ANC visits in their previous pregnancies in Uganda; and as low as 37.6% in Tanzania (Gupta et al., 2014). Obviously, this trend could be attributed to low income levels of women in Africa, but the fact that maternal health services are now free in most African countries leaves the situation much to be desired. Nonetheless, Muhwava, Morojele, and London (2016) in a cross sectional study found that 84 % of women had at least four ANC visits before delivery in South Africa.

Interestingly, Broeck, Feijen-de Jong, Klomp, Putman, and Beeckman (2016) found that 9.7 % of the women from Belgium reported inadequate care as compared to 5.6 % among the Dutch women. Furthermore, only 45.5 % of the women in Belgium, compared to 58.3 % of Dutch women, were assigned to the appropriate ANC group. Though these findings may be unsatisfactory for high income countries, the differences in the tool used to classify ANC utilization is probably responsible for this outcome. For instance, a comparison of the tool used to measure the adequacy of ANC utilisation with other studies in low-middle income countries shows different features and different rating schemes. Whilst adequacy of ANC utilisation was limited to just the number of visits (Gupta et al., 2014; Muhwava et al., 2016); the classification was expanded to reflect the extent to which a minimum amount of care recommended by national obstetric guidelines for every pregnancy was received (Broeck et al., 2016).

The second segment of maternal health care, institutional delivery or delivery with a SBA allows for the skilled medical personnel to detect risk during labour and delivery and provide interventions to avert any complications. Usually, counselling or education on safe newborn care

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practices is provided to the mother after delivery. It has been estimated that every year about 60 million births do not occur at health facilities, of which 52 million of these births are attended by unskilled individuals (Darmstadt et al., 2009). Having access to skilled care during delivery is one of the strategies that can reduce both maternal and neonatal mortality. However, there is less access to skilled care during delivery in sub-Saharan Africa and South Asia (Dahiru & Oche, 2015). Nonetheless, there has been recent tremendous increase in the rate of facility delivery in some low-middle income countries.

According to Diamond-Smith and Sudhinaraset (2015), over 65% of deliveries are attended by some skilled birth attendant (doctor, nurse, or other trained health provider) in Africa and Asia. A recent Ugandan study by Kabwijamu et al. (2016) found that 78.8% and 21.2% of respondents had facility and home deliveries respectively. Corroborating this finding, similar result was reported in a cross sectional study conducted in three regions of Ghana. Out of the 1,497 women included in the analysis, 75.6% of them delivered in health facilities (Enameh et al., 2016). Even though the methods employed in these studies are appropriate, they did not compare rural and urban women.

Despite the great strides made in terms of facility delivery or skilled attendance at delivery, the situation is appalling and unacceptable in other low-middle income countries. In a cross sectional study with a sample size of 373 postnatal women in Ethiopia, only 18.8% had skilled birth attendance (Alemayehu & Mekonnen, 2015) . Similarly, findings from Fekadu and Regassa (2014) in the same country indicated that only 4.5% women in rural areas received assistance from skilled birth attendants (SBAs) compared to 64.1 % of their urban counter parts. Moreover, Adewemimo, Msuya, Olaniyan, and Adegoke (2014) revealed that 13% (n = 52) had their births assisted by skilled personnel and of the 52 women, 56% (n = 29) delivered in a health facility.

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This trend of low facility deliveries has a great influence on the practice of safe newborn care practices among postnatal women.

2.2.2 Enabling resources of postnatal women.

The enabling resources that could have an influence on the practice ENC by post natal women include knowledge on ENC practices, socioeconomic class (SEC) and education or counselling on ENC practices from a health worker. Health workers' counselling on safe neonatal practices was reported as an important factor influencing the survival of newborns (Jensen et al., 2015). Additionally, Rama, Gopalakrishnan, and Udayshankar (2017) asserted that, creating awareness about essential newborn care through education or counselling is a key step in achieving the goals of child health programmes. The relevance of this was corroborated by Sines, Syed, Wall, and Worley (2007) who demonstrated that health education information from a skilled health provider optimizes mother and newborn health, promote healthy behaviour and household practice. However, educating and counselling mothers on essential newborn care is not a guarantee for its practice. That notwithstanding, health workers' counselling of mothers on safe neonatal practices is a very important factor influencing the survival of newborns (Lassi, Das, Salam, & Bhutta, 2014).

In recent times, several studies on newborn care have assessed the level of education or counselling of postnatal women on newborn care practices. According to Renfrew et al. (2014), results from a new framework for maternal and newborn care showed that a greater proportion of postnatal women indicated to have received education on safe newborn care practices. Similarly, Sibley et al. (2014) indicated that more than 50% of postnatal women were counselled on safe newborn care in Ethiopia.

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Additionally, Dhingra et al. (2014) conducted a qualitative study on delivery, immediate newborn and cord care practices in Tanzania. Despite the methodological differences from the studies by Renfrew et al. (2014) and Sibley et al. (2014), similar findings were discovered. It was found that nearly all TBAs counselled the mothers on safe newborn care practices at the community level; therefore the relevance of the role of TBAs in the health care delivery system cannot be downplayed.

However, other studies had contrary findings. Memon, Khan, Soofi, Baig, and Bhutta (2015) conducted a systematic literature review of both qualitative and quantitative studies on pregnant women and healthcare professionals in high income countries. It was found that pregnant women were not receiving adequate education on good nutrition. Although healthcare practitioners recognise nutrition education as important, barriers to providing such education to pregnant women included lack of time, inadequate resources and lack of relevant training.

In terms of knowledge on safe newborn care practices, its relevance cannot be overlooked in every newborn research. Generally, utilisation and practice of a health care service is largely dependent on the knowledge about the benefits of those practices; hence the more people know about the benefits of an intervention, the more likelihood of its practice. According to Kaur, Grover, and Kaur (2016), a mother is the principal source of primary care to the newborn and her knowledge about essential newborn care practices is very important. Therefore, various researches in the area of newborn care have determined the knowledge of postnatal women on safe newborn care practices.

A cross sectional study was conducted by Meghadipa and Anuradha (2016) to assess the knowledge and practice regarding newborn care practices among postnatal mothers in India.

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Using a structured questionnaire to assess the level of knowledge among 189 mothers, the majority of them (91.5%) had satisfactory knowledge on good newborn care practices. In another study in Eastern Ethiopia, 80.4 % of mothers had good knowledge on essential newborn care at home, whereas 19.6 % of them had inadequate knowledge (Misgna et al., 2016).

However, a descriptive cross-sectional study among postnatal women by Acharya, Dhakal, Chaudhary, and Baral (2015) yielded contrary results. Out of 245 postnatal mothers included in the study, 61.6% had average knowledge while 38.4% had good level of knowledge regarding safe newborn care practices. Though the sample size was adequate for a quantitative study, the major limitation is that, a non-probability purposive sampling technique was used to select the participants for the survey. This sampling technique did not give equal opportunity for prospective participants to be included in the study; hence, the findings may be deceptive. Nevertheless, only 14.2% of mothers had adequate knowledge on home based newborn care practices in a study that employed the appropriate quantitative methodology (Mohini & Shetty, 2017).

Again, Rama et al. (2017) conducted a cross sectional study on the assessment of knowledge regarding newborn care among Indian mothers. The findings revealed that only 15% of the postnatal mothers had adequate knowledge regarding recommended newborn care practices. Even though Bansal and James (2016) reported similar findings where only 12% of respondents had high level of knowledge on ENC practices, a smaller sample size (50) was used. Thus, this may not be a consistent finding to that of Rama et al. (2017). Nonetheless, there is the need for a better focused awareness creation and education programmes and policies to improve the level of knowledge among mothers on recommended newborn care practices.

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Furthermore, among the different factors that might have an influence on the utilization of modern services, socioeconomic factors are of great importance to many researchers. This is because, in practice, the effect of socioeconomic status can be controlled and modified as compared to other factors such as age and gender. Due to the socioeconomic disparities between rural and urban areas (Assah, Mbanya, Ekelund, Wareham, & Brage, 2015), many studies on newborn care have examined the socioeconomic status of mothers.

According to Osei-Kwakye, Otupiri, Dabo, Browne, and Adjuik (2010), most mothers were assessed to be in the middle level with regard to socioeconomic class in the Builsa District of Northern Ghana. This finding agrees with that of Opara et al. (2012) where 24.4% (n = 54) of mothers were in the high social class, while 29.4% (n = 65) and 46.2% (n = 102) were of middle and low social classes respectively. On the other hand, most of the mothers surveyed (46.3%) were from the lower socioeconomic class with 37.5% and 16.2% from the middle and upper socioeconomic classes respectively (Onah et al., 2014).

However, the situation is different in other low-middle income countries where more rural dwellers belong to the high socioeconomic class than urban dwellers. An exploratory study on socioeconomic status scales was conducted by Masthi and Gangaboraiah (2013) in a rural and urban settings in India. Among the 60 families surveyed at the rural setting, it was observed that, majority 67% (n = 40) belonged to high socioeconomic class; whereas among the 60 families surveyed at the urban setting, 50% (n = 30) belonged to high class.

2.2.3 Patterns of Essential Newborn Care practices

Essential newborn care practices that protect against newborn morbidity and mortality include clean cord care, good thermal care, and initiation of good feeding practices including exclusive

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breastfeeding. Essential newborn care aims at addressing poor care practices immediately after delivery and within the first 28 days of life. Skilled care at birth and good newborn care practices is crucial for newborn survival (Bosomprah, Tatem, Dotse-Gborgbortsi, Aboagye, & Matthews, 2016) and encouraging the uptake of essential newborn care practices is one strategy for improving newborn health outcomes (Callaghan-Koru et al., 2013). Below is the literature review under the three key areas.

2.2.3.1 Patterns of cord care practices

The application of a substance to the cord stump is an unsafe practice and is a risk factor of cord infection which can cause early neonatal deaths. Thus, dry umbilical cord care practices for newborns, especially in areas where hygiene is poor, have the potential to avoid these preventable neonatal deaths. Since harmful traditional cord-care practices are often cited as an important public health concern (Sharkey et al., 2017), a clear understanding of the reasons underlying traditional cord care practices in low- middle income countries can be helpful in preventing neonatal sepsis. However, the benefits of dry cord care may not be limited to only low-middle income countries, but transcends to other countries. Quattrin, Kim Iacobucci, Gallina, Pittini, and Brusaferrò (2016) contend that dry cord care is the best way of caring for the umbilical cord among newborn in high-income settings.

Although several evidential reviews of cord care practices have been conducted previously (Imdad et al., 2013; Karumbi, Mulaku, Aluvaala, English, & Opiyo, 2013), other studies, both locally and internationally have described the patterns of newborn care practices among postnatal women. Hill et al. (2010) conducted a study on clean delivery practices among home deliveries in rural Ghana. Data on the prevalence of safe delivery behaviours was collected from mothers who delivered at home within a one year period through a demographic surveillance system. In

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terms of safe cord care, it was found that 80% of families practiced dry cord care. Since the application of substances to the cord was associated with cord infection in sub-Saharan Africa (Kinanu, Odhiambo, Mwaura, & Habtu, 2015), this outcome may play an important role in reducing neonatal sepsis in rural areas.

Similarly, a cross sectional study on umbilical cord care practices among postnatal women in the Volta Region of Ghana was conducted by Nutor, Kayingo, Bell, and Joseph (2016). It was found that 74% of the respondents practiced safe cord care whilst 26% practiced unsafe cord care. This is consistent with the finding of Devkota and Bhatta (2012) where 86.0% of the respondents did not apply any substance on the stump. Again, Bibhash, Kaur, Dan, Pasi, and De (2016) reported that 90.1% of rural Indian mothers kept the neonates cord stump clean without applying any substance. Consequently, Bhatt, Malik, Jindal, and Sahoo (2015) discovered that 38.5% of illiterate study participants practiced safe cord care whereas 65.6% of mothers who had formal education practiced safe cord care

In contrast however, other studies have discovered high levels of unsafe cord care practice in other countries. In Cameroon, Monebenimp et al. (2013) conducted a cross sectional study in four health facilities to determine the knowledge and practice of mothers on essential newborn care. These health facilities were put into two groups in relation to the quality of skilled personnel, I and II comprising of two facilities each. A total sample size of 347 mothers (135 in group I and 212 in group II) were recruited for the study. The finding from the study show that mothers' practice on essential newborn care was poor. Overall, the application of traditional substances on the umbilical cord was found among 54.2% (n = 188) mothers with 51.1% (n = 69) in group I and 56.1% (n = 119) in group II. The study design was appropriate and the total

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sample size was also adequate for the study. However, for a comparative analysis involving two groups, equal sample size would be more appropriate.

Additionally, Opara et al. (2012) conducted a study in Nigeria to assess newborn cord care practices among mothers. Out of the total sample, 62.4% applied other substances including antibiotic ointments and herbs to the cord stump. As Gul, Khalil, Yousafzai, and Shoukat (2014) contends that home delivery is a risk factor for unsafe cord care, Opara et al. (2012) further established that place of delivery was significantly associated with cord care practices. Consistent with this finding, 74.3% of postnatal women in rural communities of Nepal applied various substances including ash, oil, medical drugs and powder was applied to the cord stump (Kaphle et al., 2013) . Though this finding is overwhelming, the higher proportion of home deliveries (53.4%) among the respondents could be accountable for the outcome. Likewise, there was a decline in dry cord care among women who delivered at home from 74.0% to 50.5% in Nepal (Målqvist, Pun, & KC, 2016).

Moreover, in a qualitative study on clean delivery practices in rural Northern Ghana, the practice of unsafe cord care was prevalent with 71.4% of the respondents indicating to have applied a substance on the cord stump (Moyer et al., 2012). Though vast disparities between safe and unsafe cord care practices has been widely reported, other studies did not show significant difference between safe and unsafe cord care practices among postnatal women. A study in rural areas of India revealed that almost half (49.9%) of mothers reported to have applied some substance on the cord stump whilst 50.1% did not (Houweling et al., 2013). However, in a similar Indian study, there was a wide gap in newborn cord care practices among postnatal women (Nimbalkar, Shukla, Phatak, & Nimbalkar, 2013).

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2.2.3.2 Patterns of thermal care practices

The WHO recommends that a newborn baby is not supposed to be bathed until after 24 hours of delivery; hence, bathing a newborn within the first 24 hours of delivery is a bad practice. According to Onalo (2013), early bathing of babies is a risk factor of hypothermia in sub-Saharan Africa and hypothermia is considered an important contributor to neonatal morbidity and mortality in low income countries. Although hypothermia is not a direct cause of neonatal death, it accounts for a significant number of neonatal deaths globally, mostly as a comorbidity of neonatal sepsis (Lunze, Bloom, Jamison, & Hamer, 2013; Seyum & Ebrahim, 2015)

Additionally, delayed bathing of newborns was a significant contributor to a reduction in neonatal mortality in Bangladesh (Akter, Dawson, & Sibbritt, 2015), hence the need to encourage delayed newborn bathing in lower-middle income settings. Despite delayed bathing of newborns being widely promoted, Lawn et al. (2013) argued that there is insufficient evidence regarding the exact number of hours to delay, especially if it can be a warm bath and done in a warm room. Underpinning this argument, it is evident that a gap exists between policy dissemination and implementation; hence the need to revise the modalities of educating the populace on modern and beneficial practices.

Even though there is enough evidence to support the benefits of delayed newborn bathing, it is the most poorly practiced component of the essential newborn care package, especially in sub-Saharan Africa. Callaghan-Koru et al. (2013) conducted a cross-sectional household survey to examine newborn care practices at home and in health facilities in Ethiopia. In their findings, common beneficial newborn care practices included exclusive breastfeeding (87.6%), and dry cord care (65.2%); whereas harmful practices that were reported include newborn bathing within

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24 hours of delivery (74.7%), application of substances to the cord (19.9%), and discarding colostrum (44.5%).

Moreover, in a cross sectional study by Gul et al. (2014), 86% of respondents reported that the first bath of their newborns was within 24hrs of delivery in Pakistan. Similarly, it was reported by Waiswa, Kallander, Peterson, Tomson, and Pariyo (2010) that more than half (58%) of newborns had poor thermal care. This situation is not different from the practice in Africa as delayed bathing was found among 32.6% of Ethiopian women (Berhe, Medhaniye, Kabsay, Birhane, & Abay, 2017). In spite of the differences in sample sizes, the similarities in methodological approach could be accountable for the consistent findings in these studies.

Unlike Berhe et al. (2017) who used a quantitative approach with larger sample size, Salasibew, Filteau, and Marchant (2014) conducted a qualitative study among Ethiopian mothers. Regardless of the methodological differences, similar findings emerged as immediate bathing was a common practice and mothers reported that either the TBA or the one who conducted the delivery bathed the newborn immediately after delivery. In some cases, the newborns were bathed before the placenta was delivered.

As it is common in sub-Saharan Africa and other low income countries, there are cultural beliefs and practices associated with newborn bathing after delivery. For instance, in typical rural Ghanaian communities, bathing a baby immediately after delivery is accepted because of the presence of vernix caseosa, which is seen as something “dirty”. According to Adejuyigbe et al. (2015), the main reason for universal bathing of newborns immediately after delivery in Nigeria was a belief that amniotic fluids could cause body odour later in life. Again, Sharma et al. (2016)

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concluded that immediate newborn bathing is a customary rite to purify the baby in the rural areas of Nepal.

Nonetheless, the phenomenon of poor thermal care practice appears to be different in other low-middle income countries. In a recent Ugandan study, about 60% of the mothers did not bath their babies within the first 24 hours of delivery (Kayom, Kakuru, & Kiguli, 2015). This corroborates the practice in Nepal where 86.1% of newborns were bathed after 24 hours in (Shiva & Asmi, 2014).

2.2.3.3 Patterns of breastfeeding practices

Good feeding practices in the neonatal period and adequate nutrition during infancy are essential for proper growth and development, both physically and mentally. The WHO recommends for infants to be exclusively breastfed for the first six months with much focus on the neonatal period (World Health Organization, 2012) . This to a large extent has been considerably accepted and practiced due to the increasing scientific justification of the importance of exclusive breastfeeding. As indicated by Abdulmaleek and Musa (2016), exclusive breastfeeding provides nutritional, immunologic, developmental and psychological advantages with regards to general health, and growth and development of the newborn. Several studies have been conducted to assess the patterns of breastfeeding practices, both in the neonatal and post neonatal periods.

A cross sectional survey was conducted by Sasaki et al. (2010) to determine the predictors of exclusive breastfeeding in early infancy. Using a simple random sampling technique, 312 mothers were included in the study. Their finding suggest high level of good breastfeeding

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practice as 83% of mothers fed breast milk exclusively in the first month. In a similar study, Asemahagn (2016) reported an exclusive breastfeeding rate of 79% among mothers in Ethiopia.

Additionally, Samayam and Krishna (2016) conducted a prospective observational study to determine maternal factors influencing exclusive breastfeeding of babies at six weeks of age in India. Out of 200 mothers included in the study, 92.78% of them were exclusively breastfeeding their babies at 6 weeks of age. This finding is widely consistent with what has been described in other studies. For instance, in a prospective cohort study in six low and middle income countries, Patel et al. (2015) reported the rates of exclusive breastfeeding at 42 days of birth to range between 76% - 99.5%.

Again, Tampah-Naah and Kumi-Kyereme (2013) in a cross sectional study observed that the rate of exclusive breastfeeding was 64% among mothers in Ghana. This finding is also consistent with the national exclusive breastfeeding rates in Ghana. While exclusive breastfeeding rates have been reported to be as low as 36 % in low to middle income countries (Mangasaryan et al., 2012), periodic national surveys concluded that Ghana's exclusive breastfeeding rate in the general population is currently over 50% (Dun-Dery & Laar, 2016).

Despite the enormous benefits of exclusive breastfeeding in the neonatal period, pre-lacteal feeding is still a common practice in some countries. According to Darmstadt et al. (2007), supplemental substances were given to 44% of Egyptian newborns as pre-lacteal feeds, and to more than half during the first week of life. Elsewhere in Nepal, an overwhelming 80.4% of newborns that were included in a cross sectional study received pre-lacteal feeds within the first 2 weeks of life.

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This trend can be attributed to lack of awareness about harmful effects of pre-lacteal feeding or the cultural beliefs associated with it. For instance, the main reasons for giving water to neonates in Congo were “heat” and the cultural belief that water is needed for proper digestion of human milk (Yotebieng, Chalachala, Labbok, & Behets, 2013).

2.2.4 Relationship between predisposing characteristics and knowledge on Essential Newborn Care practices.

Knowledge on essential newborn care practices has an influence on its practice (Senarath, Fernando, & Rodrigo, 2007) just as predisposing characteristics may have an influence on the knowledge of essential newborn care practices (Adebayo, Leshi, & Sanusi, 2014). In view of that, several studies have investigated the relationship between predisposing characteristics of postnatal women and their level of knowledge on essential newborn care practices.

In one Ethiopian study, Misgna et al. (2016) conducted community-based cross-sectional study among 296 mothers using simple random sampling technique. It was found that marital status and educational status were significantly related to mothers’ knowledge. Consistent with this finding, Priyadarshanie and Pethiyagoda (2015) pointed to level of education and occupation as having a significant relationship with knowledge of essential newborn care practices among postnatal women. Again, Punitha and Kumaravel (2016) discovered that higher education and higher maternal age were related to significantly higher knowledge scores on newborn care in India; whereas among Iranian women, only higher level of education was significantly related to higher knowledge score (Mandal & Ghosh, 2016).

Though parity, ANC follow ups and occupational status had no significant relationship with knowledge of mothers on essential newborn care in Ethiopia (Misgna et al., 2016), contrary

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findings has been reported elsewhere. In Sri Lanka, there was a significant positive relationship between parity and knowledge on essential newborn care (Dayaratne & de Silva, 2016). Among postnatal women in Nepal, level of knowledge on safe newborn care practices was significantly related to occupation and education level (Timilsina & Dhakal, 2015).

2.2.5 Predictors of Essential Newborn Care practices

2.2.5.1 Predictors of safe cord care

The WHO recommends dry cord care (safe cord care) where nothing is supposed to be applied on the cord stump of the newborn (World Health Organization, 2012). However, various descriptive studies done in low-middle income countries have reported that majority of mothers apply substances such as oil, ash, herbal preparations, ointment and cow dung on the cord stump (Berhe et al., 2017; Moyer et al., 2012; Saaka & Iddrisu, 2014). On the other hand, other studies have reported higher rates of dry cord care among mothers in low-middle income (Bibhash et al., 2016; Hill et al., 2010; Nutor et al., 2016). It therefore became imperative for other researchers to determine the factors that predict safe cord care among postnatal women at both facility and community levels.

Owor, Matovu, Murokora, Wanyenze, and Waiswa (2016) examined factors associated with adoption of beneficial newborn care practices among postnatal women in rural Eastern Uganda. Using a Cross-sectional study design, 1,616 mothers were randomly selected to participate in the study. Education of the mother was positively associated with adoption of safe cord care; where those women who attend primary and above education were more likely to practice safe cord care as compared with those women who were unable to read and write. Similarly, educational status was a significant predictor of safe cord care practice among women in Bangladesh

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(Shahjahan et al., 2012) with educated women more inclined to safe cord care practice than uneducated women. Place of delivery was also reported as a significant predictor of safe cord care in the study by Owor et al. (2016).

Additionally, Kokebie, Aychiluhm, and Alamneh (2015) studied newborn care practices and associated factors among mothers who gave birth within one year in North-western Ethiopia. It was a community based study where 539 postnatal women were selected to participate. Mothers' education was a significant predictor of safe cord care. Those who were at primary school and high school and above level were more likely to adopt good newborn care practice than those without formal education. This is in conformity with what was reported in Pakistan, where illiterate mothers were more likely to use harmful newborn care practices (Gul et al., 2014).

Among rural Indian mothers, Bibhash et al. (2016) found place of delivery to be a significant predictor of safe cord care. Having a home delivery was a significant factor for non-adoption of safe cord care, whereas women who delivered in a health facility were more likely to practice safe cord care. In contrast however, Ayiasi, Kasasa, et al. (2014) revealed that health facility delivery was not a predictor of safe cord care in a cross sectional study in Uganda.

Moreover, caste or ethnicity could have an influence on the practice of good newborn care practices. In view of this assertion, other studies on determinants of essential newborn care practices have cited ethnicity as one of the significant predictors of safe cord care practice. According to Tuladhar (2010), women belonging to lower caste or ethnic group were less likely to practice safe cord care than those who were in the upper caste group. This could be due to illiteracy and the cultural beliefs and perceptions associated with the application of substances to the cord stump among some ethnic groups. As indicated by Coffey and Brown (2017), the desire

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to hasten cord separation and promote healing are the underlying beliefs about the application of substances to the umbilical cord in sub-Saharan Africa. In rural northern Ghana, it is believed that dry cord care without applying any substance would have serious negative consequences on the newborn (Hill et al., 2010); hence the application of substance such as shear butter, local herbs, local oil, or “red earth sand” (Moyer et al., 2012).

In a qualitative study, Amare (2014) discovered that substances were applied on the cord to moisturize it, facilitate its separation and promote healing. Therefore, in communities where these beliefs are common, mothers are more likely to adopt unsafe cord care practices since the application of a substance has a perceived benefit. However, in areas with these beliefs and perceptions, recent studies have reported contrary findings where ethnicity did not emerge as a significant predictor of safe cord care practice (Bibhash et al., 2016; Owor et al., 2016).

Furthermore, Tura and Fantahun (2015) conducted a mixed method study on neonatal care practice and factors affecting it in Ethiopia. Place of residence, maternal education, husband’s occupation, socioeconomic status, parity and birth spacing were identified as predictors of neonatal care practice.

Interestingly, though educating or counselling mothers on safe cord care practices may translate into its practice, other researchers have reported otherwise. In a cross sectional study, Castalino, Nayak, and D'Souza (2014) revealed that knowledge on safe cord care did not translate into practice. This outcome may be a clear vindication of the gap that exists between knowledge and practice; hence the mere education or counselling of mothers on safe cord care will increase their knowledge level but may not translate into practice. Nonetheless, Chaudhary, Dhungana, and Ghimire (2013) found that mothers who had knowledge about newborn care were more likely to

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practice cord care than mothers who do not have knowledge about it. In a more recent study, Berhe et al. (2017) revealed that mothers who received counselling about the recommended newborn care practices immediately after delivery were more likely to adopt such practices than their counterparts who were not counselled.

2.2.5.2 Predictors of good thermal care practice

Thermal care is a very important component of essential newborn care as newborns are more susceptible to hypothermia, even in the tropical climates. Because newborns have limited and easily overwhelmed thermoregulatory mechanisms (Kumar, Shearer, Kumar, & Darmstadt, 2009), they lack the ability to regulate their own body temperature without thermal protection, with preterm babies being at high risk (Lunze & Hamer, 2012). There is empirical evidence that bathing newborns immediately after delivery increases the risk of hypothermia; hence, the need to delay newborn bathing for 24 hours as recommended by the WHO.

Despite the available evidence and emphasis on the importance of delayed newborn bathing, its practice has been very low, especially for home births in low-middle income countries (Pagel et al., 2014; Shamba et al., 2014). Although the factors determining the practice of delayed newborn bathing has been widely studied and reported, other factors identified has not been consistent with earlier studies (Victor, Baines, Agho, & Dibley, 2013). For instance, mothers' education, antenatal care and the presence of SBAs were found to have a positive influence on the practice of good thermal care in Nepal (Khanal, Gavidia, Adhikari, Mishra, & Karkee, 2014). Conversely, an earlier study in India found that ANC visits and the presence of SBAs were not significantly associated with good thermal care (Baqui et al., 2007).

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As might be expected, mothers who receive higher level of education should be more likely to practice good thermal care than illiterate mothers or mothers with lower levels of education. In a community based cross sectional study, Tegene, Andargie, Nega, and Yimam (2015) reported level of education and knowledge of newborn bathing time as significant predictors of good newborn care practices. Mothers with high education and above were more likely to practice good thermal care; likewise mothers who had knowledge on delayed bathing. This is consistent with the finding of Kokebie et al. (2015) where educational status was a significant predictor of essential newborn care practices which includes good thermal care. These findings are not surprising because women who are highly educated are more likely to have a better understanding of the benefits of delayed newborn bathing. Corroborating this assertion, Shoaib et al. (2012), reported that women with formal education were more likely to ignore cultural practices and use modern services that promote good health.

In Uganda, socioeconomic status of women was found to have a statistically significant influence on the practice of essential newborn care (Owor et al., 2016). Mothers of middle socioeconomic status were more likely to practice beneficial newborn care practices than those who belong to the low socioeconomic class. Consistent with earlier findings, socioeconomic status of women was a predictor of delayed bathing in Ethiopia; women with high wealth quintiles were more likely to delay newborn bathing (Tuladhar, 2010; Tura & Fantahun, 2015). In contrast however, an earlier study in Uganda reported no significant association between women's socioeconomic status and all the domains of essential newborn care practices (Lawn, Cousens, Zupan, & Team, 2005).

Additionally, findings from other studies suggest that place of delivery is a significant predictor of good thermal care practices. Women who deliver at health facilities are more likely to practice

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good thermal care than women who deliver at home. In a cross sectional study among postnatal women, Ayiasi, Criel, et al. (2014) indicated that women who delivered in a health facility were more likely to practice good thermal care than women who reported home delivery. Likewise, in Tanzania, delayed bathing was almost universal for those who delivered in a facility, but was varied for those who delivered at home (Adejuyigbe et al., 2015), indicating that facility delivery is a significant predictor of delayed newborn bathing. Contrary to what has been widely reported in literature, Kumola (2015) found that place of delivery was not a predictor of delayed newborn bathing. Additionally, a cross sectional study by Baqui et al. (2007) in India also revealed that place of delivery is not a predictor of the practice of good thermal care.

Moreover, in most communities, new mothers do not have adequate knowledge about good newborn care practices and many find it hard to rely on family members for consistent, accurate information and guidance about care of the neonate. Shoaib et al. (2012) stated that a mother is the principal source of primary care to the newborn and her knowledge about essential newborn care practices can be expected to have a significant bearing on the practice of good newborn care. Although many women may have a general understanding of the benefits of good newborn care practices, they lack the accurate information on the rationale for each essential newborn care practice. Many studies related to essential newborn care practices have cited knowledge level of mothers as a factor that influence essential newborn care practices.

2.2.5.3 Predictors of good breastfeeding practice

The WHO has recommended early and exclusive breastfeeding for first 28 days of life and subsequently for six months. There is sufficient scientific evidence to show that exclusive breastfeeding from birth to six months plays an important role in ensuring proper growth and development of children. Breastfeeding exclusively is essential for neonatal and infant survival,

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and proper growth and development (Utoo, Ochejele, Obulu, & Utoo, 2012) and protects them from early childhood illness (Cai, Wardlaw, & Brown, 2012). Despite the strong evidence on the benefits, this worldwide recommended and beneficial practice may not be followed by lactating mothers due to various reasons. According to UNICEF (2010), majority of the mothers in Africa and other low-middle income countries fail to practice exclusive breastfeeding as recommended due to various reasons. Consequently, several studies have sought to determine the factors that influence the uptake of this beneficial practice.

Available literature reveals that knowledge of mothers on exclusive breastfeeding has been reported to be a significant predictor of initiation and exclusive breastfeeding practice. Among Ethiopian mothers, maternal knowledge on good breastfeeding practices emerged as a predictor of exclusive breastfeeding (Kokebie et al., 2015). This agrees with what has been reported by other researchers where knowledge on exclusive breastfeeding was significantly associated with its practice (Adugna, 2014; Wen, Simpson, Rissel, & Baur, 2012). Again, in a Tanzanian study Maonga, Mahande, Damian, and Msuya (2016), found knowledge on exclusive breastfeeding and its advantages as a significant predictor of practicing exclusive breastfeeding. Though knowledge does not necessarily translate into practice, these findings give credence to the assertion that, knowledge influences behaviour (Mocan & Altindag, 2014).

However, the evidence that has widely cited knowledge as a significant predictor of the practice of exclusive breastfeeding may be inconclusive since other researchers have reported contrary findings. According to Patrick, Judith, and Peter (2016), maternal knowledge on exclusive breastfeeding was not significantly related to pre-lacteal feeding among Kenyan women. Though this finding may be strange, it has been corroborated by Dun-Dery and Laar (2016) where knowledge of exclusive breastfeeding and its benefits did not translate into practice.

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Again, in a cross sectional study by Arage and Gedamu (2016b), place of delivery was a significant predictor of the practice of EBF, where women who delivered in a facility were more likely to practice EBF. In a similar study, mothers who gave birth at home were more likely to practice pre-lacteal feeding as compared to mothers who delivered at health institutions (Legesse, Demena, Mesfin, & Haile, 2014; Roy, Mohan, Singh, Singh, & Srivastava, 2014). Agho et al. (2016) also reported place of delivery as a predictor of pre-lacteal feeding; where women who delivered at home were more likely to introduce pre-lacteal feeds to their newborns. These findings justify the need to encourage facility delivery where women can be counselled on good breastfeeding practices.

Moreover, Samayam and Krishna (2016) investigated the maternal factors influencing exclusive breastfeeding of babies at six weeks of age using a cross sectional study design. Mothers with education of pre-university course and more were less likely to practice exclusive breastfeeding than those with secondary school education and less. Also, Bililign, Kumsa, Mulugeta, and Sisay (2016) revealed that lack of counselling about breastfeeding as a significant predictor of pre-lacteal feeding. Since counselling has a positive correlation with knowledge (Egryani, Saktini, Susilaningsih, Puspitasari, & Gumay, 2017), there is the need to put more emphasis on the importance of counselling postnatal women on good breastfeeding practice.

In the Ghanaian context, Saaka and Iddrisu (2014) conducted a study on essential newborn care practices in rural areas of Northern Ghana. It was a community-based cross-sectional study with a sample size of 404 lactating mothers. In a logistic regression analysis, one of the main predictors of good neonatal feeding was the age of the mother. Compared to women aged at least 35 years, women aged 25–34 years were more than twice likely to give good neonatal feeding to their babies. The findings indicate that older mothers are more aware of the importance of

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breastfeeding than younger mothers. Contrarily, maternal age was not associated with safe cord care practices, breastfeeding practices and thermal care practices (Kaphle et al., 2013).

2.3 Summary of literature review

From the literature reviewed above, several descriptive studies provided very important information on the patterns of newborn care practices across the world. In low-middle income countries, the practices that have been reported are poor and these are the areas where progress in reducing neonatal mortality is almost stagnant. More studies that have employed a quantitative approach have identified both individual and contextual factors associated with the practice of essential newborn care by postnatal women. These findings are very useful in identifying the category of postnatal women who adopt recommended practices and those who do not. However, few studies have examined how these factors interrelate to influence the practice of essential newborn care. Again, few studies have employed a qualitative approach to explore the traditional practices and cultural beliefs about recommended newborn care practices.

Moreover, the description of newborn care practices was different among the studies reviewed. Some studies differentiated between home-based care and facility based practices while others studied them concurrently. The evaluation of maternal factors, healthcare professionals and the influence of significant others is essential when studying the factors that influence the practice of essential newborn care. However, most of the studies conducted so far have focused on the maternal factors such as the knowledge level and socio-demographic characteristics of mothers. Just a few studies have captured equally important determinants of good newborn care practices such as service availability and knowledge level of healthcare professionals on recommended newborn care practices.

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Despite the wide research publications on newborn care practices, there is paucity of literature on newborn care practices in the Ghanaian setting, especially literature on community level determinants. Again, much of the existing literature on the practice of essential newborn care among postnatal women have established associations between factors such as maternal knowledge, socio-demographic factors, service utilisation and newborn care practices. Descriptive studies have also indicated associations between several independent variables and newborn care practices; with a few examining such relationships statistically. However, there are still more areas in neonatal health that need to be further investigated especially the relationship between cultural beliefs/norms and the practice of essential newborn care.

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CHAPTER THREE

METHODOLOGY

This chapter outlines the methodology that was used to answer the research questions of the study. It includes the study design, study setting, study population, inclusion and exclusion criteria, sampling technique and sample size determination, data collection procedure, study instrument, data management and analysis, validity and reliability, ethical considerations, and limitations of the study.

3.1 Study Design

The study employed a quantitative approach; hence a cross sectional survey design was used to collect data from postnatal women about essential newborn care practices. A cross sectional design is a non-experimental study design that allows the researcher to examine relationships between study variables: independent variables or exposure and the dependent or outcome variables within the population under study without manipulating any of the variables (Levin, 2006).

According to Rubin and Babbie (2015), a cross sectional study is convenient by allowing the research to be less time consuming and inexpensive and gives a quick outlook view about the outcome and the characteristics associated with it. Though cross sectional study design has a major limitation of inferring causality (Levin, 2006), the survey approach to cross-sectional design allows for the collection of data from a larger sample size sufficient enough for generalization to the population of interest (Korn & Graubard, 2011). Therefore, cross sectional design enabled the researcher investigate the determinants of essential newborn care practices and to establish the relationships between the study variables within the stipulated time.

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3.2 Study Setting

The study was conducted in Bawku Municipality in the Upper East Region. The Bawku Municipality with its administrative capital at Bawku is one of the 13 Municipal and District Assemblies in the Upper East Region of Ghana. According to the Ghana Statistical Service (2015), the Municipality has a population of 98,538 persons, with the males being 47,254 (48%) and females 51,284 (52%). The urban population is 63.6% while the rural population constitutes 36.4%. The major ethnic groups in the municipality are Kussasis, Mamprusis, Bissangas and Moshies.

The total fertility rate, which is defined as the average number of children that would be born to a woman by the time she ended childbearing is 2.9 children. This implies that, women in Bawku Municipality would bear 2.9 children each if the 2010 age-specific rates continue unchanged. The proportion of literate males in the municipality is higher 57.6 % than that of females 39.3%. Health care in the municipality is provided through hospitals, health centres and private clinics. There are four sub-districts in the municipality with the following health facilities: two Hospitals, seven Health Centres, four public clinics, five private facilities, nine Community based Health Planning and Services (CHPS) centres, and one Nurses Training School. The Doctor – Patient Ratio is 1: 8315 and Nurse – Patient Ratio is 1: 551 in the municipality.

3.3 Study Population

The study population comprised all postnatal women in the Bawku Municipality in the Upper East Region.

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3.3.1 Inclusion Criteria

Postnatal women who had delivered a live baby in the past 12 months preceding data collection were included in the study.

3.3.2 Exclusion Criteria

Post natal women with a live baby less than 12 months but did not deliver within the confines of the Bawku Municipality were excluded from the study. Mentally derailed postnatal women and those who are healthcare professionals were also excluded from the study.

3.4 Sample Size and Sampling Technique

3.4.1 Sample Size

The sample size for the study was calculated using Yamane (1967) formula for sample size determination. According to Yamane (1967), the sample size can be calculated if the population size of the target group is known by using the formula below.

$$n = \frac{N}{1 + N(e)^2}$$

Where n= required sample size

N= population size

e= alpha level

According to the Bawku Municipal Health Directorate 2016 annual reports, the number of deliveries was 5060. With an alpha level of 0.05, the sample size is calculated below

$$n = \frac{5060}{1 + 5060(0.05)^2}$$

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$$n = \frac{5060}{13.65} = 370.696 = \mathbf{370}$$

Allowing a non-response rate of 10% the final sample size for the study was $37+370= \mathbf{407}$

3.4.2 Sampling Technique.

Ideally, every researcher would want to study the whole population to get the view of every single individual who qualifies to be part of the study. However, it is usually impossible to do this; hence the need to choose a sample from the population. According to Creswell and Clark (2007), a sample is a portion of elements taken from a population, which is considered to be representative of the population. Underpinning this statement, a multistage sampling technique was employed to select respondents for this study in three stages.

In the first stage, three (3) sub districts within the municipality were randomly selected for the study. The three sub districts were given proportional quotas based on the number of deliveries in the past one year. In the second stage, each sub district was divided into clusters and in each cluster; a complete list of all households was compiled. In the third stage, a systematic random sampling technique was then used in selecting the respondents for the study. All the households in each cluster was serially numbered and the sampling frame computed by dividing the total number of households in a cluster over the sample size. The first household was selected using simple random sampling and subsequent selection of households to visit was made by adding the sampling interval to the selected number. For households that were selected but did not have a target respondent, the next household was considered. This process continued until the required number of respondents was obtained in each cluster.

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3.5 Data collection instrument

A standard questionnaire developed by the Saving Newborn Lives Program was adapted and modified to meet the study objectives and answer the research questions appropriately. As part of the modification process of the questionnaire, some questions that were not applicable to my study were excluded and some responses changed as well. The questionnaire (see appendix D) was divided into four main sections. Section A collected data on respondents' socio-demographic characteristics: age, level of education, marital status, religious affiliation, employment status, type of employment, age of respondent's baby, ethnicity, monthly income and parity. Section B collected data on use of maternal health services (antenatal attendance and delivery care of respondents). These included number of ANC attendance before delivery, place of delivery and mode of delivery.

Section C assessed knowledge on ENC practices in three areas; safe cord care, good thermal care and good breastfeeding practices. The various domains consist of three interventions designed by the WHO in collaboration with UNICEF to improve newborn health and support mothers to care for their babies. Each item had a score ranging from 1 to 5 and a maximum total score of 15 on each of the three areas. A total score below 5 represents low level of knowledge, 6 to 10 represents moderate knowledge level and a score above 10 represents high level of knowledge. Total overall knowledge level of respondents on ENC practices was measured by adding the total scores on each of three areas. A total overall score below 15 indicated low knowledge level, 16 to 30 indicated moderate knowledge level and above 30 indicated high knowledge level.

Section D consisted of questions on immediate newborn care practices (cord care, thermal care and breastfeeding) after delivery and at home as well. The questionnaire tested and used by other

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researchers in previous studies in the area of newborn care practices. It was used by Karim et al. (2013) and the reliability of the questionnaire was reasonable (Cronbach's alpha of 0.77).

3.6 Data Collection Procedure

Prior to data collection, ethical approval was obtained from the Noguchi Memorial Institute for Medical Research (see appendix E). With an introductory letter from the School of Nursing and Midwifery of the University of Ghana, permission was sought from the Municipal Director of Health Services. Because the study is community based, further permission was sought from chiefs and other opinion leaders of the various communities before data collection. Four research assistants were trained to assist the researcher in data collection. After permission was granted, the purpose of the study was explained in the language the participants understand. If respondents agreed to participate in the study, they were required to sign or thumbprint a consent form to which they had the right to withdraw from the study at any point in time they wish to do so. For respondents who were below 18 years of age, the parental and child assent forms were signed as well. The consent forms were also witnessed by the principal investigator or the research assistants. After obtaining the consent of respondents, face-face interview with the written questionnaire was the main method of data collection. On each data collection day, the questionnaires were, interpreted and explained in the language the respondents understand and the appropriate response ticked or written out. With the help of the trained research assistants, this continued until the required sample size was covered.

3.7 Data Management and Analysis

The Statistical Package for Social Sciences (SPSS), now known as Predictive Analytics Software (PASW) version 20 was used to analyse the data. Filled-in questionnaires were checked for completeness, coded and entered directly into the software for analysis. Data cleaning was done

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after data entry by running frequencies and checking for out of range responses and missing values. Both descriptive and inferential statistical analyses were carried out to meet the study objectives.

Descriptive results took the form of frequencies, percentage distribution, means, minimum, maximum and standard deviations and presented in tables, and bar charts. Cross tabulation analysis was also carried out between the explanatory variables and the three dependent variables (safe cord care, good thermal care and good breastfeeding) to examine the pattern of essential newborn care practices. With a p-value of less than or equal to 0.05 ($p \geq 0.05$) as the significance level, the chi-square test of independence in the cross tabulation analysis was computed to examine the significant difference in essential newborn care practices (safe and unsafe, or good and bad practice) between the independent factors.

Moreover, a bivariate correlation analysis was done to establish the relationship between predisposing characteristics and enabling factors (knowledge of ENC practices). Since the dependent variable (knowledge on ENC practices) is measured on the interval scale, Pearson Product Moment Correlation (Pearson r) was used for continuous predisposing characteristics. Again, the knowledge on ENC practices was categorised into ordinal knowledge levels and a Spearman Rank Order Correlation (Spearman ρ) was used for correlation analysis between knowledge levels and categorical predisposing characteristics.

Furthermore, the simple binary logistic regression analysis was used to examine the relationships between each of the independent variables and dependent variables separately and the Odds Ratios (OR) and the 95% confidence intervals of each independent variable recorded. This is because the dependent variables of the study were binary in nature (measured in two levels);

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which is an assumption of binary logistic regression modelling (Harrell, 2015). Since binary logistic regression also assumes that $P(Y=1)$ is the probability of the event occurring (Allison, 2012), it is necessary for the dependent variables to be coded accordingly. Underpinning this assumption, all the three areas of essential newborn care practices were coded into 0 and 1, where 1 represents the preferred practice.

Finally, the multiple logistic regression analysis was then used to determine the predictors of recommended newborn care practices. The independent variables that had no statistically significant relationship with the dependent variables in the simple logistic regression analysis were excluded in the multiple regression analysis.

3.8 Validity and Reliability

According to Heale and Twycross (2015), validity is defined as the extent to which a concept is accurately measured in a quantitative study. In other words, validity expresses the degree to which a measurement instrument measures what it purports to measure (Bolarinwa, 2015; Zohrabi, 2013). On the other hand, reliability refers to the degree to which the results obtained by a measurement and procedure can be replicated (Drost, 2011; Ong, 2012). Also, Bolarinwa (2015) indicates that reliability is an extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.

To ensure validity, the researcher conducted an extensive literature review and thoroughly examined the adapted questionnaire to ensure that all the variables to be measured are included; questions that were irrelevant to the current study were removed and other questions modified to meet the study objectives. The questionnaire was also examined and scrutinised by experts and supervisors, and inputs were made to answer the research questions and meet the study

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objectives. Moreover, the adapted questionnaire for this study has been widely used by other researchers for similar studies (Callaghan-Koru et al., 2013; Karim et al., 2013; Tuladhar, 2010)

In ensuring reliability, a pre-test of the adapted questionnaire was conducted in the Navrongo Municipality with ten post natal women who met the inclusion criteria. This exercise was to check the appropriateness of the questionnaire, whether it is too long or short, difficult or easy to understand and difficult wordings, or contain culturally sensitive questions. The reliability coefficient was determined and the overall Cronbach's alpha of the questionnaire was 0.70 for the pre-test and the main study.

3.9 Ethical Considerations

Ethical considerations are very important aspects of the research process. The ethical principles underlying research are general and concern issues such as privacy, anonymity, confidentiality, honesty, and respect for fundamental human rights (Munn-Giddings & Winter, 2013). In conducting a research, the principles of confidentiality and the provision of appropriate information about the research must be safeguarded (Marianna, 2011). Therefore, ensuring that the research is approved by an appropriate ethical review board is a prime duty of the researcher. Based on this statement, ethical approval was sought and obtained from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research (see appendix E) prior to data collection.

Additionally, an introductory letter from the School of Nursing and Midwifery, University of Ghana (see appendix F) was submitted to the Municipal Health Directorate and other opinion leaders in the communities to seek permission to conduct the study. All participants' right to self-determination and autonomy was respected. Participation was voluntary and participants were

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given the opportunity to withdraw from the study at any time if they so wish. Postnatal women who agreed to participate in the study signed informed consent forms (see appendix A) after the details and purpose of the study was explained to their understanding. For participants who were below 18 years of age, the parental consent form (see appendix B) was signed by a guardian or a parent and the child assent form (see appendix C) endorsed by the participant. The principle of anonymity and confidentiality was also adhered to, hence, the identity of participants was not a requirement on the questionnaire and the information provided was strictly confidential.

CHAPTER FOUR

FINDINGS

This chapter presents the findings from the study. This study sought to investigate the determinants of Essential Newborn Care practices among postnatal women in the Bawku Municipality. Descriptive results on both the independent and dependent variables are presented first, followed by the results from the correlation and regression analyses. The results are presented according to the study objectives below.

4.1. Predisposing characteristics of respondents

In this study, predisposing characteristics include: socio demographic characteristics of the respondents and use of maternal health services (ANC attendance and delivery care). The following sections present a description of the predisposing characteristics of respondents in the study.

4.1.1 Socio demographic characteristics of respondents

From the sample, majority of the respondents, 54.1% (n = 220) were between 21-30 years and only 2.7% (n = 11) were above 40 years. Again, 94 respondents representing 23.1% were below 20 years whereas 82 respondents representing 20.1% were within the ages of 31-40 years. The average age of the respondents was 26 (SD= 6.411) with a minimum and maximum ages of 16 and 43 years respectively. With respect to education, a greater proportion of the respondents, 69.3% (n = 282) received formal education at different levels whereas 30.7% (n = 125) never had formal education. Table 4.1 presents details of socio demographic characteristics of respondents in the study.

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Table 4. 1: Socio-demographic characteristics of respondents

Variable		Frequency	Percentage (%)
Age groups	20 and below	94	21.1
	21 – 30	220	54.1
	31 – 40	82	20.1
	40 and above	11	2.7
	Total	407	100
Level of education	No formal education	125	30.7
	Primary education	93	22.9
	J. H. S	94	23.1
	S. H. S	66	16.2
	Tertiary	29	7.1
	Total	407	100
Ethnicity	Kusaasi	112	27.5
	Busanga	79	19.4
	Mooshie	77	18.9
	Mamprusi	73	17.9
	Others	66	16.2
	Total	407	100
Religious affiliation	Islam	244	60
	Christianity	155	38
	ATR	8	2
	Total	407	100
Marital status	Single	37	9.1
	Married	387	87.7
	Divorced	5	1.2
	Widowed	8	2
	Total	407	100
Age of respondents baby	Less than 1 month	195	47.9
	1 – 3 months	129	31.7
	4 – 6 months	60	14.7
	7 and above	23	5.7
	Total	407	100

Source: Field data, 2017

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4.1.2 Use of maternal health services

In this study, use of maternal services consists of ANC attendance and delivery care. It is recommended that a pregnant woman attend ANC for at least four times before delivery. In this study, ANC attendance was universal, with all 407 respondents indicating to have attended ANC before delivery. However, not all the respondents attended the minimum number of four ANC attendances before delivery, whilst others had more than four attendances. With regards to the number of attendance, majority of the respondents, 92.6% (n = 377) had four or more (adequate) ANC attendance before delivery; whilst the remaining 7.4% (n = 30) had less than four (inadequate) ANC visits before delivery. The average number of ANC attendance was 3.473 (SD= 1.01) with a minimum and maximum number of attendance of 1 and 6 respectively.

In terms of delivery care, majority of the respondents received delivery services from a Skilled Birth Attendant (SBA) during delivery as 88.5% (n = 260) women reported that they delivered at a health facility. Despite a universal ANC attendance, 11.5% (n = 47) women still delivered at home without an SBA. None of the respondents had unassisted delivery. The results are displayed in Table 4.2 below.

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Table 4. 2: Use of maternal health services of respondents

Use of maternal health service		Frequency (n)	Percentage (%)
Antenatal care attendance	Adequate	377	92.6
	Inadequate	30	7.4
	Total	407	100
Average number of attendance (SD): 3.47 (\pm 1.01)		Minimum: 1	Maximum: 6
Place of delivery	Facility delivery	260	88.5
	Home delivery	47	11.5
	Total	407	100

Source: Field data, 2017

4.2 Enabling resources of respondents

In this study, enabling resources of the respondents are: knowledge on Essential Newborn Care practices, education or counselling on ENC practices and socioeconomic class (SEC). The findings on the enabling resources are presented below.

4.2.1 Knowledge of respondents on Essential Newborn (ENC) Care practices

Knowledge on ENC practices was assessed in three areas; cord care, thermal care and breastfeeding. The various domains consist of three interventions designed by the WHO in collaboration with UNICEF to improve newborn health and support mothers to care for their babies. Knowledge on safe cord care practices was measured with reference to three recommended intervention areas; use of sterile/clean instrument to cut the umbilical cord, use of cord clamp or new thread to tie the cord and leaving the cord stump dry without applying any substance to it. As shown in Table 4.3 below, the mean score of 11.57 (SD = 2.20) revealed high knowledge on safe cord care practices. Only 0.2% (n = 1) of the woman had low knowledge,

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32.7% (n = 133) had moderate knowledge and 67.1% (n = 271) had high knowledge. Additionally, knowledge on thermal care practices was also measured with reference to three recommended intervention areas of the ENC strategy. These are; wiping/drying immediately after delivery, wrapping in a clean dry cloth after wiping, and delayed bathing until after 24hours of delivery. The mean score of 11.15 (SD = 1.67) revealed that respondents had high knowledge on good thermal care practices. More than half of the respondents, 63.4% (n = 258) had high knowledge whilst 36.6% (149) respondents had moderate knowledge. None of the women scored within the low knowledge range.

Moreover, to measure the knowledge level of respondents on breastfeeding practices, three recommended areas of the ENC package was used. The results revealed high level of knowledge on good breastfeeding practices among the respondents, with a mean score of 11.07 (SD = 2.54). High level of knowledge was among 64.4% (n = 262) of the women, with 34.2% (n = 139) and 1.5% (n = 6) of the respondents having moderate and low levels of knowledge respectively. Finally, knowledge on ENC practices was measured by adding the total scores of knowledge on cord care, thermal care and breastfeeding. Overall, knowledge on ENC practices was high (Mean = 33.78, SD = 5.32). The majority of respondents, 70.5% (n = 278) had high knowledge level whilst 29.5% (n = 120) had moderate level of knowledge. Table 4.3 shows the details of level of knowledge of respondents on ENC practices

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Table 4. 3: Knowledge level of respondents on Essential Newborn Care practices

Area of ENC practice	Level of knowledge	Range of scores	Frequency (n = 407)	Percentage (100%)	Mean (SD)
Safe cord care practices	Low	1 - 5	1	.2	
	Moderate	6 - 10	133	32.7	11.57 (±2.20)
	High	11 - 15	271	67.1	
Good breastfeeding practices	Low	1 - 5	6	1.5	
	Moderate	6 - 10	139	34.2	11.15 (±1.67)
	High	11 - 15	262	64.4	
Good thermal care practice	Low	1 - 5	0	0	
	Moderate	6 - 10	149	36.6	11.07 (±2.54)
	High	11 - 15	258	63.4	
Total score of knowledge on ENC practices	Low	1 – 15	0	0	
	Moderate	16 – 30	120	29.5	33.78 (±5.32)
	High	31 - 45	287	70.5	

Source: Field data, 2017

4.2.2 Knowledge on specific Essential Newborn Care (ENC) practices

Three items were used to assess the knowledge level of respondent on specific areas of the ENC package. In terms of keeping the cord stump dry, a greater proportion of the respondents exhibited good knowledge as 59.2% (n = 241) agreed with the statement; whilst 29.7% (n = 121) disagreed with the statement. Just a few respondents, 11.1% (n =41) neither agreed nor disagreed

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with dry cord care. Similarly, knowledge on exclusive breastfeeding was high among respondents with 64.9% (n = 264) respondents agreeing with the statement on exclusive breastfeeding respectively. On the other hand, those who disagreed with the statement represents 21.1% (n = 86) whereas 14% (n = 57) of the respondents were neutral. However, knowledge on delayed bathing was low as more than half of the respondents, 55% (n = 224) disagreed with the statement. Only 29.3% (n = 119) represents those who agreed to delayed newborn bathing whilst 15.7% (n = 64) neither agreed no disagreed. This is presented in Table 4.4 below.

Table 4. 4: Respondents’ knowledge on specific areas of Essential Newborn Care practices.

Aspect of ENC practice		Frequency (n)	Percentage (%)
I am not supposed to apply anything to my baby’s cord stump	Disagree	121	29.7
	Agree nor Disagree	45	11.1
	Agree	241	59.2
	Total	407	100.0
My baby is not supposed to be bathed until after 24hrs of delivery	Disagree	224	55.0
	Agree nor Disagree	64	15.7
	Agree	119	29.3
	Total	407	100.0
My baby is supposed to be fed on only breast milk until after six months of delivery	Disagree	86	21.1
	Agree nor Disagree	57	14.0
	Agree	264	64.9
	Total	407	100.0

Source: Field data, 2017

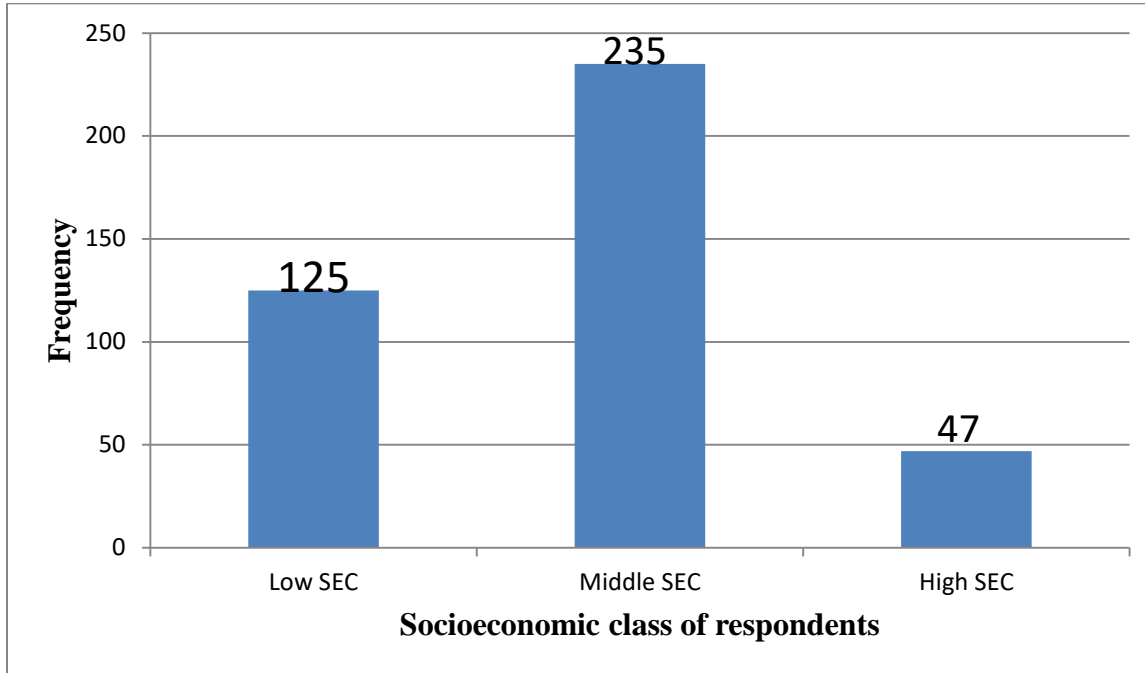
4.2.3 Socioeconomic class (SEC) of respondents

Socioeconomic class was one of the enabling resources examined in the study. The socioeconomic class of respondents was measured using four variables: education status, employment status, type of employment and monthly income, with a total maximum score of 17. A score or 1 – 6 represents low SEC, 7 – 12 for middle SEC and 13 – 17 for high SEC. The results showed that majority of them, 57.7% (n = 235) were in the middle class whilst only

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11.5% (n = 47) were in the high SEC. Moreover, 125 respondents, representing 30.7% were in the low SEC. Figure 4.1 shows the SEC of respondents in the study.

Figure 4. 1: Bar chart showing the socioeconomic class (SEC) of respondents



Source: Field data, 2017

4.2.4 Education or counselling on Essential Newborn Care practices

Under education or counselling, respondents were asked whether they have ever been educated or counselled on the three outcome variables (safe cord care, good thermal care and good breastfeeding practice) or not. Majority of the respondents, 71.3% (n = 290) indicated to have ever been educated or counselled on safe cord care, whereas 28.7% (n = 177) did not. With regards to good thermal care, 80.8% (n = 329) respondents were educated or counselled whilst 19.2% (n = 78) respondents were not. Finally, education or counselling on good breastfeeding practice was high as 83% (n = 338) of respondents were educated or counselled whereas only 17% (n = 69) respondents were not. The results are presented in table 4.5 below.

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Table 4. 5: Education or counselling on Essential Newborn Care practices

Variable		Frequency (n)	Percentage (%)
Education or counselling on safe cord care	Yes	290	71.3
	No	117	28.7
	Total	407	100.0
Education or counselling on good thermal care	Yes	329	80.8
	No	78	19.2
	Total	407	100.0
Education or counselling on good breastfeeding practice	Yes	338	83.0
	No	69	17.0
	Total	407	100.0

Source: Field data, 2017

4.3 Patterns of Essential Newborn Care (ENC) practices

The patterns of ENC practices are described in three areas using percentages and frequencies. Subsequently, cross tabulation analyses to examine the significant differences that exist between the independent variables are reported in tables. It is recommended that the umbilical cord stump of a newborn baby is left dry without the application of any substance. In this study, 67.8% (n = 276) of the respondents did not apply a substance to the cord stump (safe cord care) whilst, 29.5% (n = 120) indicated to have applied a substance to the cord stump of their newborn babies (unsafe cord care). A few respondents, 2.7% (n = 11) could not remember whether a substance was applied or not. With regards to adopting a good thermal care practice, the result shows that only 22.6% (n = 92) of mothers bathed their newborn babies after 24 hours of delivery. A majority of them, 74.4% (n = 303) bathed their newborn babies before 24 hours of delivery and 3% (n = 12) of mothers could not remember the time their newborn babies were bathed.

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Moreover, it is recommended for a newborn to be fed on only breast milk and not given any other substance or food within the first one month of life and until after six months of age. As such, mothers were asked to indicate whether their newborns were given any substance within the neonatal period or not. The results showed that 77.4% (n = 315) of the respondents fed their newborns on only breast milk whereas 22.6% (n = 92) indicated to have given a substance to their newborns in the neonatal period. The results on the patterns of newborn care practices are presented in Table 4.6 below.

Table 4. 6: Frequencies and percentages of the patterns of newborn care practices

Newborn care practices	Frequency (n)	Percentage (%)
Cord care practice	Safe practice	276
	Unsafe practice	120
	Could not remember	11
	Total	407
Thermal care practice	Good practice	92
	Bad practice	303
	Could not remember	12
	Total	407
Breastfeeding practice	Good practice	315
	Bad practice	92
	Could not remember	0
	Total	407

Source: Field data, 2017

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4.3.1. Association between predisposing characteristics and cord care practice

In the analysis for cord care practices, only those mothers who applied or did not apply any substance to the umbilical cord stump were included. Mothers who could not remember whether they applied a substance or not, were excluded from the analysis. These mothers were excluded because their responses cannot be classified under either safe or unsafe practice. Therefore, a total of 396 were included in the analysis of safe cord care. The chi-square test of independence was performed to test whether there was a statistically significant relationship between the predisposing characteristics and safe cord care. The cross tabulation results are presented in Table 4.7 below.

With regards to age, there was a statistically significant relationship between mother's age and safe cord care [$\chi^2_{(3)} = 22.320, p < .001$], indicating that the practice of safe cord care is dependent on age; hence, age of mothers has an influence on the practice of safe cord care. More than half of the respondents in each of the age groups practiced safe cord care, with mothers within the age group of 31 – 40 years having the highest (87.5%). In terms of education, there was a statistically significant relationship between level of education and cord care ($\chi^2_{(4)} = 227.923, p < .001$). This suggests that the level of education of mothers significantly influenced the practice of safe cord care. The findings further showed that 89.2% of mothers with primary education, 93.1% of mothers with tertiary education, 93.8% of women with S.H.S education and 96.6% of mothers with J.H.S education practiced safe cord care. However, a very low proportion (17.9%) of mothers who had no formal education practiced safe cord care.

Additionally, ethnicity of mothers was found to have a statistically significant relationship with safe cord care ($\chi^2_{(4)} = 26.268, p < .001$). It was found that 83.6% of Mamprusi mothers, 80.3% of mothers of other ethnic groups, 72% of Mooshie mothers, 69.7% of Busanga mothers and 51.9%

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of Kussasi mothers practiced safe cord care. Finally, there was a statistically significant relationship between respondents' place of delivery and the practice of safe cord care ($\chi^2_{(1)} = 99.484, p < .001$). A greater proportion, 77.8% of mothers who delivered in a health facility practiced safe cord care whilst only 4.5% of mothers who delivered at home practiced safe cord care. However, religious affiliation of mothers did not show a statistically significant association with cord care $\chi^2_{(2)} = .440, p = .802$. The cross tabulation result is presented in table 4.7 below.

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Table 4. 7: A cross tabulation analysis results showing the association between predisposing characteristics and cord care

Variable	Cord care (N=396)		Chi-square (χ^2)	P- value
	Unsafe (N = 120)	Safe (N = 276)		
Age				
Below 20	42 (45.7%)	50 (54.3%)	22.320	.000
21-30	65 (30.5%)	148 (69.5%)		
31-40	10 (12.5%)	70 (87.5%)		
Above 40	3 (27.3%)	8 (72.7%)		
Ethnicity				
Kusaasi	51 (48.1%)	55 (51.9%)	26.268	.000
Busanga	23 (30.3%)	53 (69.7%)		
Mooshie	21 (28%)	54 (72%)		
Mamprusi	12 (16.4%)	61 (83.6%)		
Others	13 (19.7%)	53 (80.3%)		
Educational level				
No formal education	101 (82.1%)	22 (17.9%)	227.923	.000
Primary education	10 (10.8%)	83 (89.2%)		
J.H.S	3 (3.4%)	84 (96.6%)		
S.H.S	4 (6.3%)	60 (93.8)		
Tertiary education	2 (6.9%)	27 (93.1%)		
Place of delivery				
Facility delivery	78 (22.2%)	274 (77.8%)	99.484	.000
Home delivery	42 (95.5%)	2 (4.5%)		

Dependent variable: Cord care practice, Criterion level: 0.05

4.3.2 Association between predisposing characteristics and good thermal care.

In the analysis of the relationship between predisposing characteristics and good thermal care practice, 395 respondents were included. The chi-square test was carried out to test whether thermal care had a statistically significant relationship with predisposing characteristics. The results revealed a significant difference in the practice of thermal care by ethnicity [$\chi^2_{(4)} = 15.597$, $p = .004$], level of education [$\chi^2_{(4)} = 22.807$, $p < .001$] and place of delivery [$\chi^2_{(1)} = 13.373$, $p < .001$]. This finding suggests that the practice of good thermal care is influenced by

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mothers' level of education, ethnicity and place of delivery. With reference to level of education, the results revealed that good thermal care was found to be very low among women who had no formal education with only 15.4% (n = 19) of them practicing good thermal care; whereas 39.3% (n = 11) and 42.2% (n = 27) of mothers who had tertiary and S.H.S education respectively practiced good thermal care. In terms of place of delivery, the results revealed that 26.1% (n = 91) of mothers who delivered in a health facility practiced good thermal care whilst only 2.1% (n = 1) of those who delivered at home practiced same. Moreover, almost all the women (99%) who adopted good thermal care practice were those who delivered at a health facility whereas almost all the women (98%) who delivered at home adopted bad thermal care practice. The cross tabulation results are shown in Table 4.8 below.

Table 4. 8: Cross tabulation analysis results showing the relationship between predisposing characteristics and thermal care.

Variable	Thermal care (N=395)		Chi-square (χ^2)	p- value
	Good (N = 92)	Bad (N = 303)		
Ethnicity				
Kusaasi	18 (14.4%)	92 (83.6%)	15.597	.004
Busanga	15 (19.2%)	63 (80.9%)		
Mooshie	13 (17.6%)	61 (82.4%)		
Mamprusi	21 (30.9%)	47 (69.1%)		
Others	25 (38.5%)	40 (61.5%)		
Educational level				
No formal education	19 (15.4%)	104 (84.6%)	22.807	.000
Primary education	19 (21.1%)	71 (78.9%)		
J.H.S	16 (17.8)	74 (82.2%)		
S.H.S	27 (42.2%)	37 (57.8%)		
Tertiary education	11 (39.3%)	17 (60.7%)		
Place of delivery				
Facility delivery	91 (26.1%)	257 (73.9%)	13.374	.000
Home delivery	1 (2.1%)	46 (97.9%)		

Dependent variable: Thermal care, Criterion level: 0.05

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4.3.3 Association between predisposing characteristics and breastfeeding practice

Table 4.9 below shows the cross tabulation analysis results of the association between predisposing characteristics and breastfeeding practice. In this analysis, all 407 women were included. The cross tabulation results show that among women who had no formal education, 64% (n = 80) of them practiced good breastfeeding and a greater proportion, 96.6% (n = 28) of women with tertiary education also practiced good breastfeeding. With respect to place of delivery, 81.9% (295) of mothers who delivered in a health facility practiced good breastfeeding; however less than half (42.6%) of women who delivered at home practiced good breastfeeding.

The chi-square test found a significant association between the education level of respondents and the practice of breastfeeding, [$\chi^2_{(4)} = 30.072, p < .001$]. Similarly, there was a statistically significant association between place of delivery and good breastfeeding [$\chi^2_{(1)} = 36.872, p < .001$]. These findings suggest that place of delivery and level of education of mothers have an influence on the practice of good neonatal breastfeeding. However, ethnicity [$\chi^2_{(4)} = 2.161, p = .706$], religious affiliation [$\chi^2_{(2)} = 4.632, p = .099$] and age [$\chi^2_{(3)} = .628, p = .890$] did not have a statistically significant association with breastfeeding practice.

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Table 4. 9: A cross tabulation analysis results showing the association between predisposing characteristics and breastfeeding practice.

Variable	Breastfeeding practice (N= 407)		Chi-square (χ^2)	p -value
	Good (N = 315)	Bad (N = 92)		
Level of education				
No formal education	80 (64%)	45 (36%)	30.072	.000
Primary education	68 (73.1%)	25 (26.9)		
J.H.S	78 (83%)	16 (17%)		
S.H.S	61 (92.4%)	5 (7.6%)		
Tertiary education	28 (96.6%)	1 (3.4%)		
Place of delivery				
Facility delivery	295 (81.9%)	65 (18.9%)	36.872	.000
Home delivery	20 (42.6%)	27 (57.4%)		

Dependent variable: Breastfeeding practice, Criterion level: 0.05

4.4 Relationship between predisposing characteristics and enabling resources (knowledge of on essential newborn care practices)

To establish the relationship between predisposing characteristics and knowledge of ENC practices, a bivariate correlation analysis was done. Pearson Product Moment Correlation (Pearson r) was used for continuous variables whereas Spearman Rank Order Correlation (Spearman rho) was used for ordinal variables.

As shown in the table below, total score of knowledge on ENC practices was found to have a statistically significant moderate positive correlation with age ($r = .306, p < .001$) and parity ($r = .582, p < .001$). This means that an increase in age and parity leads to an increase in total score of knowledge on ENC practices, indicating that elderly and multiparous mothers have high knowledge on ENC practices than younger and primiparous mothers. However, number of ANC attendance had no significant correlation with total score of knowledge on ENC practices.

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For the Spearman correlation analysis, the total score of knowledge on ENC practices which is measured on the ratio scale was recoded into three ranks of knowledge (low, moderate and high) to meet the assumptions of a Spearman correlation analysis. The results revealed a statistically significant positive, but weak correlation between level of knowledge on ENC practices and age groups of respondents ($r_s = .197, p < .001$). This implies that mothers who belong to the older age group had high level of knowledge on ENC practices. Similarly, there was a significant weak positive correlation between monthly income level of respondents and level of knowledge on ENC practices ($r_s = .194, p < .001$); which indicates that mothers with higher monthly income have high level of knowledge than mothers who earn lower monthly income.

Moreover, there was a moderate positive correlation between level of knowledge on ENC practices and level of education of respondents, which is statistically significant ($r_s = .569, p < .001$). This implies that, mothers with higher level of education have higher levels of knowledge on ENC practices. The results are presented in Table 4.10 below.

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Table 4. 10: Correlation between predisposing characteristics and knowledge of Essential Newborn Care practices.

Variable	Total score of knowledge on ENC practices	
	Type of Correlation	Significance level
Continuous Variables		
	Pearson r	p- value
Age	.306**	.000
Parity	.582**	.000
Number of ANC visits	.059	.233
Level of knowledge on ENC practices		
Categorical Variables		
	Spearman rho	p-value
Age group	.197**	.000
Level of education	.569**	.000
Employment Status	.294**	.000
Monthly income	.194**	.000

***= Significant at the 0.05 alpha level **= Significant at the 0.01 alpha level**

4.5 Predictors of Essential Newborn Care practices

For the data analysis to determine the predictors, the data was transformed and a new data file created for the three outcome variables: Safe cord care, good breastfeeding and good thermal care. All uncertain responses such as “do not know” and “cannot remember” on the three outcome variables were excluded. This made each of the three outcome variables to have only two possible outcomes: either “good practice” or “bad practice”. The new data file for the dichotomous dependent variables “safe cord care”, “good breastfeeding” and “good thermal care” included 396, 407, and 395 participants respectively. Due to the dichotomous nature of the dependent variables, the binary logistic regression method was used to determine their predictors. Initially, simple binary logistic regression was performed to establish the relationship

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between each independent variable and the three outcome variables separately. Thereafter, multiple logistic regression method was used to determine how a combination of the independent variables predicts the three outcome variables separately. The independent variables that were not significant in the simple logistic regression analysis were not included in the multiple regression analysis. The results of the binary logistic regression analyses are presented in the following sections.

4.5.1 Predictors of safe cord care.

To determine the predictors of safe cord care, simple logistic regression was first conducted to establish the relationship between each independent variable and safe cord care. The results showed that seven independent variables had a statistically significant relationship with safe cord care: level of education ($p < .001$), parity ($p < .001$), place of delivery ($p < .001$), ethnicity ($p < .01$), socioeconomic class ($p = < .001$), knowledge on safe cord care ($p < .001$), and education/counselling on safe cord care ($p < .001$). In terms of socioeconomic class, women in the middle class had a statistically significant positive effect on the odds of practicing safe cord care [(OR = 8.667, CI: 5.226 – 14.373), $p < .001$] relative to mothers in the low class, which was the reference category. This means that women in the middle socioeconomic class were 8.667 times more likely to practice safe cord care than women in the low socioeconomic class. Similarly, women in the high socioeconomic class were more likely to practice safe cord care than mothers in the low socioeconomic class [(OR = 17.769, CI: 5.973 – 52.857), $p < .001$].

With regards to education, women who had primary education had a statistically significant effect on the odds of practicing safe cord care [(OR = 8.300, CI: 4.307 – 15.996), $p < .001$] than women with tertiary education; likewise, women who had J.H.S education had a statistically significant increase in the odds of practicing safe cord care [(OR = 28.000, CI: 8.852 – 88.572), p

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< .001]. However, mothers who had no formal education were less likely to practice safe cord care than mothers who had tertiary education [(OR = .218, CI: .137 - .345), $P < .001$].

Moreover, women who delivered in a health facility had a statistically significant increase in the odds of practicing safe cord care [(AOR = 1.575, CI: 1.316 – 1.884), $p < .001$]. This indicates that women who delivered in a health facility were 1.575 times likely to practice safe cord care than women who delivered at home. Similarly, postnatal mothers who received counselling or education on safe cord care were more likely to practice safe cord care than mothers who did not [(OR = 1.564, CI: 1.339 – 1.825), $p < .001$]; as multiparous women were also six times more likely to practice safe cord care than primiparous women [(OR = 6.123, CI: 3.827 – 9.799), $p < .001$]. However, age, marital status, religious affiliation, facility of delivery and number of ANC attendance had no statistically significant relationship with safe cord care; hence, they were excluded in the multiple logistic regression analysis. Table 4.11 below shows the results of the simple logistic regression on safe cord care, with their associated odds ratios and 95% confidence intervals.

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Table 4. 11: 10 Simple logistic regression analysis results showing the relationship between predisposing characteristics, enabling factors and safe cord care

Variables	B	S.E.	Wald	Sig.	OR	95% C.I.for	
						EXP(B) Lower	Upper
Socioeconomic class			80.419	.000			
Middle class	2.159	.258	69.998	.000	8.667	5.226	14.373
High class	2.877	.556	26.755	.000	17.769	5.973	52.857
Ethical background			51.326	.000			
Kusaasi	.076	.194	.151	.698	1.078	.737	1.579
Busanga	.835	.250	11.178	.001	2.304	1.413	3.759
Mooshie	.944	.257	13.487	.000	2.571	1.553	4.257
Mamprusi	1.626	.316	26.510	.000	5.083	2.737	9.440
Level of education			141.594	.000			
No formal education	-1.524	.235	41.962	.000	.218	.137	.345
Primary	2.116	.335	39.970	.000	8.300	4.307	15.996
J.H.S	3.332	.588	32.162	.000	28.000	8.852	88.572
S.H.S	2.708	.516	27.501	.000	15.000	5.452	41.271
Parity	1.812	.240	57.071	.000	6.123	3.827	9.799
Place of delivery	.454	.091	24.675	.000	1.575	1.316	1.884
Counseling on safe cord care	.447	.079	32.056	.000	1.564	1.339	1.825
Knowledge on safe cord care	-1.212	.236	26.445	.000	.297	.187	.472

Dependent variable: Safe cord care, Criterion level: 0.05

The multiple logistic regression analysis was used to determine the predictors of safe cord care in two models. In model one, only the predisposing characteristics that had an independent statistically significant relationship with safe cord care were included. The results showed that predisposing characteristics (parity, level of education, ethnicity and place of delivery) account for 47.2% of safe cord care [$R^2 = .472$, $\chi^2_{(10)} = 194.138$, $p < .001$]. However, only level of education ($p < .001$), place of delivery ($p < .001$) and ethnicity ($p = .046$) were significant predictors of the model. In the second and final model, the enabling factors that had a statistically

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significant relationship with safe cord care were added to the predisposing characteristics. It was found that enabling factors (SEC, and education/counselling on safe cord care) and predisposing characteristics (parity, ethnicity, level of education and place of delivery) jointly predicted 49.4% of safe cord care [$R^2 = .494$, $\chi^2_{(8)} = 219.461$, $p < .001$]. The predictors of safe cord care in the final model are level of education ($p < .001$), place of delivery ($p < .001$) and ethnicity ($p = .053$). The enabling resources that were included in the second model did not contribute significantly to the practice of safe cord care; hence, the final predictors of safe cord care are level of education, place of delivery and ethnicity. The predictors of safe cord care practice is presented in Table 4.12 below.

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Table 4. 12: Multiple logistic regression analysis results, showing the predictors of cord care

Model	Variables	B	S.E.	Wald	Sig.	OR	95% C.I.for EXP(B)	
							Lower	Upper
Model 1	Level of education			86.324	.000			
	No formal education	-3.724	.907	16.855	.000	.024	.004	.143
	Primary education	-.006	.922	.000	.995	.994	.163	6.055
	J.H.S education	1.566	1.091	2.060	.151	4.787	.564	40.613
	S.H.S education	1.117	1.034	1.166	.280	3.056	.402	23.209
	Ethnicity			9.868	.043			
	Kusaasi	-.621	.585	1.126	.289	.538	.171	1.692
	Busanga	.480	.646	.553	.457	1.617	.456	5.735
	Mooshie	.409	.641	.407	.523	1.505	.429	5.286
	Mamprusi	1.232	.661	3.473	.062	3.430	.938	12.536
	Parity	-.079	.221	.129	.720	.924	.599	1.424
	Place of delivery	-5.106	.931	30.045	.000	.006	.001	.038
Model 1 summary: [R² = .472, $\chi^2_{(10)} = 194.226$, p < .001].								
Model 2	Level of education			60.165	.000			
	No formal education	-4.250	1.021	17.316	.000	.014	.002	.106
	Primary education	.260	.951	.075	.784	1.297	.201	8.373
	J.H.S education	2.023	1.136	3.173	.075	7.560	.816	70.020
	S.H.S education	1.450	1.067	1.848	.174	4.264	.527	34.516
	Ethnicity			9.318	.054			
	Kusaasi	-.668	.602	1.231	.267	.513	.157	1.669
	Busanga	.429	.664	.416	.519	1.535	.418	5.642
	Mooshie	.501	.666	.568	.451	1.651	.448	6.085
	Mamprusi	1.126	.664	2.877	.090	3.084	.839	11.335
	Parity	-.050	.234	.046	.830	.951	.601	1.504
	Place of delivery	-5.611	1.080	26.973	.000	.004	.000	.030
	Socioeconomic class			2.837	.242			
	Low class	-.175	1.019	.030	.863	.839	.114	6.181
	Middle class	-.953	.952	1.001	.317	.386	.060	2.493
	Counselling on safe cord care	-.790	.463	2.912	.088	.454	.183	1.124
	Knowledge on safe cord care	-.164	.120	1.890	.169	.848	.671	1.072
Model 2 summary: [R² = .494, $\chi^2_{(14)} = 219.461$, p < .001].								

Dependent variable: Cord care practice, Criterion level: 0.05

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4.5.2 Predictors of good thermal care practice

The results of simple logistic regression for good thermal care showed that SEC, ethnicity, level of education, parity, place of delivery and knowledge on good thermal care had a statistically significant relationship with good thermal care. In terms of parity, an increase by one, leads to an increase in the odds of practicing good thermal care by 1.388. This implies that, as parity increases, there is 1.388 times likelihood of practicing good thermal care. Similarly, the odds of practicing good thermal care increase by 1.166 as knowledge on good thermal care increases. However, age, religious affiliation and education/counselling on good thermal care had no significant relationship with the practice of good thermal care; hence, were excluded from the multiple regression analysis. The results are presented in Table 4.13 below.

Table 4. 13: Simple logistic regression analysis results, showing the relationship between predisposing characteristics, enabling factors and good thermal care

Variables	B	S.E.	Wald	Sig.	OR	95% C.I	
						Lower	Upper
SEC			15.994	.000			
Low class	-1.594	.431	13.680	.000	.203	.087	.473
Middle class	-.458	.348	1.725	.189	.633	.320	1.253
Ethnic background			14.985	.005			
Kusaasi	-1.161	.363	10.263	.001	.313	.154	.637
Busanga	-.965	.386	6.313	.012	.381	.179	.809
Mooshie	-1.076	.398	7.312	.007	.341	.156	.744
Mamprusi	-.336	.366	.841	.359	.715	.349	1.465
Level of education			21.459	.000			
No formal education	-1.265	.460	7.545	.006	.282	.115	.696
Primary	-.883	.463	3.602	.058	.414	.116	1.029
JHS	-1.096	.475	5.323	.021	.334	.132	.848
SHS	.120	.462	.068	.795	1.128	.456	2.791
Parity	.328	.110	8.807	.003	1.388	1.118	1.723
Place of delivery	-2.790	1.018	7.511	.006	.061	.008	.452
Knowledge on good thermal care	.154	.073	4.436	.035	1.166	1.011	1.346

Dependent variable: Good thermal care, criterion level: 0.05

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A multiple logistic regression analysis was used to determine if predisposing characteristics (model 1) and a combination of predisposing characteristics and enabling factors (model 2) significantly predict the practice of good thermal care. In the first model, predisposing characteristics (level of education, parity, ethnicity and place of delivery) accounted for 16.6% of the practice of good thermal care [$R^2 = .166$, $\chi^2_{(10)} = 45.987$, $p < .001$]. The individual predisposing characteristics that contributed significantly to the model were level of education, place of delivery, and ethnicity. Surprisingly, parity did not contribute significantly to the model. In the second model, enabling resources (socioeconomic class and knowledge on good thermal care) were included to examine the combined effect of the variable on good thermal care. The results showed that predisposing characteristics together with enabling factors significantly predicted approximately 19% of the practice of good thermal care [$R^2 = .187$, $\chi^2_{(13)} = 52.358$, $p < .001$]. Level of education, place of delivery and ethnicity retained their significance in the second model. In addition, socioeconomic status was found to have a significant relationship with good thermal care; whereas parity and knowledge on good thermal care were not. Therefore, the final predictors of good thermal care were level of education, place of delivery, ethnicity and socioeconomic class. Table 4.14 presents the details of the results.

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Table 4. 14: Multiple logistic regression analysis results showing the predictors of good thermal care

Model	Variables	B	S.E.	Wald	Sig.	OR	95% C.I	
							Lower	Upper
Model 1	Level of education			12.535	.014			
	No formal education	-.713	.547	1.697	.193	.490	.168	1.433
	Primary education	-.946	.526	3.236	.072	.388	.139	1.088
	J.H.S	-.914	.509	3.227	.072	.401	.148	1.087
	S.H.S	.258	.482	.287	.592	1.295	.504	3.329
	Parity	.007	.142	.003	.960	1.007	.763	1.330
	Place of delivery	-2.559	1.035	6.114	.013	.077	.010	.588
	Ethnicity			10.246	.036			
	Kusaasi	-.971	.393	6.119	.013	.379	.175	.817
	Busanga	-.822	.407	4.075	.044	.440	.198	.976
	Mooshie	-1.084	.424	6.536	.011	.338	.147	.777
	Mamprusi	-.301	.385	.610	.435	.740	.348	1.574
	Model 1 summary: [R² = .166, $\chi^2_{(10)} = 45.987$, p < .001].							
Model 2	Level of education			10.589	.032			
	No formal education	-.009	.642	.000	.988	.991	.281	3.488
	Primary education	-.638	.565	1.274	.259	.528	.174	1.600
	J.H.S	-.811	.539	2.262	.133	.444	.154	1.279
	S.H.S	.310	.494	.393	.531	1.363	.517	3.590
	Ethnicity			11.300	.023			
	Kusaasi	-1.031	.399	6.679	.010	.357	.163	.780
	Busanga	-.849	.413	4.232	.040	.428	.191	.961
	Mooshie	-1.116	.427	6.815	.009	.328	.142	.757
	Mamprusi	-.257	.392	.429	.512	.774	.359	1.667
	Parity	.002	.151	.000	.990	1.002	.745	1.348
	Place of delivery	-2.399	1.042	5.300	.021	.091	.012	.700
	SEC			5.982	.050			
	Low class	-1.212	.570	4.522	.033	.298	.097	.909
	Middle class	-.220	.406	.295	.587	.802	.362	1.778
	Knowledge on good thermal care practices	-.010	.093	.011	.915	.990	.825	1.188
Model 2 summary: [R² = .187, $\chi^2_{(13)} = 52.359$, p < .001].								

Dependent variable: Good thermal care practice, Criterion level: 0.05

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4.5.3 Predictors of good breastfeeding practice

Table 4.15 below shows the relationship between the independent variables (predisposing characteristics and enabling factors) and good breastfeeding practice. Level of education, socioeconomic class, parity, education/counselling on good breastfeeding practice and place of delivery had a statistically significant relationship with good breastfeeding practice ($p < .001$). In terms of parity, multiparous women were more likely to practice good breastfeeding than primiparous women [(OR = 2.008, CI: 1.531 – 2.633), $p < .001$]. Additionally, women with adequate knowledge on good breastfeeding practices were more likely to practice same than women with inadequate knowledge. These variables were then included in the multiple regression analysis.

Table 4. 15: Simple logistic regression analysis results showing the relationship between predisposing characteristics, enabling resources and good breastfeeding practices

Variables	B	S.E.	Wald	Sig.	OR	95% C.I.	
						Lower	Upper
SEC			27.537	.000			
Low class	-1.936	.554	12.216	.000	.144	.049	.427
Middle class	-.760	.551	1.902	.168	.468	.159	1.378
Knowledge on good breastfeeding practices	.295	.049	36.641	.000	1.343	1.221	1.477
Level of education			25.053	.000			
No formal education	-2.757	1.035	7.100	.008	.063	.008	.482
Primary	-2.332	1.044	4.985	.026	.097	.013	.752
J.H.S	-1.748	1.054	2.750	.097	.174	.022	1.374
S.H.S	-.831	1.119	.551	.001	.438	.048	3.905
Parity	.697	.138	25.411	.000	2.008	1.531	2.633
Place of delivery	-1.813	.325	31.054	.000	.163	.086	.309

Dependent variable: Good breastfeeding practice, Criterion level: 0.05

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In the multiple logistic regression analysis, model one included predisposing characteristics that had a statistically significant relationship with good breastfeeding practice. As shown in Table 4.16 below, parity and place of delivery were significant predictors of good breastfeeding; whereas level of education was not a significant predictor in model one. The three predisposing characteristics (parity, place of delivery and level of education) significantly accounted for 20% of good breastfeeding practice [$R^2 = .20$, $\chi^2_{(6)} = 57.314$, $p < .001$]. When enabling factors were added to predisposing characteristics in the second model, they significantly predicted 22.1% of good breastfeeding practice [$R^2 = .221$, $\chi^2_{(9)} = 63.698$, $p < .001$]. However, the significant predictors of good breastfeeding in model two were place of delivery ($p = .010$) and knowledge on good breastfeeding ($p = .043$).

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Table 4. 16: Multiple logistic regression analysis results, showing the predictors of good breastfeeding practice

Model	Variables	B	S.E.	Wald	Sig.	OR	95% C.I.	
							Lower	Upper
MODEL 1	Parity	.380	.162	5.464	.019	1.462	1.063	2.010
	Place of delivery	-1.399	.359	15.153	.000	.247	.122	.499
	Level of education			6.900	.141			
	No formal education	-1.598	1.081	2.185	.139	.202	.024	1.684
	Primary education	-1.707	1.070	2.544	.111	.181	.022	1.478
	JHS	-1.291	1.070	1.457	.227	.275	.034	2.238
	SHS	-.508	1.129	.203	.653	.601	.066	5.501
Model 1 summary: [R² = .20, $\chi^2_{(6)} = 57.314$, p < .001].								
Model 2								
	Parity	.280	.170	2.718	.099	1.323	.949	1.845
	Place of delivery	-1.082	.382	8.029	.005	.339	.160	.716
	Level of education			4.303	.367			
	No formal education	-.817	1.140	.514	.474	.442	.047	4.124
	Primary	-1.321	1.092	1.465	.226	.267	.031	2.267
	JHS	-1.136	1.081	1.105	.293	.321	.039	2.670
	SHS	-.531	1.129	.221	.638	.588	.064	5.376
	Knowledge of good breastfeeding	.134	.066	4.093	.043	1.143	1.004	1.302
	SEC			2.403	.301			
	Low SEC	-.752	.656	1.314	.252	.471	.130	1.706
	Middle SEC	-.247	.589	.176	.675	.781	.246	2.479
Model 2 summary: [R² = .221, $\chi^2_{(9)} = 63.698$, p < .001]								

Dependent variable: Good breastfeeding practice, Criterion level: 0.05

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4.5 Summary of findings.

The study sought to investigate the determinants of Essential Newborn Care practices in the Bawku Municipality. Both descriptive and inferential statistical analyses were used to answer the research questions. From the sample, majority of the respondents, 54.1% (n = 220) were between 21-30 years and only 2.7% (n = 11) were above 40 years. The average age of the respondents was 26 (SD= 6.41) with a minimum and maximum ages of 16 and 43 years respectively. With respect to education, a greater proportion of the respondents, 69.3% (n = 282) received formal education at different levels whereas 30.7% (n = 125) never had formal education. Attendance to ANC was universal, with all 407 respondents indicating to have attended ANC before delivery; the average number of ANC attendance was 3.473 (SD= 1.01) with a minimum and maximum number of attendance of 1 and 6 respectively. With regards to delivery care, majority of the respondents, 88.5% (n = 360) reported that they delivered at a health facility whereas 11.5% (n = 47) women still delivered at home without a Skilled Birth Attendant (SBA).

Additionally, the study found that postnatal women exhibited high level of knowledge on the three areas of ENC practices: safe cord care (Mean = 11.57, SD = 2.20), good thermal care (Mean = 11.15, SD = 1.67) and good breastfeeding (Mean = 11.07, SD = 2.54). This reflected a high overall level of knowledge on ENC practices (Mean = 33.78, SD = 5.32). Using a Pearson correlation analysis (Pearson r) for continuous variables, total score of knowledge on essential newborn care practices was found to have a statistically significant moderate positive correlation with age and parity; however, number of ANC attendance was found to have a weak negative correlation with total score of knowledge on essential newborn care practices, which is statistically significant. Similarly, Spearman rho correlation results revealed a statistically significant positive correlation between total level of knowledge on essential newborn care

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practices and categorical predisposing characteristics; Age group, level of education, employment status, and monthly income level.

Furthermore, the study found that the practice of safe cord care was good as 67.8% of the respondents did not apply any substance to the cord stump whilst a considerable number, 29.5% applied a substance to the cord stump of their newborn babies. In a simple binary logistic regression analysis, level of education, parity, place of delivery and ethnicity were found to have a statistically significant relationship with the practice of safe cord care. Others include socioeconomic class, knowledge on safe cord care, and education or counselling on safe cord care. From the multiple logistic regression analysis, it was found that enabling factors and predisposing characteristics jointly predicted 49.4% of safe cord care [$R^2 = .494$, $\chi^2_{(14)} = 219.461$, $p = .001$]. However, level of education, ethnicity and place of delivery were the significant predictors of safe cord care in the final model of the multiple logistic regression analysis.

Moreover, the practice of good thermal care was very poor among the respondents as the results showed that only 22.6% ($n = 92$) of newborns were bathed after 24 hours of delivery. The majority of them, 74.4% ($n = 303$) bathed their newborn babies before 24 hours of delivery and 3% ($n = 12$) of women could not remember the time their newborn babies were bathed. Ethnicity, SEC, level of education, parity, place of delivery and knowledge on good thermal care had a statistically significant relationship with good thermal care. In a multiple logistic regression analysis, level of education, place of delivery, ethnicity and SEC were significant predictors in the final model, accounting for 18.7% of the practice of good thermal care [$R^2 = .187$, $\chi^2_{(13)} = 52.358$, $p < .001$]. However parity and knowledge on good thermal care were not significant predictors.

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Finally, the study found that a greater proportion of the respondents practiced good breastfeeding. Majority, 77.4% of the respondents fed their newborns on only breast milk whereas 22.6% indicated to have given a substance to their newborns in the neonatal period. When enabling factors were added to predisposing characteristics in the multiple logistic regression analysis, they significantly predicted 22.1% of good breastfeeding practice [$R^2 = .221$, $\chi^2_{(9)} = 63.698$, $p < .001$]. However, the significant predictors of good breastfeeding in the final model were place of delivery and knowledge on good breastfeeding.

CHAPTER FIVE

DISCUSSION OF FINDINGS

This chapter discusses the findings from the study and is divided into the following sections: predisposing characteristics of respondents; enabling resources of respondents; patterns of ENC practices; relationship between predisposing characteristics and enabling resources; and predictors of ENC practices.

5.1 Predisposing characteristics of respondents

The predisposing characteristics in the study are the socio-demographic characteristics of respondents and use of maternal health services (ANC attendance and place of delivery). The findings of the predisposing characteristics are discussed below.

5.1.1 Socio-demographic characteristics of respondents

From the sample, majority of the mothers, 54.1% (n = 220) were between 21-30 years and only 2.7% (n = 11) were above 40 years. Additionally, 94 respondents representing 23.1% were below 20 years and this is an indication that teenage pregnancy and early childbearing is prevalent in the Bawku Municipality. This is consistent with the findings that 14% of women aged teenagers had begun childbearing in Ghana; either they had given birth or were pregnant at the time of the survey (Ghana Statistical Service et al., 2015). Similar finding has also been reported by Gyesaw and Ankomah (2013) which showed that about 12% of adolescent girls between ages 15 and 19 years were pregnant or had already given birth in a suburb of Accra. This trend is however lower and contradicts the finding of Loaiza and Liang (2013) where most countries with 30% and above teenage pregnancy levels were in sub-Saharan Africa and that births to teenage mothers account for 25% of all the births in West Africa (Odimegwu & Mkwanzani, 2016). This

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contradiction may be an indication of success and progress in the fight against teenage pregnancy and child marriage in sub-Saharan Africa. Despite this progress, other African countries still record high levels of teenage pregnancies and early childbearing; hence the need for government and non-governmental organisations (NGOs) to intensify the fight against teenage pregnancy and early childbearing.

The average age of childbearing in this study was 26 (SD= 6.411) with a minimum and maximum ages of 16 and 43 years respectively. Though the average age was greater than what was found in Bangladesh (Shahjahan et al., 2012) and similar to that of Bililign et al. (2016), it is less than what was reported in Sri Lanka (Dayaratne & de Silva, 2016) and Ethiopia (Arage & Gedamu, 2016a). The maximum childbearing age of 43 years suggests that women above 43 years had either stopped giving birth or were in menopause. This finding is similar to that of Setorglo, Keddey, Agbemaflle, Kumordzie, and Steiner-Asiedu (2012), where the average age of the onset of menopause was 48 years. The 2014 GDHS also found that 70% of women in their menopausal period were above 43 years (Ghana Statistical Service et al., 2015).

The study also found that, the majority of respondents, 69.3% (n = 282) received formal education at different levels whereas 30.7% (n = 125) never had formal education. Though a greater proportion of women had formal education, just a few (7.1%) respondents attained more than a senior high education. This is in tandem with what was reported in the 2014 GDHS where 6% of women had attained more than a secondary education in Ghana. On the other hand, the proportion of mothers who had no formal education (30.7%) is a call for worry; given that 34.4% of them were below 20 years of age. This is probably due to the rural nature of the study area where cultural inclination towards gender inequity is a strong impediment to the education of females. To buttress this point, Kanmiki et al. (2014) found that as high as 87.5% of non-

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educated girls were living in rural areas, whilst 12.5% were urban dwellers. According to Lambert et al. (2012), traditional Ghanaian culture have a negative view of females who attain higher educational levels, especially in typical rural northern settings.

Moreover, most of the respondents in the study (87.7%) were married which is reconcilable with the findings of other studies in rural areas. Saaka and Iddrisu (2014) found that 89.4% of postnatal women were married in rural areas of Northern Ghana. This trend in Ghana agrees with what was reported in Uganda where 89.6% of postnatal women were married (Ayiasi, Kasasa, et al., 2014). However, the finding in the current study is higher than the national figure where less than half (42.2%) of women were married in the 2014 GDHS. On the other hand, the proportion of non-married women in this study was lower (9.1%) than the national figure (32.9%). Early marriage, teenage pregnancy and motherhood are a common phenomenon among Ghanaian women, especially in the rural areas where poverty is endemic. This trend has led to several campaigns against child marriage by religious bodies and other civil society organisations in the recent past.

Additionally, 88.3% of the respondents below 20 years in the current study were married, which is higher than Ghana's national figure. In Ghana, 2.3% of the total number of women below age 20 was married during the five year period from 2009 to 2014 (Ghana Statistical Service et al., 2015). However, this finding is consistent with reports that indicate that the Upper East Region has the highest prevalence of child marriage in Ghana. According to the Ghana Statistical Service (2011) Multiple Indicator Cluster Survey (MICS) report, the Upper East Region has a child marriage prevalence of 50%, the highest in the country. Additionally, more than half of adolescents (55.4%) were married and had given birth in Western Uganda (Kabwijamu et al., 2016).

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5.1.2 Use of maternal health services of respondents

The WHO has recommended a minimum of four antenatal care (ANC) visits and subsequent facility delivery with skilled attendants at birth. However, a significant number of pregnant women in rural communities in low-income countries do not achieve the minimum recommended number of visits and also deliver at home without a Skilled Birth Attendant (Amoah, Anto, Osei, Pieteron, & Crimi, 2016). According to Ghana Statistical Service et al. (2015), 91% of pregnant women had at least one ANC visit before delivery in Ghana; with 96% and 86% in urban and rural areas respectively. During the same period, 87% had at least four visits; with 92% in urban areas and 83% in rural settings. In the Bawku Municipality, the number of pregnant women who had at least four visits before delivery decreased from 89.1% in 2014 to 84.9% in 2015 (Bawku Municipal Health Directorate, 2014).

In this study, the findings indicate that ANC attendance was universal, with all 407 respondents indicating to have had at least one ANC visit before delivery which is higher than the national rate (91%). This can be attributed to the expansion of the healthcare delivery system through the introduction of the CHPS concept to increase access to and use of health services in remote communities. Similar to what has been reported in this study, 97% of pregnant women had at least one ANC visit before delivery in the Upper East Region (Pell et al., 2013). Afulani (2015) also found that 96% of Ghanaian women had at least one antenatal care visit while pregnant. On the contrary, 29.7% of pregnant women never attended ANC in Kenya (King'oo, 2015), and over one third of pregnant women in Nigeria do not attend ANC service during pregnancy (Fagbamigbe & Idemudia, 2015).

Despite the global and local attention and commitment made towards maternal health since the inception of the MDGs, there are still low levels of adequate ANC attendance in some countries.

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Though ANC attendance was universal in this study, not all the respondents had the minimum number of four ANC attendances before delivery. The proportion of women who had at least four visits before delivery (92.6%) in the current study was consistent, but slightly higher than the national rate (87%) and that of the 2015 figure of the Bawku Municipality (84.9%). Given the rural nature of the study area, the factors that could influence adequate ANC visits may include poor access, cultural beliefs, financial constraints and level of education. According to Gitonga (2017), women with higher level of education were more likely to attend more antenatal care visits. That notwithstanding, the finding is encouraging and indicates good progress towards achieving the WHO recommendation.

Similar to the finding in the present study, Muhwava et al. (2016) in a cross sectional study found that 84% of women had a minimum of four antenatal care visits before delivery. On the contrary, low levels of adequate number of ANC visits have been reported in other sub-Saharan African countries. For instance, 56.2% had adequate numbers of ANC visits in Nigeria (Fagbamigbe & Idemudia, 2017). Moreover, according to Ayiasi, Kasasa, et al. (2014), 42.3% of respondents had at least four ANC visits in their previous pregnancies in Uganda.

Moreover, with a universal ANC attendance as reported in the study, one would expect a universal facility delivery with a skilled birth attendant; given that ANC attendance is a one of the determinants of choice of place of delivery. In a study on determinants of health facility utilization for childbirth in rural western Kenya, Kawakatsu et al. (2014) found ANC attendance as one of the significant determinants of facility delivery. In this study, majority of the respondents delivered in a health facility with a SBA (88.5%); whereas 11.5% delivered at home without an SBA despite a universal ANC attendance. Similarly, Enuameh et al. (2016) found that 75.6% of respondents had facility deliveries whilst 24.4% delivered at home. Kabwijamu et al.

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(2016) also found that 78.8% and 21.2% of respondents had facility and home deliveries respectively in Western Uganda. On the contrary, only 18.8% of births were attended by skilled attendants in Ethiopia (Alemayehu & Mekonnen, 2015), 13% in Nigeria (Adewemimo et al., 2014), and 39.8% of women delivered at home in rural Ghana (Dickson, Adde, & Amu, 2016).

5.2 Enabling resources of respondents

In this study, enabling resources include knowledge on ENC practices, socioeconomic class (SEC) and education or counselling on ENC practices from a health worker. Health workers' counselling on safe neonatal practices has been identified as a key factor influencing the uptake of recommended newborn care practices by mothers. The current study found that more than half of the respondents received education or counselling on the three areas of ENC: 83% for good breastfeeding practices, 80.8% for good thermal care practices and 71.3% for safe cord care practices. These findings agree with that of Renfrew et al. (2014) where a greater proportion of postnatal women indicated to have received education on safe newborn care practices. Similarly, more than 50% of mothers were counselled on safe newborn care in Ethiopia (Sibley et al., 2014).

This trend of high maternal education or counselling on safe newborn care practices is attributable to the increasing attention given to newborn health, both globally and locally. The ENC programme was launched by GHS in the Upper East Region in 2012, with the Bawku Municipality as one of the implementation centres; hence, a high level of maternal education or counselling on safe newborn care practices was an expected outcome. Additionally, the Every Newborn Action Plan (ENAP) is well recognized in Ghana and health workers have played an important role in the education of mothers about safe newborn care practices.

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According to Rama, Gopalakrishnan, and Udayshankar (2014), creating awareness about essential newborn care practices among mothers through education is a key step in achieving the goals of specific child health programmes. The relevance of this was shown by Sines et al. (2007) who demonstrated that health education information from a skilled health provider optimizes mother and newborn health, promote healthy behaviour and health household practice. Moreover, health workers' counselling of mothers on safe neonatal practices is an important factor that can play a role in the survival of newborns (Lassi et al., 2014). However, educating and counselling mothers on essential newborn care is not a guarantee for the practice of good newborn care. That notwithstanding, there is the need for health workers to intensify the modalities for educating post natal women on safe newborn care practices.

However, the findings in this study refute what was reported by Memon et al. (2015). It was reported that pregnant women were not receiving adequate education or counselling on good newborn feeding practices. Though this finding may contradict what has been reported in the current study, it corroborates the assertion that much focus is put on the education of women on safe newborn care practices in the postnatal period. Therefore, the education or counselling of women on safe newborn care practices should be expanded to include the antenatal period.

The current study also found that mothers' overall knowledge on ENC practices was high (Mean = 33.78, SD = 5.34) with 70.5% (n = 287) of the respondents having high level of knowledge whilst none of the respondents had low level of knowledge. This is an indication that postnatal women have adequate knowledge on ENC practices in the Bawku Municipality. In other low-middle income countries like Ghana, similar findings have been revealed. According to Meghadipa and Anuradha (2016), 91.5% of postnatal women in India had satisfactory knowledge on neonatal care practices. Misgna et al. (2016) also found that 80.4 % of mothers

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had good knowledge on essential newborn care at home, whereas 19.6 % of them had inadequate knowledge. Despite the high level of overall knowledge on ENC practice, a greater proportion of the respondents disagreed with the item on delayed newborn bathing until after 24 hours of delivery. This probably explains why the majority of respondents, 74.4% (n = 303) practiced early newborn bathing in the current study.

However, the high level of knowledge on ENC practices found in this study appear to contradict the finding of Bansal and James (2016), where only 12% of respondents had high level of knowledge on ENC practices. Though both studies employed a quantitative approach, the differences in geographical locations of the study areas and the comparatively smaller sample size (50 respondents) by Bansal and James (2016) could best explain the wide gap in the findings.

In terms of socioeconomic class, majority of the mothers, 57.7% (n = 235) were in the middle class; whilst only 11.5% (n = 47) were in the high SEC and 30% (125) were in the low SEC. This finding could be due to the rural nature of the study area, where illiteracy, gender inequality, unemployment, and poverty among women is endemic. According to Assah et al. (2015), people in rural communities have low socioeconomic status than their urban partners. This finding agrees with Osei-Kwakye et al. (2010) who found that most mothers were assessed to be in the middle level with regard to economic class in the Builsa District. In a Nigerian study, Opara et al. (2012) also found that 24.4% (n = 54) of mothers were in the high social class, while 65 (29.4%) and 102 (46.2%) were of middle and low social classes respectively. Moreover, most of the mothers in the study (46.3%) were from the lower socioeconomic class with 37.5% and 16.2% from the middle and upper socioeconomic classes respectively (Onah et al., 2014).

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Interestingly, the situation is different in other low-middle income countries where more rural dwellers belong to the high socioeconomic class than urban dwellers. Masthi and Gangaboraiah (2013) conducted an exploratory study on socioeconomic status scales in a rural and urban setting in India. Among the 60 families surveyed at rural setting, it was observed that, majority 67% (n = 40) belonged to high socioeconomic class; whereas among the 60 families surveyed at urban setting, 50% (n = 30) belonged to high socioeconomic class.

5.3 Patterns of Essential Newborn Care (ENC) practices

The three areas of essential newborn care that were considered in the study are cord care, thermal care and breastfeeding. Therefore, the patterns of essential newborn care are discussed under the headings below.

5.3.1 Pattern of cord care practices

It is recommended that the umbilical cord stump of a newborn baby should be left dry without the application of any substance to it, which is a safe practice. The application of a substance to the cord stump is an unsafe practice and is a risk factor of cord infection which can cause early neonatal deaths. According to Kinanu et al. (2015), the application of substances to the cord was associated with cord infection in Kenya and the most common cause of neonatal death in rural Uganda is sepsis (Grant et al., 2014).

In the present study, 67.8% (n = 276) of the respondents practiced safe cord care whilst 29.5% (n = 120) practiced unsafe cord care. This finding suggests high safe cord care practice which is consistent with the findings of other studies in Ghana and other low-middle income countries. A cross sectional study in the Volta Region found that 74% of the respondents practiced safe cord care whilst 26% practiced unsafe cord care (Nutor et al., 2016). In another study, about 86.0% of

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the respondents did not use any substance on the stump (Devkota & Bhatta, 2012), suggestive of high level of safe cord care practice among mothers. The finding from the current study is also in line with the work of Bibhash et al. (2016) who found that 90.1% of mothers practiced safe cord care and that of Hill et al. (2010) where 80% of families practiced dry cord care.

The factors that were found to have a statistically significant association with cord care practice include mother's age [$\chi^2_{(3)} = 22.320$, $p < .001$], level of education ($\chi^2_{(4)} = 227.923$, $p < .001$), ethnicity ($\chi^2_{(4)} = 26.268$, $p < .001$), and place of delivery ($\chi^2_{(1)} = 99.484$, $p < .001$). This means that the practice of safe cord is influenced by mothers' age, level of education, ethnicity and place of delivery. A greater proportion of mothers who received formal education at different levels practiced safe cord care (89% – 94%). However, a very low proportion (17.9%) of mothers who had no formal education practiced safe cord care whilst 82.1% practiced unsafe cord care. This corroborates the findings of previous studies where 38.5% of the illiterate study participants practiced safe cord care whereas 65.6% of mothers who had formal education practiced safe cord care (Bhatt et al., 2015).

Additionally, a greater proportion, 77.8% of mothers who delivered in a health facility practiced safe cord care whilst only 4.5% of mothers who delivered at home practiced safe cord care. This indicates that only 22.2% of mothers who delivered at a health facility, compared to 95.5% of mothers who delivered at home practiced unsafe cord care. These findings affirms Gul et al. (2014) assertion that having a delivery at home was a risk factor for poor cord care. This is probably due to the fact that, mothers are usually educated on safe newborn care practices after delivery. Therefore, women who deliver at home do not get the opportunity to be educated or counselled on safe newborn care practices. Similar to the findings in the current study, Bhatt et al. (2015) revealed that more than one third (36.1%) of newborns delivered in an institution

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practiced unsafe cord care as compared to 82.9% who were delivered at home. Moreover, Opara et al. (2012) established that place of delivery was significantly associated with cord care practices ($\chi^2 = 1.260$, $p = 0.030$).

Interestingly, the findings from this study is in sharp contrast with that of Saaka and Iddrisu (2014), where the prevalence of safe cord care practice was 0.2% in Northern Ghana. Given the similarities in demographic and economic characteristics of the study areas, one would expect similar outcomes but the findings are completely different. This is probably due to the fact that majority of the respondents (89.4%) in the previous study by Saaka and Iddrisu (2014) were illiterates and had delivered their babies at home; given that level of education and place of delivery are associated with safe cord care. As women attain higher education, they become more exposed to relevant information about the importance of safe cord care, and will therefore be more inclined towards keeping the cord stump dry without applying any substance. Corroborating this assertion, Shoaib et al. (2012) concluded that, educated women have the tendency to ignore tradition and use modern ways of promoting good health than illiterate women. Therefore, it is not surprising that the current study revealed high practice of safe cord care, given that majority of the respondents had received formal education at different levels.

Despite the emphasis on the practice of safe cord care through the essential newborn care programme, the practice of unsafe cord care is still prevalent in some countries. Contrary to the findings from the current study where the practice of safe cord care was high among mothers, other earlier studies found otherwise. In a qualitative study on clean delivery practices in rural Northern Ghana, the practice of unsafe cord care was prevalent with 71.4% of the respondents indicating to have applied a substance on the cord stump (Moyer et al., 2012). More recently, the

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prevalence of safe cord care practice was less than half (42.8%) among mothers in the northern part of Ethiopia (Berhe et al., 2017).

5.3.2 Pattern of thermal care practice

As recommended by the WHO, a newborn baby is not supposed to be bathed until after 24 hours of delivery (World Health Organization, 2012); hence, bathing a newborn within the first 24 hours of delivery is a bad practice. Home delivery, low birth weight, and early bathing of babies are risk factors of hypothermia in sub-Saharan Africa (Onalo, 2013). Although hypothermia is rarely a direct cause of neonatal death, it has been reported as an important indirect contributor to neonatal mortality globally (Lunze et al., 2013; Seyum & Ebrahim, 2015). It is also evident that delayed bathing contributes to a reduction in neonatal mortality in low and lower-middle income countries. In Bangladesh, delayed bathing significantly contributed to an improvement in newborn health, hence a reduction in neonatal mortality (Akter et al., 2015).

With regards to adopting a good thermal care practice, the current study found that only 22.6% of mothers bathed their newborn babies after 24 hours of delivery. A majority of them, 74.4 % bathed their newborn babies before 24 hours of delivery whilst 3 % of mothers could not remember the time their newborn babies were bathed. This is consistent with the findings of Gul et al. (2014) where 86% of respondents reported first bath within 24hrs of birth in Pakistan. Similarly, it was reported by Waiswa et al. (2010) that more than half (58%) of newborns had poor thermal care. However, the phenomenon of poor thermal care practice appears to be different in other low-middle income countries. In Uganda, about 60% of the mothers practiced delayed newborn bathing (Kayom et al., 2015) and 86.1% of newborns were bathed after 24 hours in Nepal (Shiva & Asmi, 2014).

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Cultural beliefs and practices are associated with newborn bathing after delivery in sub-Saharan Africa and other low income countries. In typical rural Ghanaian communities, immediate newborn bathing after delivery is widely prevalent because the baby is considered “dirty” due to the presence of vernix caseosa on the baby’s body. This probably explains the findings in the current study despite the emphasis on the practice of safe newborn care. Supporting this assertion, Sharma et al. (2016) concluded that immediate newborn bathing is a customary practice to purify the baby in the rural areas of Nepal. Moreover, the main reason for universal early bathing in Nigeria was a belief that the amniotic fluid that protects the foetus in utero could cause body odour as the child grows (Adejuyigbe et al., 2015).

It was further found that ethnicity [$\chi^2_{(4)} = 15.597, p = .004$], level of education [$\chi^2_{(4)} = 22.807, p < .001$] and place of delivery [$\chi^2_{(1)} = 13.373, p < .001$] were significantly associated with thermal care. This finding suggests that the practice of good thermal care is influenced by mothers’ level of education, ethnicity and place of delivery. In terms of education, good thermal care was found to be very low among women who had no formal education with only 15.4% of them practicing good thermal care; whereas 42.2% of mothers who had S.H.S education practiced good thermal care. This implies that the practice of good thermal care is influenced by level of education; affirming the conclusion of Shiva and Asmi (2014) that newborn bathing was significantly associated with level of education of mothers.

Moreover, the results revealed that 26.1% of mothers who delivered in a health facility practiced good thermal care whilst only 2.1% of those who delivered at home practiced same. Almost all the women (99%) who adopted good thermal care practice were those who delivered at a health facility whereas almost all the women (98%) who delivered at home adopted bad thermal care

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practice. In another study in Tanzania, 55% of babies born at a health facility and 81% born at home were bathed within six hours after birth (Shamba et al., 2014).

The cultural beliefs and perceptions associated with bathing the newborn immediately after delivery are very difficult to change as they have been practiced for a long time. As found in the present study, the prevalence of bathing newborns immediately after delivery was also high among educated women. This might be due to the cultural beliefs and desire to remove vernix completely to make the baby clean and pure; indicating that education has not been able to change the beliefs and perceptions about early newborn bathing. However, other factors that determine delayed bathing could be changed with less effort.

5.3.3 Pattern of breastfeeding practice

As recommended by the WHO, newborns are supposed to be fed exclusively on breast milk (World Health Organization, 2012). According to Abdulmaleek and Musa (2016), exclusive breastfeeding provides nutritional, immunologic, developmental and psychological advantages with regard to general health, growth and development of the newborn.

With an almost universal knowledge on exclusive breastfeeding among respondents in the study, one would expect the findings on its practice to reflect the level of knowledge. However, the descriptive statistics revealed that 77.4% (n = 315) of the respondents fed their newborns on only breast milk whereas 22.6% (n = 22.6%) indicated to have given other feeds to their newborns in the neonatal period. This is an indication that knowledge does not necessarily reflect practice. As concluded by Onah et al. (2014), knowledge and awareness does not translate to practice of exclusive breastfeeding. Also, Dun-Dery and Laar (2016) revealed that although awareness about EBF was almost universal (99%), its practice was very low with only 10.3 % indicating to

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have practiced EBF. Therefore, more effort by health workers and policy makers should be directed to mothers along the fault lines to encourage the practice of exclusive breastfeeding.

The finding in this study contradicts the exclusive breastfeeding rate in other countries but consistent with the national exclusive breastfeeding rate in Ghana. While exclusive breastfeeding rates have been reported to be as low as 36% in low to middle income countries (Mangasaryan et al., 2012), periodic national surveys concluded that Ghana's exclusive breastfeeding rate in the general population is currently over 50% (Dun-Dery & Laar, 2016). Similarly, Tampah-Naah and Kumi-Kyereme (2013) reported that the rate of exclusive breastfeeding was 64% in a cross sectional study in Ghana.

On the contrary, Yotebieng et al. (2013) found that 50% of respondents gave something to their newborns before initiating breastfeeding and 60% of newborns were given other feeds in the Democratic Republic of Congo. Likewise, supplemental substances were given to 44% of newborns as pre-lacteal feeds, and to more than half during the first week of life in rural Egypt (Darmstadt et al., 2007). In Ghana, Dun-Dery and Laar (2016) found that the practice of exclusive breastfeeding at six months was low (10.3%) among city-dwelling professional working mothers in Ghana. Moreover, though majority of the respondents were well-informed about exclusive breastfeeding, less than half, 48% of professional working mothers were able to practice exclusive breastfeeding in Kumasi (Danso, 2014).

Furthermore, the chi-square test found a statistically significant relationship between the level of education of respondents and the practice of breastfeeding, ($\chi^2_{(4)} = 30.072, p < .001$). The cross tabulation results showed that among women who had no formal education, 64% (n = 80) of them practiced good breastfeeding whereas a greater majority, 96.6% (n = 28) of women with

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tertiary education practiced good breastfeeding. This implies that level of education of mothers have an influenced on the practice of good breastfeeding. A similar finding was reported in Mauritius, where education was found to have an influence on the practice of good breastfeeding among mothers (Motee, Ramasawmy, Pugo-Gunsam, & Jeewon, 2013). Additionally, Sriram, Soni, Thanvi, Prajapati, and Mehariya (2013) concluded that Level of education has positive impact on infant feeding practices.

Moreover, there was a statistically significant association between place of delivery and good breastfeeding, ($\chi^2_{(1)} = 36.872, p < .00$), suggesting that good breastfeeding practice is influenced by place of delivery. With respect to place of delivery, 81.9% (n = 295) of mothers who delivered in a health facility practiced good breastfeeding; however less than half (42.6%) of women who delivered at home practiced good breastfeeding. As reported by Asemahagn (2016), mothers who delivered at a healthcare facility practised more exclusive breastfeeding than those who delivered at home in Ethiopia.

Though the study found only level of education and place of delivery to have significant association with breastfeeding practices, other studies have found a significant association between other predisposing characteristics and good breastfeeding practices. In a cross sectional study by Kumola (2015) in Kenya, breastfeeding was found to be influenced by religion, maternal occupation, attendance of ANC and paternal occupation.

5.4 Relationship between predisposing characteristics and enabling resources

As revealed in this study, mothers' knowledge on ENC practices was high; hence the need to establish the relationship between their predisposing characteristics and knowledge on ENC practices. Knowledge on ENC practices showed a statistically significant moderate positive

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correlation with mothers' age ($r = .306, p > .01$) and parity ($r = .582, p > .01$). This means that an increase in age and parity leads to an increase in knowledge on ENC practices; therefore, elderly and multiparous mothers (mothers with more than one child) had high knowledge on ENC practices than younger and primiparous mothers (mothers with one child). Consistent with the findings of the current study, multiparity, higher education and higher maternal age were related to significantly higher knowledge scores on newborn care in India (Punitha & Kumaravel, 2016), and Ethiopia (Misgna et al., 2016).

In Sri Lanka, age was also found to have a significant positive relationship with knowledge on neonatal care whilst parity did not show a significant relationship with maternal knowledge on neonatal care as expected (Priyadarshanie & Pethiyagoda, 2015). However, according to Dayaratne and de Silva (2016), there was a significant relationship between parity and knowledge on essential newborn care.

Furthermore, the results revealed a moderate positive correlation between level of knowledge on ENC practices and level of education, which is statistically significant ($r_s = .569, p < .001$) and a weak but significant positive correlation with monthly income level ($r_s = .194, p < .001$). This implies that, mothers with higher level of education have higher levels of knowledge on ENC practices and mothers with higher monthly income have high level of knowledge than mothers who earn lower monthly income. In a similar study, Priyadarshanie and Pethiyagoda (2015) found level of education to have a significant positive relationship with knowledge regarding neonatal care.

However, number of ANC attendance had no significant relationship with knowledge on ENC practices. This finding is not surprising because the education or counselling of mothers on

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newborn care is usually emphasised after delivery and discharge from a health facility. This implies that women who attend ANC but did not deliver in a health facility are deficient in knowledge on safe newborn care practices; hence the likelihood of adopting harmful newborn care practices. As found by Gul et al. (2014), antenatal care coverage was good, but knowledge regarding newborn care was poor among post natal women in Pakistan.

5.5 Predictors of essential newborn care practices

5.5.1 Predictors of safe cord care.

In this study, safe cord care was defined as keeping the cord stump of the newborn dry, without applying any substance to it. The binary logistic regression results showed that seven independent variables had an independent statistically significant relationship with safe cord care: level of education, parity, place of delivery, ethnicity, socioeconomic class, knowledge on safe cord care, and education/counselling on safe cord care.

Additionally, the multiple logistic regression analysis revealed that the predictors of safe cord care are level of education, place of delivery and ethnicity. With regards to level of education, mothers who received formal education at different levels were more likely to practice safe cord care; whereas women without formal education were less likely to practice safe cord care. This implies that uneducated mothers are likely to adopt unsafe cord care practices than educated mothers. This finding is broadly consistent with other studies on safe cord care among post natal women. As found by Shahjahan et al. (2012), level of education was a predictor of safe cord care; where secondary and higher levels of maternal education was a significant predictor for safe cord care compared with women with no education. More recently, maternal education also emerged as a significant predictor of safe cord care in Ethiopia (Kokebie et al., 2015; Tura &

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Fantahun, 2015), and Pakistan (Gul et al., 2014). Therefore, one can conclude that there is an urgent need to educate mothers since level of education appeared as significant predictor of safe cord in this study and corroborated by the findings of other researchers.

Moreover, the findings in the current study suggest that women who delivered in a health facility are more likely to practice safe cord care than women who delivered at home. This concurs with other studies where place of delivery was found as a significant predictor of safe cord care. According to Bibhash et al. (2016) , having a home delivery was a significant factor for non-adoption of safe cord care in rural India. A similar finding was also revealed by Owor et al. (2016) where mothers who had skilled delivery were more likely to practice safe cord care than their colleagues who delivered at home. However, Ayiasi, Kasasa, et al. (2014) revealed that health facility delivery was not a predictor of safe cord care in a cross sectional study in Uganda.

Furthermore, ethnicity emerged as a significant predictor of safe cord care. Mothers who belonged to other ethnic groups were more likely to practice safe cord care than mothers who belonged to the indigene ethnic groups (Kusaasi, Busanga, Mamprusi and Moshie). This is probably due to the cultural beliefs and perceptions associated with the application of substances to the cord stump. As reported by Coffey and Brown (2017), the desire to promote healing and hasten cord separation is the underlying beliefs related to application of substances to the umbilical cord in sub-Saharan Africa. In rural northern Ghana, it is believed that practice of dry cord where nothing is applied to the cord stump would have serious negative consequences on the newborn (Hill et al., 2010); hence the application of substance such as shear butter, ground shear nuts, local herbs, local oil, or “red earth sand (Moyer et al., 2012). Also, in a qualitative study, Amare (2014) discovered that substances were applied on the cord to moisturize it, facilitate its separation and promote healing. Therefore, in communities where these beliefs are

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common, mothers are more likely to practice unsafe cord care since the application of a substance has a perceived benefit.

However, this observation is not new as similar findings have been reported in other studies where ethnicity was a predictor of safe cord care. According to Tuladhar (2010), women belonging to the inferior caste or ethnic groups were less likely to practice safe cord care than women in the superior caste or ethnic group. Nonetheless, contrary findings were reported in other studies where ethnicity did not predict safe cord practice (Bibhash et al., 2016; Owor et al., 2016; Tura & Fantahun, 2015).

Interestingly, knowledge and education or counselling on safe cord care did not emerge as significant predictors of safe cord care in this study. This implies that knowledge on safe cord care does not necessarily guarantee its practice. Though this finding may be surprising, Castalino et al. (2014) revealed that knowledge on safe cord care did not translate into practice. This outcome reveals a gap between knowledge of safe cord care by mothers and its practice; hence the mere education or counselling of mothers on safe cord care may not translate into practice. That notwithstanding, other studies have revealed knowledge as a significant predictor of safe cord care. Chaudhary et al. (2013) found that mothers who knew about newborn care were more likely to practice cord care in comparison to mothers who do not know about it. Moreover, Berhe et al. (2017) revealed that mothers who received counselling about essential newborn care during delivery were more likely to practice essential neonatal care practice than their counterparts who did not.

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5.5.2 Predictors of good thermal care

As indicated earlier, research has revealed that immediate newborn bathing after delivery increases the risk of hypothermia. Hence, the need to delay newborn bathing for 24 hours as recommended by the WHO. However, several factors are considered to have an influence on the adoption of this safe practice by post natal women. The current study found that ethnicity, level of education, parity, place of delivery and knowledge on good thermal care had an independent statistically significant relationship with good thermal care. However, level of education, place of delivery, ethnicity and socioeconomic class emerged as the predictors of good thermal care in the final model of the multiple logistic regression analysis.

In terms of education, mothers who received formal education up to the senior high level and above were more likely to practice good thermal care than mothers who had lower levels of education and no formal education. This finding is not surprising because women who are highly educated are more likely to have a better understanding of the benefits of delayed newborn bathing. As may be expected, women who understand the benefits of delayed newborn bathing would practice same. Corroborating this assertion, Shoaib et al. (2012), reported that educated women were more likely to break away from tradition to use modern means of safeguarding their own health and that of their children. Therefore, the findings in the current study could be expected as mothers who attained secondary or higher education prefers to use modern health facilities and would consequently become more aware of the relevance of delayed newborn bathing. This is consistent with the finding of Kokebie et al. (2015) where educational status was as a predictor of essential newborn care practices which includes good thermal care.

Additionally, mothers in the high socioeconomic class were more likely to practice good thermal care than women in the low and middle class. This is because wealthy women may be more

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inclined to delaying the first bath of their newborns until after 24 hours of birth. Delaying the first bath of a newborn is relatively a modern practice and it might be that the wealthier women are more likely to desert traditional practices and be more inclined towards adopting modern practices. Therefore, they would delay newborn bathing until after 24 hours of delivery. This finding is in tandem with that of Owor et al. (2016) where socioeconomic status of mothers was a significant predictor of safe cord care. Additionally, SES was a predictor of delayed newborn bathing; women in the high socioeconomic class were more likely to bathe their baby after 24 hours of delivery in Ethiopia (Tuladhar, 2010; Tura & Fantahun, 2015).

Moreover, the findings of the current study suggest that women who delivered at a health facility were more likely to practice good thermal care than women who delivered at home. This outcome is attributable to the rural nature of the study area where negative cultural beliefs and practices associated with delayed newborn bathing are inherent. In typical rural Ghanaian communities, the newborn is considered as 'dirty' due to the presence of vernix; hence should be bathed immediately after delivery for cleansing before having contact with the mother. Validating this assertion, a qualitative study in Zambia by Shamba et al. (2014) revealed that the main reason for early newborn bathing was the belief that the baby is dirty, particularly if the baby had an obvious vernix as this was believed to be sperm.

In a similar finding, Ayiasi, Criel, et al. (2014) indicated that women who reported health facility delivery were more likely to practice good thermal care than women who reported home delivery. Likewise, in Tanzania, delayed newborn bathing was almost universal for those who delivered in a facility, but was varied among home deliveries (Adejuyigbe et al., 2015), indicating that facility delivery was a significant predictor of delayed newborn bathing. Contrary to the findings from this study and what has been widely reported in the literature, Kumola

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(2015) found that place of delivery was not a predictor of good thermal care. Additionally, a cross sectional study by Baqui et al. (2007) in India also revealed that place of delivery did not predict the practice of good thermal care.

Despite facility delivery emerging as a predictor of good thermal care, the descriptive results showed that facility delivery constituted 84.8% of bad thermal care whilst 15.2% were home deliveries. Nevertheless, in the multivariate analysis, home delivery was not a significant predictor of good thermal care, possibly due of the small number of home deliveries in the sample population (11.5%), therefore a lack of statistical power to determine the association. According to Button et al. (2013), a study with low statistical power has a reduced chance of detecting a true effect.

Finally, the gap between mothers' knowledge of good thermal care and practicing good thermal care has also emerged from this study. Despite the high level of mothers' knowledge on good thermal, it did not emerge as a significant predictor of good thermal care in the multiple regression analysis. Nonetheless, in a community based cross sectional study, Tegene et al. (2015) reported knowledge of newborn bathing time as a significant predictor of good thermal care practice. Mothers who had knowledge on delayed bathing were more likely to practice good thermal care; therefore the usefulness of knowledge on good thermal care practices cannot be downplayed. However, this may imply that the practice of good thermal care is predicted by more than one factor; hence, there is an interaction of several factors in determining the practice of good thermal care, where mothers' knowledge could be an intermediate factor. Therefore, improving socioeconomic status of women, supporting girl child education, encouraging facility delivery and increasing the knowledge on the benefits of delayed bathing might be very effective approaches to modify newborn bathing behaviours.

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5.5.3. Predictors of good breastfeeding practice

Exclusive breastfeeding for first 28 days of life and subsequently for six months has several enormous benefits for babies as well as mothers. However, this worldwide recommended and beneficial practice may not be followed by lactating mothers due to various reasons. In this study, good breastfeeding practice referred to the act of feeding newborns on only breast milk without giving any other substance to the baby. The findings from the study demonstrate that place of delivery and knowledge on good breastfeeding practices are the key predictors of its practice.

Having high knowledge of good breastfeeding practices was found to have a positive influence on good breastfeeding practice. This is a direct relationship, in that woman who knew the advantages of feeding the newborn on only breast milk for the first one month were more likely to breastfeed their newborns on only breast milk. Though knowledge does not necessarily translate into practice, this finding gives credence to the assertion that, knowledge influences behaviour (Mocan & Altindag, 2014). These findings concur with other studies where knowledge on good breastfeeding emerged as a significant predictor of good breastfeeding practice. In a Tanzanian study Maonga et al. (2016), found knowledge on exclusive breastfeeding and its advantages as a significant predictor of practicing exclusive breastfeeding. Similarly, maternal knowledge in newborn danger signs was a significant predictor of good breastfeeding practice in rural northern Ghana (Saaka & Iddrisu, 2014).

Contrary to the finding in the current study and what has widely reported in other countries, maternal knowledge on exclusive breastfeeding was not significantly related to pre-lacteal feeding in Kenya (Patrick et al., 2016). Certainly, the differences in the knowledge assessment tools used in both studies could account for the contradicting findings. A comparison of the

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criteria used to assess the knowledge of respondents on good breastfeeding practices show similar component features but different rating scheme to assess their knowledge levels. That notwithstanding, the conclusion by Patrick et al. (2016) that high maternal knowledge on good breastfeeding does not necessarily translate into practices could be a valid one since other studies had similar outcomes. According to Dun-Dery and Laar (2016), knowledge of exclusive breastfeeding and its benefits did not translate into practice in Ghana.

Though receiving counselling about good breastfeeding practice did not emerge as a significant predictor of good breastfeeding practice in the current study, other studies have found otherwise. According to the findings of Berhe et al. (2017), women who received counselling during delivery were more likely to practice essential newborn care as compared to women who did not receive counselling. Also, Bililign et al. (2016) revealed that lack of counselling about breastfeeding as a significant predictor of pre-lacteal feeding. However the relevance of counselling cannot be downplayed in this study as knowledge emerged as a significant predictor of good breastfeeding practice. Since counselling has a positive correlation with knowledge (Egryani et al., 2017), there is the need to put more emphasis on the importance of counselling post natal women on good breastfeeding practice.

Furthermore, the finding that facility delivery is a predictor of the practice of good breastfeeding is not new as similar finding have been reported in other studies. In a cross sectional study by Arage and Gedamu (2016b), facility delivery was reported as predictor of exclusive breastfeeding; likewise, mothers who gave birth at home were more likely to practice pre-lacteal feeding as compared to mothers who delivered at health institutions (Legesse et al., 2014; Roy et al., 2014). Agho et al. (2016) also reported place of delivery as predictor pre-lacteal feeding; where women who delivered at home were more likely to introduce pre-lacteal feeds to their

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newborns. These findings justify the need to encourage facility delivery where women can be counselled on good breastfeeding practices.

Surprisingly, level of education and parity did not emerge as significant predictors of good breastfeeding practice in the final regression model. Though parity was not a predictor of good breastfeeding practice in the final regression model, it was found to have a significant relationship with good breastfeeding practice when place of delivery and level of education variables were regressed in the first mode. However, it could not retain its significance when socioeconomic class and knowledge of good breastfeeding practice were introduced in the second and final model.

In summary, the uptake of recommended newborn care practices by post natal women was good for cord care and breastfeeding, but bad for thermal care. Mothers exhibited high level of knowledge on recommended newborn care practices and this had a significant positive correlation with age of mothers, parity socioeconomic class and level of education. The key factors that emerged as significant predictors of these recommended newborn care practices are: mother's level of education, place of delivery, ethnicity, socioeconomic class and knowledge on good breastfeeding practices. However, the thorough discussion of the findings has revealed several consistent and contradicting findings in different countries in terms of the practice of recommended newborn care; even across low-middle income countries and regions within a country. Again, the predictors of recommended newborn care practices were different across countries and even regions or districts within a country; and also different for specific recommended newborn care practices. Therefore, a country-specific analysis of the determinants of specific ENC practices can best inform policies and strategies that should be implemented to improve the uptake of these practices for individual countries.

CHAPTER SIX

**SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION AND
RECOMMENDATIONS**

This is the last and final chapter of the study. It presents a summary of the entire study, discusses the implications of the study, limitations and conclusion. Based on the findings of the study, recommendations were also made for consideration by the appropriate authorities for onward implementation.

6.1 Summary of the study

The neonatal period constitutes the most critical period for a child's survival and therefore, the risk of a child dying is very high. Globally, an estimated 2.7 million deaths, approximately 45% of under-five deaths occurred in the neonatal period in 2015. Sub-Saharan Africa has the highest risk of death in the first month of life and is among the regions that showed the least progress towards achieving MDG 4. According to the UNICEF et al. (2016), progress in the reduction of neonatal mortality has been almost stagnant in Ghana over a 5 year trend: 31/1,000 live births in 2011 and 2012, 30/1,000 live births in 2013, 29/1000 live births in 2014 and 28/1,000 live births in 2015. Many studies have come to a conclusion that poor newborn care is one of the important reasons for the persistent increase in newborn deaths in low-income countries. Moreover, there is no local data on community based essential newborn care practices in the study area and little is documented on the factors influencing the practice of essential newborn care, especially among postnatal women. This study investigated the determinants of essential newborn care practices among post natal women in the Bawku Municipality.

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With a cross sectional survey design, 407 postnatal women were selected using a multistage sampling technique. A standard questionnaire developed by the Saving Newborn Lives Program was adapted, modified and used for data collection. The Statistical Package for Social Sciences (SPSS), now known as Predictive Analytics Software (PASW) version 20 was used to analyse the data. Descriptive results took the form of frequencies, percentage distribution, means, minimum, maximum and standard deviations and presented in tables and figures. Cross tabulation analysis was also carried out between the independent variables and the outcome variables (safe cord care, good thermal care and good breastfeeding) to examine the pattern of essential newborn care. Pearson r and Spearman rho correlation analysis was used to establish the relationship between predisposing characteristics and enabling factors (knowledge of ENC practices). Moreover, the binary logistic regression analysis was done to determine the predictors of good newborn care practices.

The findings show that post natal women had high level of knowledge on all the three aspects of essential newborn care practices: mean score of 11.57 (SD = 2.20) for safe cord care, 11.15 (SD = 1.67) for thermal care and 11.07 (SD = 2.54) for good breastfeeding practices. Though ANC attendance was universal, not all the respondents had adequate number of visits as recommended by the WHO; 92.6% (n = 377) had four or more ANC attendance before delivery. With regard to place of delivery, majority of the respondents received delivery services from a SBA during delivery as 88.5% (n = 260) reported that they delivered at a health facility; whereas 11.5% (n = 47) still delivered at home without an SBA.

Additionally, the practice of safe cord care and good breastfeeding was high. In terms of cord care, 67.8% (n = 276) practiced safe cord care and on the other hand, 77.4% (n = 315) practiced good breastfeeding. However, the practice of good thermal care was bad as the majority of the

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respondents, 74.4% (n = 303) bathed their newborns before 24 hours of delivery, whereas only 22.6% (n = 92) delayed newborn bathing until after 24 hours of delivery. The chi-square test of independence showed that mother's level of level education ($p = .001$) and place of delivery ($p = .001$) were significantly associated with safe cord care, good thermal care and good breastfeeding practice. Ethnicity ($p = .001$) was also significantly associated with safe cord care and good thermal care practice; whilst age was significantly associated with only safe cord care.

Generally, the overall knowledge of post natal women on essential newborn care practices was high with a mean score of 33.78 (SD = 5.32). The correlation results showed that knowledge on ENC practices had a moderate but statistically significant positive correlation with age ($r = .306$, $p > .01$) and parity ($r = .582$, $p > .01$). Moreover, there was a moderate positive correlation between level of knowledge on ENC practices and level of education of respondents, which is statistically significant ($r_s = .569$, $p < .001$). Besides, the results revealed a statistically significant positive, but weak correlation between level of knowledge on ENC practices and age groups of respondents ($r_s = .197$, $p < .001$) and with monthly income ($r_s = .194$, $p < .001$). These findings agree with the assertion of Andersen's model of health service utilisation that, predisposing characteristics have an influence on enabling resources.

Finally, the multiple logistic regression analysis revealed that level of education and place of delivery were the significant predictors of safe cord care practice. Women with higher education were more likely to practice safe cord care than women who had no formal education; likewise women who delivered at a health facility were more likely to practice safe cord care than women who delivered at home. Similarly, place of delivery and knowledge on good breastfeeding were the only significant predictors of the practice of good breastfeeding. However, four variables emerged as significant predictors of the practice of good thermal care: level of education,

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ethnicity, place of delivery, and socioeconomic class. These findings are indeed consistent with the constructs of the model of health care utilisation which postulates that, the utilisation of a health service is influenced by predisposing characteristics and enabling resources.

6.2 Implications of the study

Based on the findings and what has been widely reported in literature, this study has both policy and practice implications. These implications are discussed below.

6.2.1 Nursing practice implications

The study found that the overall knowledge level of post natal women on essential newborn care practices was high. However, despite majority of the respondents indicating to have been educated or counselled on delayed newborn bathing, the knowledge level as reported in the study was very low. This implies that nurses and midwives do not put specific timelines and emphasis on the number of hours when educating postnatal women on delayed newborn bathing. This also became evident in the study as education or counselling of postnatal women on delayed newborn bathing did not emerge as a significant predictor of its practice. Additionally, facility delivery was associated with good newborn care practices whilst home delivery was associated with bad newborn care practices. Again, knowledge on good breastfeeding practices emerged as a significant predictor of its practice and number of ANC attendance had no correlation with knowledge on good newborn care practices. This implies that education or counselling of women on good newborn care practices is either commenced in the later part of pregnancy or is not considered during the ANC period. Given a universal ANC attendance in the study, a revision of the modalities of education or counselling on good newborn care practices to cover the ANC period would improve the newborn care practices of women who may deliver at home; since they would have acquired the knowledge during ANC visits.

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6.2.2 Policy implications

The findings from the study have significant implications for policy formulation and implementation in the area of essential newborn care practices. Despite high rate of facility delivery as reported in the study, the practice of delayed bathing until after 24 hours of delivery was very low. The practice of early newborn bathing was still found among mothers who indicated to have delivered in a health facility. As a consequence, the probability of the practice of early newborn bathing within the health facilities is high; since majority of deliveries are usually discharged home after 24 hours of delivery. This implies that health care professionals may not have adequate understanding on the actual number of hours to delay newborn bathing or the policy is poorly implemented. A rigorous policy intervention is therefore needed to streamline the implementation and adherence of delayed newborn bathing in the health facilities.

Moreover, the study revealed that some mothers were not educated or counselled by a health care professional on the three areas of newborn care practices: safe cord care (28.7%), good thermal care (19.2%) and good breastfeeding practice (17%). Since these percentages exceed the proportion of home deliveries (11.5) in the study, it is obvious that education or counselling on essential newborn care practices was not given to all mothers who delivered in a health facility. This implies that there is a gap between policy and practice because in principle, nurses and midwives are expected to educate and counsel every woman on good newborn care practices after delivery and discharge. Hence, there is the need for innovative measures to ensure that all postnatal women receive education or counselling on good newborn care practices.

6.3 Limitations of the study

Every research, regardless of the methodology employed has some form of limitations. Underpinning this statement, there are some limitations associated with the current study.

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Primarily, the study was quantitative in nature and this made it difficult to measure the cultural perspectives of postnatal women about newborn care practices. Hence, the study could not establish any relationship between cultural factors (traditional customs, beliefs and norms) and the practice of recommended newborn care practices; given that cultural factors could have an influence on the adoption of recommended newborn care practices.

Again, a cross-sectional study design was used in the current study where a section of postnatal women were selected to participate. As one of the limitations of a cross sectional study design, it does not help determine cause and effect; hence the strength of causality is weak. Therefore, the cross sectional nature of the data limits the ability of this study to draw any causal conclusions on the relationships found in the current study despite the existence of significant relationships.

Moreover, the data collected for the study was based on a self-report of newborn care practices from mothers who delivered 12 months preceding the date of data collection. This could lead to recall bias since the mothers may forget the exact practice that was adopted for their newborns. Again, the data could be inaccurate since data collection was based on self-report but not a direct observation of the practices.

6.4 Conclusion

The findings from the study showed that the practice of safe cord care and good breastfeeding was very high among postnatal women; whereas the practice of good thermal care was low. Place of delivery and mothers' level of education were associated with the practice of safe cord care and good thermal care. Moreover, place of delivery, ethnicity, socioeconomic class, knowledge of good breastfeeding practices and level of education were the significant predictors of recommended newborn care practices. These findings suggest that a substantial number of

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newborns still receive harmful newborn care practice and these practices are determined by several factors as stated above. Rigorous efforts should therefore be made by the Ministry of Health through the Ghana Health Service and other stakeholders to improve the uptake of recommended newborn care practices at the community level.

6.5 Recommendations

With reference to the findings of the study, recommendations were made to the Ministry of Health (MOH) and its agencies, and the Nursing and Midwifery Council (NMC). Other recommendations for future research were also made.

6.5.1 Recommendations to the Ministry of Health (MOH)

The ministry of health should;

- Collaborate with Ghana Health Service (GHS) and other relevant stakeholders to include TBAs and elderly household females in their training programs on community based newborn care practices to increase their knowledge. This is because in rural Ghanaian communities, some deliveries still occur at home, and are mostly assisted by Traditional Birth Attendants and elderly females, instead of a Skilled Birth Attendant.
- Collaborate with GHS and other agencies of newborn health to develop a policy on mandatory follow up visits of newborns by health care professionals for monitoring, evaluation and documentation of newborn care practices at the community level. Community newborn care volunteers should also be trained to help in the follow up home visits at the communities. This will ensure strict adherence to the recommended practices and also ensure the availability of data on community based newborn care practices for future references and other interventions.

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6.5.2 Recommendations to the Ghana Health Service and its agencies

- The GHS, Christian Health Association of Ghana (CHAG) and other agencies of newborn health should organise regular in-service training for its staff on newborn care practices, especially newly qualified staff.
- The education and counselling of women on recommended newborn care practices should be expanded to include the antenatal period since some women are still delivered of their newborns at home.

6.5.3 Recommendations to the Nursing and Midwifery Council (NMC) of Ghana

The Nursing and Midwifery Council of Ghana should consider the following recommendations:

- Review the nursing and midwifery curriculum at the diploma, post-basic and graduate levels to include a considerable syllabus on newborn care practices. Preferably, a new course on Essential Newborn Care should be introduced at all the levels of nursing and midwifery education.
- The NMC should also liaise with the Ghana College of Nurses and Midwives to increase the enrolment of nurses and midwives into the three year neonatal nursing programme which was introduced in 2015. Additionally, a post-graduate specialty in Neonatal Nurse Practitioner (NNP) could also be introduced by other academic institutions to train nurses and midwives on care of the neonate.

6.5.4 Recommendations for future research

- Newborn care issues have gained more attention since the introduction of the MDGs and the rapid increase in neonatal mortality which led to non-achievement of MDG 4 by the majority of member states. The factors influencing the adoption of safe newborn care

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practices are multifaceted and have been widely researched, especially in low-middle income countries. However, most of the research studies have focused on health care professional and post natal women; without much attention on the influence of significant others on the uptake of these beneficial practices. Additionally, the paucity of literature in Ghana on newborn care practices was evident after an extensive literature review; with just a few having to investigate the determinants of essential newborn care practices at the community level. For Ghana to achieve the sustainable development goal of ending preventable newborn deaths by 2030, there is the need for more rigorous research in the area of newborn care. Therefore, future research should put more emphasis on the influence of significant others on the uptake of recommended newborn care practices, rather than focus on health care professionals and postnatal women. This will give a holistic view of the determinants of essential newborn care practices; hence a holistic approach to improving the practice of recommended newborn care.

- In this study, cultural factors were cited as possible reasons for the adoption of unsafe newborn care practices; and have been corroborated by other studies. For instance, the belief that the newborn is “dirty” could be the reason for the high level of early newborn bathing in the current study. Despite being an important factor in influencing the adoption of recommended newborn care practices, there has been little research into the cultural perspectives of newborn care. Unfortunately, the majority of studies on the determinants of recommended newborn care practices have employed quantitative designs which make it difficult to measure cultural beliefs associated with newborn care practices. Therefore, it is imperative for future researchers on newborn care to explore the cultural factors using qualitative study designs. This will provide a better understanding

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of the cultural perspectives of newborn care practices; making it essential for long term interventions.

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APPENDICES

Appendix A: Consent form

NMIMR-IRB CONSENT FORM TEMPLATE

Title: Determinants of Essential Newborn Care practices among postnatal women in Bawku Municipality

Principal Investigator: Alem John Ndebugri

Address: Department of Maternal and Child Health, School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon, Email: johnalem@rocketmail.com

General Information about Research:

This study seeks to understand how you take care of your newborn. You are invited to be part of the study if you just had a baby and can speak English, Kusaal, Hausa or Moori. If you agree to participate, you will be required to sign or thumbprint a form and fill out a form with responses to questions asked. It will take you about 10-15 minutes to answer the questions. You have the right not to answer questions which make you uncomfortable and the right to refuse to participate in the study. However, your refusal to take part in the study will not have an effect on how you take care of your baby.

Possible Risks and Discomforts

There are no known risk or discomfort to your being part of the study. However, the only anticipated inconvenience is the time you will spend to fill or answer the questions.

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Possible Benefits

There are no direct benefits to you as a participant; however, your responses to the questions may be used to educate other mothers in the future.

Confidentiality

To ensure confidentiality, you are not required to provide your name and the information obtained from you will not be shown to anybody. Only the researcher and his supervisors will have access to the information you provide. Also, your name will not be mentioned in the research report. All study information will be kept under lock and key in a cupboard at the School of Nursing of the University of Ghana and will be destroyed five years after the study. All data entries into a computer will also be protected by a password to prevent others from having access to it. Moreover, any publication from this study will not contain any identifiable information of you.

Compensation

You will be given half a bar of key soup for the time you spend to answer the questions.

Voluntary Participation and Right to withdraw

You have the right to take part in the study or not to and you can decide to withdraw from the study at any time.

Notification of Significant New Findings

Significant findings from the study will be presented at the Municipal Health Directorate and you will be invited to witness the findings

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Contacts for Additional Information

For further information about the study, you can contact any of the following

Alem John Ndebugri 0207444229 or johnalem@rocketmail.com

Prof. Ernestina Donkor 0243114968 or esdonkor@ug.edu.gh

Dr. Florence Naab 0263741717 or fnaab@ug.edu.gh

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.ug.edu.gh

Volunteer agreement

The above document describing the benefits, risks and procedures for the research title: *Determinants of Essential Newborn Care practices among postnatal women in the Bawku Municipality* has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date

Name and signature or mark of volunteer

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If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date

Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date

Name Signature of Person Who Obtained Consent

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Appendix B: Parental consent form

NMIMR-IRB PARENTAL CONSENT FORM TEMPLATE

Title: Determinants of essential newborn care practices among postnatal women in Bawku Municipality

Principal Investigator: Alem John Ndebugri

Address: Department of Maternal and Child Health, School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon, Email: johnalem@rocketmail.com

General Information about Research

This study seeks to understand how your child takes care of her newborn baby. She is invited to be part of the study if she has just had a baby and can speak English, Kusaal, Hausa or Moori. If she agrees to participate, she will be required to sign or thumbprint a form and fill out a form with responses to questions asked. It will take her about 10-15 minutes to answer the questions. She has the right not to answer questions which make her uncomfortable and the right to refuse to participate in the study. However, her refusal to take part in the study will not have an effect on how she takes care of her baby and she will not be penalised for refusing to take part.

Possible Risks and Discomforts

Your child will not be exposed to any known risk or discomfort for being part of the study. However, the only anticipated inconvenience is the time she will spend to fill or answer the questions.

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Possible Benefits

There are no direct benefits to your child as a participant; however, her responses to the questions may be used to make recommendations on newborn care for future implementation. Her responses may also be used to educate other mothers on newborn care practices.

Confidentiality

To ensure confidentiality, your child's information will be protected at all times. She is not required to provide her name and the information obtained from her will not be shown to anybody. Only the researcher and his supervisors will have access to the information provided by your child and her name will not be mentioned in any report. All the information provided by your child will be kept under lock and key in a cupboard at the School of Nursing in the University of Ghana and will be destroyed five years after the study. Moreover, any publication from this study will not contain any identifiable information of your child.

Compensation

Your child will be given half a bar of key soup for the time she will spend to answer the questions.

Voluntary Participation and Right to Leave the Research

Your child has the right to take part in the study or not to and she can decide to withdraw from the study at any time.

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Notification of Significant New Findings

Significant findings from the study will be presented at the Municipal Health Directorate and your child will be invited to witness the findings.

Contacts for Additional Information

For further information about the study, your child can contact any of the following

Alem John Ndebugri 0207444229 or johnalem@rocketmail.com

Prof. Ernestina Donkor 0243114968 or esdonkor@ug.edu.gh

Dr. Florence Naab 0263741717 or fnaab@ug.edu.gh

Your Child's Rights as a Participant

This research has been reviewed and approved by the Noguchi Memorial Institute for Medical Research Institutional Review Board (NMIMR-IRB). If you have any questions about your child's rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.ug.edu.gh

Volunteer agreement

The above document describing the benefits, risks and procedures for the research title: Determinants of essential newborn care practices among post natal women in the Bawku Municipality has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree that my child should participate as a volunteer.

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Date Name and signature or mark of parent or guardian

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the child's parent or guardian. All questions were answered and the child's parent has agreed that his or her child should take part in the research.

Date Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date Name Signature of Person Who Obtained Consent

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Appendix C: Child Assent Form

NMIMR – IRB CHILD ASSENT FORM

Introduction

My name is Alem John Ndebugri and I am from the Department of Maternal and Child Health, School of Nursing and Midwifery at the University of Ghana. I am conducting a research study titled: Determinants of essential newborn care practices among postnatal women in the Bawku Municipality. I am asking you to take part in this research study because I want to learn more about how you take care of your newborn baby. This will take about 10-15minutes.

General Information

If you agree to be in this study, you will be required to sign or thumbprint a form and fill out a form with responses to questions asked about your personal information and how you take care of your newborn baby.

Possible Benefits

Your participation in this study will result to a better understanding of how you take care of your newborn baby and may also be used to educate other mothers on how to take care of their babies. You will be given half a bar of key soup for the time you spend to answer the questions.

Possible Risks and Discomforts

There are no known risk or discomfort to your being part of the study. However, the only anticipated inconvenience is the time you will spend to fill or answer the questions.

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Voluntary Participation and Right to Leave the Research

You can stop participating at any time if you feel uncomfortable. No one will be angry with you if you do not want to participate and you will not be penalized for that.

Confidentiality

Your information will be kept confidential. No one will be able to know how you responded to the questions and you will not be required to provide your name. Only the researcher and his supervisors will have access to the information you provide. Also, your name will not be mentioned in the research report. All study information will be kept under lock and key in a cupboard at the School of Nursing of the University of Ghana and will be destroyed five years after the study. Moreover, any publication from this study will not contain any identifiable information of you.

Contacts for Additional Information

You may ask me any questions about this study. You can contact me at any time, Alem John Ndebugri on 0207444229 or johnalem@rocketmail.com or talk to me the next time you see me.

You can also contact the following people for more information: Prof. Ernestina Donkor on 0243114968 or esdonkor@ug.edu.gh and Dr. Florence Naab on 0263741717 or fnaab@ug.edu.gh.

Please talk about this study with your parents before you decide whether or not to participate. I will also ask permission from your parents before you are enrolled into the study. Even if your parents say “yes” you can still decide not to participate.

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you

can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.ug.edu.gh

VOLUNTARY AGREEMENT

By making a mark or thumb printing below, it means that you understand and know the issues concerning this research study. If you do not want to participate in this study, please do not sign this assent form. You and your parents will be given a copy of this form after you have signed it.

This assent form which describes the benefits, risks and procedures for the research titled: **Determinants of essential newborn care practices among post natal women in the Bawku Municipality** has been read and or explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate.

Child’s Name:..... **Researcher’s Name:**.....

Child’s Mark/Thumbprint..... **Researcher’s Signature:**.....

Date: **Date:**

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Appendix D: Data collection instrument

Appendix D: DATA COLLECTION INSTRUMENT

The purpose of this study is to investigate the determinants of Essential Newborn Care practices among post natal women in the Bawku Municipality.

Interview date.....Sub district.....
 Name of community.....
 Name of interviewer.....
 Respondent's number.....

NO	SECTION A: SOCIO-DEMOGRAPHIC DATA	RESPONSE
Q1	What is your age (in years)?
Q2	What is your highest level of education?	1. No formal education 2. Primary education 3. Junior high education 4. Senior education 5. Tertiary education
Q3	What is your ethnic background?	1. Kusaasi 2. Busanga 3. Mooshie 4. Mamprusi 5. Other, specify.....
Q4	What is your marital status?	1. Single 2. Married 3. Divorced 4. Widowed
Q5	What is your religious affiliation?	1. Christianity 2. Islam 3. ATR 4. Other (specify).....
Q6	What is your employment status?	1. Student 2. Unemployed 3. Self employed 4. Gainfully employed
Q7	What is your occupation?	1. House wife 2. Farmer 3. Trader 4. Civil servant 5. Public servant 6. Other, specify.....

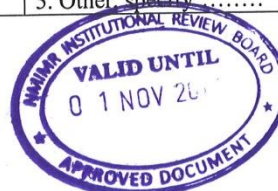


DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Q8	What is your monthly income?	1.>100gh 1. 100-499ghs 2. 500-999ghs 2. 1000+ghs
Q9	How many children do you have (Parity)?	1 2 3 4+
Q10	What is the age of your baby? Write in the space provided

SECTION B: ANC AND DELIVERY CARE: The following questions ask about your ANC attendance and delivery care.

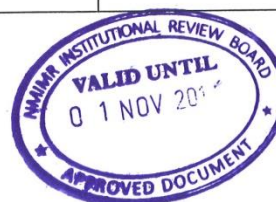
Q11	Did you attend ANC before you delivered this baby?	1.Yes 2.No
Q12	If yes to question 11 above, how many times?	1. Once 2. Twice 3. Thrice 4. Four times 5. Cannot remember 6. Other (specify)
Q13	Where did you deliver your current baby	1. Hospital 2. Maternity Home 3. Clinic 4. Home 5. Other (specify).....
Q14	If facility delivery, what type of facility is it?	1. Government facility 2. Private facility
Q15	How did you deliver your current baby?	1. Spontaneous Vaginal Delivery 2. Caesarean Section 3. Vacuum Extraction 4. Other (specify).....
Q16	Who attended to you during delivery?	1.Doctor 2. Nurse 3. Midwife 4. TBA 5. Other, specify



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Q17	If you delivered in a health facility, did you receive a visit from the health worker after you were discharged?	1. Yes 2. No
Q18	If yes to question 17 above, how long after the delivery did that visit happen?

SECTION C: KNOWLEDGE ON ENC PRACTICES: This section seeks to test your knowledge on essential newborn care practices. The rating is as follows: 1=Strongly disagree, 2= Disagree, 3= Disagree nor Agree, 4=Agree and 5=Strongly agree						
	KNOWLEDGE ON CORD CARE	Strongly disagree	Disagree	Disagree nor Agree	Agree	Strongly agree
Q19	A clean/sterile instrument is supposed to be used to cut my baby's cord	1	2	3	4	5
Q20	A cord clamp or new thread is supposed to be used to tie my baby's cord	1	2	3	4	5
Q21	I am not supposed to apply anything to my baby's cord stump	1	2	3	4	5
	KNOWLEDGE ON THERMAL CARE	Strongly disagree	Disagree	Disagree nor Agree	Agree	Strongly Agree
Q22	My baby is supposed to be wiped and dried immediately after delivery	1	2	3	4	5
Q23	My baby is supposed to be wrapped in a clean dry cloth after wiping	2	2	3	4	5
Q24	My newborn is not supposed to be bathed until after 24hours of delivery	1	2	3	4	5
	KNOWLEDGE ON BREASTFEDDING	Strongly disagree	Disagree	Disagree nor Agree	Agree	Strongly Agree
Q25	Breastfeeding should be initiated within the first one hour of delivery	1	2	3	4	5
Q26	I am supposed to feed my newborn with the first breast milk (colostrum).	1	2	3	4	5
Q27	My baby is supposed to be fed on only breast milk until after six months of delivery	1	2	3	4	5
Q28	Have you ever been educated or counseled on safe cord care?	Yes			No	
Q29	Have you ever been educated or counseled on good thermal care?	Yes			No	
Q30	Have you ever been educated or counseled on exclusive breastfeeding?	Yes			No	



DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

SECTION D:IMMEDIATE ENC PRACTICES		
SECTION D1-CORD CARE: This section seeks to assess how your newborn's umbilical cord was taken care of after delivery.		
Q31	What instrument was used to cut the cord?	1. Scissors 2. New Blade/Boiled blade 3. Unboiled used blade 4. Knife 5. Scissors 6. Don't know/cannot remember
Q32	What material was used to tie the cord?	1. Cord clamp 2. New thread 3. Used thread 4. Other(specify) _____ 5. Don't know/cannot remember
Q33	Did you or anybody apply anything on the cord stump?	1. Yes 2. No 3. Cannot remember
Q34	If yes to question 33 above, what substance was applied?	1. Oil 2. Herbal preparation 3. Ointment 4. Powder 5. Animal dung 6. Other (specify) _____ 7. Don't know.....
Q35	How often was the substance applied on the cord stump?	1. Once daily 2. Twice daily 3. Thrice daily 4. Others (specify).....
SECTION D2-THERMAL CARE: This section consists of questions about thermal care of your baby after delivery.		
Q36	Was your baby wiped off/dried before the placenta was delivered?	1. Yes 2. No 3. Cannot remember



DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Q37	Was your baby wrapped in cloth or put on mother's body and covered with cloth before the placenta was delivered?	1. Yes 2. No 3. Cannot remember
Q38	If yes to question 37 above, What was the condition of the cloth, which was used for wrapping the baby?	1. Clean cloth 2. Dry cloth 3. New cloth 4. Used cloth 5. Wet cloth 6. Other (specify) _____ 7. Don't know
Q39	Where was the baby placed before the placenta was delivered?	1. On the floor 2. On the cot 3. Beside or on the mother's body 4. With someone else 5. Other (specify) _____ 6. Don't know
Q40	Did you have skin-skin contact with your baby immediately after delivery or before the placenta was delivered.	1. Yes 2. No 3. Cannot remember
Q41	If yes to question 40 above, proceed to question 42, if no, state the reason.
Q42	How long after birth was your baby bathed for the first time?	1. Within 1 hour 2. 2-24 hours 3. After 24 hours 4. Don't know
Q43	Is it acceptable to delay bathing the baby until after 24hrs of delivery	1. Yes 2. No
Q44	If yes to 43 proceed to the next section, if no, why is it not acceptable?
SECTION D3: IMMEDIATE AND EXCLUSIVE BREASTFEEDING: This section consists of questions about breastfeeding within the first one month of delivery.		
Q45	Did you breastfeed your baby after delivery	1. Yes 2. No
Q46	How long after birth did you first put your baby to the breast?	1. During the first hour after delivery 2. More than 1 hour 3. Don't know
Q47	Do you clean your breast before breastfeeding the baby?	1. Yes 2. No



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Q48	Did you give your baby the first liquid (<i>colostrum</i>) that came from your breasts?	1. Yes 2. No
Q49	If no to question 48 above, why did you not give it to your baby?
Q50	What was the first feed you gave to your baby after delivery?	1. Breast milk 2. Porridge 3. Formula feed 4. Other (specify).....
Q51	In the first one month after delivery, was your newborn given anything to drink other than breast milk?	1. Yes 2. No 3. Don't remember
Q52	If yes to question 51, what substance was given to the baby?
Q53	What was the reason for giving the substance?	
Q54	Are you still breastfeeding your child?	1. Yes 2. No



DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Appendix E: Ethical clearance

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
Established 1979 *A Constituent of the College of Health Sciences*
University of Ghana

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E-mail: nirb@noguchi.mimcom.org
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INSTITUTIONAL REVIEW BOARD



Post Office Box LG 581
Legon, Accra
Ghana

My Ref. No: DF.22
Your Ref. No:

2nd November, 2016

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824

IRB 00001276

NMIMR-IRB CPN 014/16-17

IORG 0000908

On 2nd November, 2016, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL : **Determinants of essential new born care practices among post natal women in Bawku Municipality**

INVESTIGATOR : **Alem John Ndebugri, MPhil Cand.**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 1st November, 2017. You are to submit annual reports for continuing review.

Signature of Chair:

Mrs. Chris Dadzie
(NMIMR – IRB, Chair)

DETERMINANTS OF ENC PRACTICES AMONG POSTNATAL WOMEN

Appendix F: Introductory letter from School of Nursing, University of Ghana

**SCHOOL OF NURSING
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA
LEGON**

Telephone: 0302-513255 (Dean)
Ext. 6206
0302-513250 } Secretary
028 9531213 }
Fax: 513255
E-mail: nursing@ug.edu.gh



P. O. Box LG 43
LEGON, GHANA

December 5, 2016

Our Ref:.....SON/E.L1.....

Your Ref:.....

The Municipal Health Director
Bawku Municipal Health Directorate
Bawku/Upper- East.

Dear Sir/Madam,

INTRODUCTORY LETTER

I write to introduce to you Alem John Ndebugri, an M.Phil Year II student of the School of Nursing, University of Ghana, Legon. He is seeking your permission to conduct a research on **“Determinants of Essential Newborn Care Practices among Post-natal Women in Bawku Municipality.”**

I should be most grateful if you could kindly assist him with the information that he may require.

Thank you.

Yours faithfully,

A handwritten signature in blue ink, appearing to be 'ED'.

Prof. Ernestina Donkor
Supervisor