FACTORS INFLUENCING NEWBORN CARE PRACTICES AMONG MOTHERS IN SAVELUGU NANTON MUNICIPALITY IN THE NORTHERN REGION OF GHANA

BY

FRANCIS ATIAGBO

(STUDENT ID: 10359974)

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH (MPH) DEGREE

DECEMBER, 2018
DECLARATION

I declare that this dissertation is my own work under the supervision of Dr. Emmanuel Asampong apart from specific references which have been duly acknowledged. I also declare that this work has not been presented elsewhere for the award of another degree.

NAME OF STUDENT: FRANCIS ATIAGBO

SIGNATURE: .................................................................

DATE SIGNED: .................................................................

NAME OF SUPERVISOR: DR EMMANUEL ASAMPONG

SUPERVISOR’S SIGNATURE: ..................................................

DATE SIGNED: .................................................................
DEDICATION

This dissertation is dedicated to my wife, Mariam and my son, Elorm for their patience as I had to be away from them for months in pursuit of this degree. I also dedicate this piece of work to my brothers and sisters for their encouragement and support.
AKNOWLEDGEMENT

I am very thankful to the Almighty God for his guidance and protection throughout the duration of the course and also completing this dissertation successfully.

I would like to express my deepest gratitude to my supervisor Dr. Emmanuel Asampong at the Department of Social and Behavioural Science (SOBS), School of Public Health, University of Ghana for his massive input, direction and support throughout the study.

I am appreciative to Mrs. Denisia Lamisi Agong, the Municipal Director of Health Service, Savelugu/Nanton in the Northern Region for allowing me to conduct the research in the municipality and also supporting me throughout my data collection.

I would also like to express my heartfelt gratitude to my research assistants; Eradatu Iddriu, Magaret Pesewu, Nathaniel Wassah, Alhaji Mohammed Iddrisu Awal and Hana Minbiak for their inputs, and time spent in assisting me to collect data for the study. I cannot forget the contributions of Mr. Richard Dzeha during the analysis and interpretation of the data.

I am also grateful to the various authors whose work from provided enormous information which were used to support this study.

My last but not the least appreciation goes to roommate Yao Agbokpe and my learning mates; Millicent Heloo and Vinolia Ziork for their support and encouragement.
ABSTRACT

Background: Reducing neonatal mortality has been a major challenge for world leaders, agencies and organizations in developing countries particularly in the African sub-region. In Ghana, almost half of child mortalities occur in the first 28 days after birth. There are recommended basic and cost effective interventions to reduce neonatal deaths. Mother’s knowledge and practice of these basic interventions plays an important role in reducing neonatal deaths.

Objective: This study sought to examine the knowledge of mothers and the factor that influence their practice of the recommended newborn care interventions.

Methods: A facility-based quantitative cross-sectional study was conducted. A sample of 280 mothers with children aged less than 6 months old were recruited into the study. Participants were proportionally selected from 9 health facilities. Systematic random sampling technique was employed in selecting participants. Semi-structured questionnaire was used to collect the data. A total of 276 questionnaires were completed. Data were entered using Epidata and exported to STATA version 15 for analysis.

Bivariate and multivariate logistic regression analysis was performed to determine factors associated with newborn care practice of mothers. Odds ratios were calculated to measure the strength of association with 95% confidence interval.

Results: Maternal knowledge and prevalence of practice of essential newborn care in this study were (68%) and (56%) respectively. Mothers aged 26-35 years old were four times likely to practice good newborn care compared to younger mothers (AOR =4.0; CI 1.19 - 13.26). Mothers who delivered their baby at the health facility were twice likely to practice
recommended newborn care actions compared to who delivered at home (AOR=2.06; CI 1.03 - 4.12).

**Conclusion:** Mothers’ knowledge on essential newborn care and prevalence of practice was fairly good. However, there were gaps in knowledge and practice of mothers on some of the components of recommended newborn care which must be addressed. Age of mother and place of delivery are important factors to consider in the design of interventions to reduce neonatal mortality. There is the need for follow up through home visits to reinforce mother’s practice of the essential newborn care.
# TABLE OF CONTENTS

DECLARATION ........................................................................................................................................... i
DEDICATION .............................................................................................................................................. ii
LIST FIGURES .......................................................................................................................................... ix
LIST OF ABBREVIATIONS ........................................................................................................................ x

## CHAPTER ONE .......................................................................................................................... 1

INTRODUCTION ........................................................................................................................................ 1
1.1 Background ..................................................................................................................................... 1
1.2 Problem Statement ....................................................................................................................... 3
1.3 Justification ..................................................................................................................................... 4
1.4 Research Questions ...................................................................................................................... 5
1.5 General Objective ......................................................................................................................... 5
1.6 Specific Objectives ......................................................................................................................... 5
1.7 Conceptual Framework ................................................................................................................ 6

## CHAPTER TWO ............................................................................................................................. 8

LITERATURE REVIEW .......................................................................................................................... 8
2.1. General information about Essential Newborn Care ............................................................. 8
2.2 Cleanliness and care of the umbilical cord ............................................................................. 9
2.3 Thermal Control for Newborns ............................................................................................... 10
2.4 Immunization ............................................................................................................................ 11
2.5 Breastfeeding of the Newborn ................................................................................................. 12
2.6 Eye care for the Newborn ........................................................................................................ 12
2.7 Maternal knowledge about recommended newborn care actions ........................................ 13
2.8 Prevalence of essential newborn care practice by mothers .................................................. 15
2.9.0 Factors influencing Essential Newborn Care practices of mothers ..................................... 16
   2.9.1. Socio – demographic characteristics ............................................................................... 16
   2.9.2 Maternal health services ................................................................................................... 17
   2.9.3. Obstetrics factors .............................................................................................................. 18
   2.9.4 Mothers knowledge about ENC ....................................................................................... 19
   2.9.5 Culture ............................................................................................................................... 19

## CHAPTER THREE ....................................................................................................................... 21

METHODS ............................................................................................................................................. 21
3.1 Introduction ................................................................................................................................. 21
3.2 Study design.......................................................................................................................... 21

3.3.0 Study site ........................................................................................................................... 21
  3.3.1 Location and size ............................................................................................................... 21
  3.3.2 Population ....................................................................................................................... 22
  3.3.3 Socio-cultural activities ................................................................................................. 22
  3.3.4 Geographical profile .................................................................................................... 22
  3.3.5 Economic activities .................................................................................................... 23
  3.3.6 Transport and communication .................................................................................... 23
  3.3.7 Education .................................................................................................................... 24
  3.3.8 Health infrastructure ................................................................................................. 24

3.4 Study population ............................................................................................................... 26

3.5 Sample size calculation .................................................................................................... 26

3.6 Sampling procedure ......................................................................................................... 26

3.7 Study variables ................................................................................................................ 27

3.8 Operational definitions and measurement ....................................................................... 28

3.9 Data collection tools ........................................................................................................ 30

3.10 Pretest of tool ................................................................................................................ 30

3.11 Data collection procedure ............................................................................................ 31

3.12 Data analysis ................................................................................................................... 31

3.13.0 Ethical consideration .................................................................................................... 31
  3.13.1 Informed consent ....................................................................................................... 32
  3.13.2 Confidentiality .......................................................................................................... 32
  3.13.3 Potential benefit of the study ................................................................................... 32
  3.13.4 Risks ............................................................................................................................ 33

CHAPTER FOUR .................................................................................................................... 34

RESULTS .................................................................................................................................... 34

4.1 Introduction ....................................................................................................................... 34
  4.2 Socio-demographic Characteristics of the study sample ............................................. 34
  4.3 Utilization of antenatal and delivery services .............................................................. 36
  4.4 Knowledge of mothers on Essential Newborn Care .................................................. 38
  4.6 Factors associated with mother’s practice of essential newborn care ...................... 44

CHAPTER FIVE .................................................................................................................... 46

DISCUSSION ........................................................................................................................ 46
5.1 Introduction........................................................................................................................................46
5.2 Knowledge on essential newborn care..........................................................................................46
5.3 Newborn care practices of mothers..............................................................................................48
5.4.0 Factor affecting newborn care practice of mothers.................................................................49
  5.4.1 Socio – demographic characteristics......................................................................................49
  5.4.2 Maternal health services..........................................................................................................50
  5.4.3 Obstetrics factors .....................................................................................................................51
  5.4.4 Mothers knowledge about Essential Newborn Care .............................................................52

CHAPTER SIX ........................................................................................................................................54
  6.1 Conclusion ....................................................................................................................................54
  6.2 Recommendations .......................................................................................................................54

APPENDICES ........................................................................................................................................59
  Appendix I: Information Sheet .........................................................................................................59
  Appendix II: Informed Consent Form ...............................................................................................60
  Appendix III. QUESTIONNAIRE ......................................................................................................61
  Appendix IV: Ethical Clearance Letter ............................................................................................67
LIST FIGURES

**Figure 1**: Conceptual framework for newborn care knowledge and practices of mothers .............. 7

**Figure 2**: Map of study area ........................................................................................................ 25

**Figure 3**: Areas of Newborn Care counseling revived reported by mothers ......................... 36

**Figure 4**: Mothers Knowledge on timing of Breastfeeding of baby after delivery .............. 38

**Figure 5**: Percentage of mothers with knowledge on application of antibiotic ointment to baby’s eyes after delivery ........................................................................................................ 40

**Figure 6**: Knowledge of mothers on neonatal danger signs ...................................................... 41
LIST OF TABLES

Table 1: Distribution of study sample by health facility ................................................................. 27

Table 2: Socio-demographic Characteristics of study participants .................................................. 35

Table 3: Obstetric, Antenatal Care and Delivery history of mothers ................................................. 37

Table 4: Knowledge of mother on essential newborn care ................................................................. 39

Table 5: Composite score on knowledge of mothers on essential newborn care .................................. 40

Table 6: Percentage composite score of mothers of newborn care practice ....................................... 42

Table 7: Frequency and percentage of newborn care practice of mothers ......................................... 43

Table 8: Associated factors of newborn care practice of mothers ...................................................... 45
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>AOR</td>
<td>Adjusted Odd Ratio</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacillus Calmette-Guerin</td>
</tr>
<tr>
<td>CHPS</td>
<td>Community-Based Health Planning and Services</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>COR</td>
<td>Crude Odds Ratio</td>
</tr>
<tr>
<td>EBF</td>
<td>Exclusive Breast Feeding</td>
</tr>
<tr>
<td>ENC</td>
<td>Essential Newborn Care</td>
</tr>
<tr>
<td>GDHS</td>
<td>Ghana Demographic and Health Survey</td>
</tr>
<tr>
<td>H.C</td>
<td>Health Centre</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>OPV</td>
<td>Oral Polio Vaccine</td>
</tr>
<tr>
<td>PNC</td>
<td>Postnatal Care</td>
</tr>
<tr>
<td>SBA</td>
<td>Skill Birth Attendance</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendance</td>
</tr>
<tr>
<td>TT</td>
<td>Tetanus Toxoid</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

1.1 Background

Issues of neonatal and child health have been a great concern for both world leaders and health authorities in low and middle-income countries. This concern was highlighted in the Millennium Development Goals (MDGs). Countries were therefore enjoined to reduce child mortality by 67 percent between period of 1990 and 2015.

A considerable improvements have been made to reduce neonatal deaths, however only a small number of countries were able to achieve the needed reductions (Paudel, Thapa & Shedain, 2013, Liu, Hill, Oza & Hogan, 2016). The trend of mortality among neonates, infants, and children under -five over the past fifteen years have shown that neonatal mortality has declined at a slower rate than infant and child mortality (You et al, 2015). Acceleration of the rate of reduction in neonatal mortality is needed to meet the Sustainable Development Goal (SDG) target on child survival, particularly in countries where mortality rates are high. In order to achieve the SDG target of an under-five mortality rate of 25 or less deaths per 1,000 live births by the year 2030, a number of countries need to increase their rate of reduction. About 30 countries must at least double their present rate of reduction and 11 countries of these are required to at least triple their current rate of reduction (You et al., 2015).

Preventing neonatal deaths was not a prioritization of most child health and safe motherhood packages in the past resulting in the death of newborns (Lawn, Osrin, Adler, & Cousens, 2008). Most neonatal deaths occur at home, undocumented and therefore not
incorporated into national and regional policies and programs (Lawn et al., 2008, Manu et al., 2016)

The immediate causes of neonatal mortality are birth asphyxia, sepsis, preterm delivery, low birth weight and hypothermia. Other underlying factors include inadequate health facilities for antenatal and postnatal services and wrong newborn care practices at the household and community level, nutritional status of mothers, educational and overall status of women in the family (Lawn, Kerber, Enweronu-Laryea, & Cousens, 2010).

Globally it has been estimated that 67% of newborns death could be avoided if mothers and caretakers of neonates practice World Health Organizations’ recommended Essential Newborn Care (ENC) practices which include how to keep the cord clean, how to protect the newborn from cold by deferring the first bath of the baby for at least six hours to reduce the risk of hypothermia and starting of breastfeeding within the first hour of birth (WHO., 1996, Lawn et al., 2008).

Maternal health and newborn health are inseparable. Significant reduction in neonatal morbidity and mortality cannot be achieved without efforts to improve maternal health (Black, Laxminarayan, Temmerman, 2016). Care during prenatal period and delivery must be complemented with correct care of newborn and processes to reduce newborn deaths due to postnatal causes such as sepsis, hypothermia and asphyxia (Lawn et al., 2010).

There are geographical variations in the care that newborns receive. In many instances there is inadequate knowledge of what is needed to ensure optimal newborn care (Sandberg, Pettersson, Asp, Kabakyenga, & Agardh, 2014). Household and community practices often do not take into account the basic needs of newborns such as warmth,
cleanliness and breastmilk which are key to the survival of the newborn and must be addressed (Lawn et al, 2013).

1.2 Problem Statement

Globally, statistics have shown that over 2 million neonates die each year before they get to one month of age. The neonatal period is just 28 days but it accounts for 45% of all deaths in children under 5 years of age (You et al., 2015). About 67% of newborn deaths occur in the first week after birth. Infant and under five mortality ratio in developing countries have reduced considerably in the past few decades. However, under five mortality is declining faster (58%) compared to neonatal mortality (47%) (You et al, 2015).

Sub-Saharan Africa has been cited as one of the regions with high neonatal mortality rate in the world (You et al., 2015, GDHS, 2014). It has been projected that 69 million more children under five years will between now and 2030, the SDG target year, if nothing is done to accelerate the current pace of reduction in under-five mortality (You et al., 2015, GDHS, 2014).

The Ghana Demographic and Health Survey Report (2014), shows that neonatal mortality rate in Ghana is 24 per 1,000 live births which is quite high. It also indicates that the risk of dying for any Ghanaian child who survives the first 28 days of life is reduced by more than half in the remaining 11 months of the first year of life. Furthermore, almost half of under-five deaths occur during the first month of life. These are higher compared to global and regional average (GDHS, 2014).

Neonatal mortality rates in the Northern region of Ghana is quite high (24 deaths per 1000 live births). The proportion of neonatal deaths to under-five mortality is also high across
all and regions (GDHS, 2014). In the Savelugu/Nanton municipality, institutional neonatal deaths are stagnating from 35 deaths in 2015, 37 deaths in 2016 and 34 deaths in 2017 (Savelugu Health Directorate Annual Report, 2017). Most communities in the Northern region of Ghana are primarily rural communities. Household newborn care practices are often poor and some of which are also harmful (Saaka & Iddrisu, 2014). Newborn deaths can be avoided through changes in household level practices regarding delivery and newborn care (USAID, 2007). There are a number of simple interventions that when practiced can prevent neonatal morbidity and deaths. These include; clean cord care, thermal care and starting breastfeeding within the first hour after birth (WHO, 1996).

The knowledge and practice of the recommended newborn care practices at the individual level by mothers and caregivers is important in reducing neonatal morbidity and mortality. Premised on the fact that cultures and traditions differ across communities, likewise traditional newborn care practices may also differ (WHO, 2006). Newborn practices that are healthy need to be promoted whilst unhealthy practices need to be discouraged.

Research on knowledge and practice of Essential Newborn Care practices and its associated factors in the Savelugu/Nanton municipality is limited. Therefore, current interventions may not be evidence based, resulting stagnation in reducing the numbers of neonatal deaths.

1.3 Justification

Reduction in child mortality is part of the sustainable development goals. Although there have been a drastic improvement in child mortality over the years, the contribution of neonatal deaths to under-five mortality has been increasing in many Sub-Saharan African countries. This has significant socio-economic implications for the health system and
families. Recommended newborn care practices exist and are being promoted. However little is known about whether mothers know and understand these practices, and whether the practices of mothers at the household level conform to the recommended practices, and the factors that influence these practices.

Understanding of the factors responsible for newborn care practices among mothers at home will help in the design and planning effective interventions to improve neonatal survival.

This study therefore sought to identify and provide the understanding of the interrelated factors that impact on neonatal care practices of mothers in the Savelugu/Nanton municipality.

1.4 Research Questions

1. What is the level of knowledge of mothers on Essential Newborn Care practices?

2. What are the newborn care practices of mothers at home?

3. What factors influence newborn care practices of mothers?

1.5 General Objective

To investigate the factors that influence newborn care practices among mothers in Savelugu/Nanton municipality in the Northern region of Ghana.

1.6 Specific Objectives

1. To assess the level of knowledge of mothers on Essential Newborn Care.

2. To evaluate newborn care practices of mothers at home.

3. To identify factors that influence newborn care practice of mothers at home.
1.7 Conceptual Framework

This conceptual framework was proposed after extensive review of different literatures which are cited as main factors/determinants of mothers’ practices of Essential Newborn Care. The conceptual framework is shown in figure 1 below.

That framework shows that socio-demographic factors such as maternal age, educational level, residence, religion, marital status and use of maternal health services including ANC, Place of delivery and health education all influence maternal knowledge on newborn care. Poor knowledge of mothers and coupled with their inability to recognize newborn danger signs also result in inappropriate newborn care actions.

Also traditional and cultural beliefs and practices that consider home delivery as a sign of bravery, separating newborns from their mothers immediately after birth and others that see the newborn as unclean and for that matter needs immediate bathing affect appropriate newborn care practice
Figure 1: Conceptual framework for newborn care knowledge and practices of mothers
CHAPTER TWO

LITERATURE REVIEW

2.1. General information about Essential Newborn Care

Essential Newborn Care (ENC) is a package of care that has been recommended by the World Health Organization to ensure improved neonatal outcome. Every newborn baby needs to be given this care notwithstanding where the baby is born or its birth weight or size. The recommended newborn care package is to be applied soon after the baby is born and continued for at least the first 7 days after birth. The ENC interventions are simple, safe, effective and can be provided by a trained health personnel including Midwives and Community Health Nurses, or Traditional Birth Attendant or by a family member assisting the mother in a health facility or at home (World Vision International, 2017).

The ENC was developed in 1996 in response to the persistent increase in neonatal morbidity and mortality and has been globally accepted especially in developing countries. Ghana first launched the ENC package in Upper East region in 2012 by Ghana Health Service in partnership with UNICEF. Subsequently, The Ghana National Newborn Health Strategy and Action Plan 2014-2018 was developed which adopted the ENC packages.

The recommended essential newborn care practices cover clean cord care, thus cutting and tying or clumping of the umbilical cord with a clean tool and thread, thermal care which involves drying and wrapping the newborn soon after delivery and deferring the newborn’s first bath for at least six hours preferably for 24 hours or more to reduce the risk of hypothermia, and starting of breastfeeding within the first hour of birth (WHO, 1996).
2.2 Cleanliness and care of the umbilical cord

The umbilical cord connects the fetus and the placenta in utero. After birth the umbilical cord is cut and clumped (WHO, 1996). The newly cut umbilical cord can serve as portal of entry for bacteria that can cause sepsis in the newborn and can lead to death if not detected and treated promptly. Micro-organisms rapidly take over the moist cord stump and invade the bloodstream through umbilical vessels that are still exposed for the first few days after birth. In addition, bacterial invasion may lead to cord infection with potential spread to the surrounding tissues and blood stream. (WHO, 1996, PATH, 2014). Ensuring appropriate cord care at birth and in the first week of life especially in settings with poor hygiene, is a very important intervention to prevent life-threatening sepsis and cord infections, and avert preventable neonatal deaths. (PATH, 2014).

Although it is generally accepted that cutting of the cord of a newborn with a clean instrument is the best practice, there are however variations in opinion on the best method of care for the cord stump (WHO, 1996). Some argue that the stump will desiccate if opened to the air without any dressing; some also contend that the cord needs binding and bandages. Others also maintain that the cord will not be contaminated if it is secured with clean cloths and is kept from urine and contamination. To some others, antiseptics are needed for cleaning; some people also argue that the cord can be washed with clean water and dried with clean cotton or gauze if contaminated. It has been recommended that, local practices of putting various substances on the cord stump- whether in the facility or homes should be carefully examined discouraged if found harmful and substituted with acceptable ones (WHO, 1996).
The world health organization recommends that either chlorhexidine is applied to the cord or nothing is applied especially where chlorhexidine is not available. Application of chlorhexidine to the cord has demonstrated to reduce neonatal mortality. Danger signs of infected cord include, pus coming from the umbilical cord stump, redness of the skin around cord and foul smell of the cord. Mothers are required to be aware of these danger signs and other signs of infection including fever, lethargy and difficulty in breathing (WHO, 1996, World Vision International, 2017).

**2.3 Thermal Control for Newborns**

Keeping the baby warm is one of the basic needs of the newborn babies. It is very important to their survival and well-being. Newly born babies unlike adults, lack the ability to maintain thermoregulation especially when the external environmental temperature is low. If the baby is left unprotected from cold, it can lead to low temperature or hypothermia. Hypothermia occurs when the body temperature of the baby drops below 36° C (WHO, 2010). Newborn babies have a higher risk of developing hypothermia because they have a large surface area per unit of body weight and cannot do anything by themselves to decrease the surface area by adjusting to a bent position. In addition, babies whose birth weight is less than 2.5kg and babies that were born prematurely have decreased thermal insulation due to less subcutaneous fat and decreased heat production due to less brown fat. The temperature of a baby can be assessed by touching the trunk and feet of the baby. When the feet of the baby are pink it is an indication that the baby’s temperature is normal but when the feet and trunk are cold it is an indication the baby is experiencing hypothermia. When the feet are cold and the trunk is warm, it indicates that the baby is in cold distress. After delivery, recommended practices to prevent hypothermia include
rooming in, breastfeeding on demand and dressing the infant appropriately. Early bathing exposes the newborn to hypothermia. WHO recommends bathing after six hours of life and preferably after 24 hours of life (WHO, 1994).

2.4 Immunization

Childhood Immunization has demonstrated to be one of the effective public health measures in reducing child mortality and morbidity (Ventola, 2016). Immunization contributed considerably to the attainment of Millennium Development Goal 4 by reducing vaccine preventable diseases (GDHS, 2014).

The Expanded Programme on Immunization (EPI) was launched in 1974 by WHO. It aims to prevent deaths from vaccine preventable diseases such as tuberculosis, diphtheria, tetanus, pertussis, pneumococcal, poliomyelitis and measles.

In Ghana, the policy on EPI is that, each child should receive one dose of BCG to protect against tuberculosis at birth, three doses of Pentavalent vaccine against Diphtheria, Pertussis, Tetanus, Haemophilus influenza type ‘B’ and Hepatitis B virus and Pneumococcal conjugate vaccine (at 6, 10 and 14 weeks), two doses of Rotavirus vaccine (at 6 and 10 weeks), four doses of OPV (at birth, that is within 14 days after birth, 6, 10 and 14 weeks), two doses of measles/rubella vaccine (at 9 and 18 months) one dose meningococcal ‘A’ conjugate vaccine (at 18month) and one dose of yellow fever (at 9 months). Every woman of childbearing age is also required to receive 5 doses of tetanus toxoid to protect against maternal and neonatal tetanus at birth (WHO, 2014).
2.5 Breastfeeding of the Newborn

Breastfeeding is one of the most effective measures to ensure child health and survival (Setegn et al., 2011). It is recommended that mothers start breastfeeding within the first hour after birth and feed the baby with only breastmilk for the first six months of life to achieve optimal growth, development and health. After the sixth month, the infants should be given nutritionally adequate and safe balanced foods while breastfeeding continues up to two years and beyond to meet their growing nutritional requirements (WHO, 2007). Globally, only 40% of children under 6 months of age are exclusively breastfed (WHO, 2017). Studies have shown that interventions to improve early infant feeding practices can result in significant reduction in neonatal mortality. It has been reported that about 16% of neonatal mortality could be avoided if all infants initiated breastfeeding on the first of life and by 22% if breastfeeding is started within the first hour of life (Edmond, Zandoh, Quigley & Kirwood, 2006).

Breastfeeding has proven to be beneficial to both mother and the newborn, Breastfeeding immediately after birth helps stimulates uterine contraction and therefore facilitates delivery of placenta thereby preventing postpartum haemorrhage. Initiation breastfeeding early provides nutrition, warmth and colostrum which contain immunological factors that prevent infections in the newborn (Edmond et al., 2006).

2.6 Eye care for the Newborn

Ophthalmia neonatorum refers to inflammation of the conjunctiva which occurs within the first two weeks of life. Bacteria such as Neisseria gonorrhoea and Chlamydia trachomatis are major causes of eye infection in neonates (Mallika et al., 2008). In most cases, the two eyelids of the neonate become swollen and red with pussy discharge. Mothers with
untreated gonorrhoea have between 30%-50% probability of transmitting the infection to her newborn at birth. Early detection and treatment of maternal genital infection is recommended. However, areas where diagnosis and treatment of maternal genital infections are not available before delivery, most cases of conjunctivitis in the newborn can be prevented by disinfection of the conjunctivitis of the newborn after birth (Mallika et al., 2008). According to the world Health Organization, eye infection in the neonate can be prevented by cleaning the eye soon after birth with either silver nitrate solution or tetracycline or erythromycin ointments to the eyes within one hour of delivery. If infection in the neonate is not detected and treated properly, ophthalmia neonatorum may lead to serious complications including blindness due to corneal ulceration and can result in death (WHO, 1994).

2.7 Maternal knowledge about recommended newborn care actions

Maternal knowledge of essential newborn care is a necessary step in reducing neonatal mortality (Adigun, 2018). Several studies conducted in Africa shows varied level of knowledge of mothers on essential newborn care though some are similar.

A study conducted among mothers in Ethiopia revealed that 80.4 % of the mothers demonstrated good knowledge (answered more than half of knowledge questions correctly) on how to care for the neonate. With regards to cord care, it was found that approximately 67 % of the mothers indicated that no substance should be applied to the umbilical cord stump. For thermal control of the baby, the same study found that majority (77.4 %) of mothers indicated that the newly born baby should be wrapped with a new cloth and kept on the mother’s chest, the same percentage of them also knew the correct timing of the first bath of the baby (Misgna, Gebru, & Birhanu, 2016). The study also found that 80.4%
of the mothers had knowledge on early initiation of breastfeeding within one hour after birth. A test of mothers knowledge on danger showed that only 50% had adequate knowledge on newborn danger signs (Misgna et al., 2016).

A similar study conducted at Juba Teaching Hospital, South Sudan showed that only less than 20% of mothers indicated nothing should be used to cover the umbilical stump; almost 40% of the mothers however mentioned that substances could be applied to the umbilical stump. Among those who mentioned that something could be applied to the cord, 43% of them said powder, 14% ashes, about said 3% oil and 3% alcohol. It was also found that majority of the mothers were aware that babies should be given colostrum and fed exclusively with breastmilk for 6 months, and avoid giving pre-lacteal feeds. The same studies also found that majority of the mothers in the study recognized fever and discharge from the eye as a danger sign but only 41.1% recognized hypothermia as a danger sign (Meseka, Mungai, & Musoke, 2017).

In Kenya, another study found that more than 90% of mothers are aware about breastfeeding within one hour after delivery, exclusive breastfeeding for 6 months and also aware that colostrum should be given to the newborns. The researchers found that, while majority of the mothers knew that prelacteal feeds should not be given to neonates, only 15.8% believed in giving pre-lacteal feeds. Only 33.4% knew that the newborn should receive BCG vaccine at birth while 56.8% knew Oral Polio Vaccine should also be given at birth to protect the child from polio. Rooming in was identified by 94.5% of mothers as a way of thermoregulation while 93.7% identified skin to skin contact. Only 7.1% of mothers reported the baby should be well dress to prevent heat loss. With regards to cord
care, only 37.9% knew that the umbilical cord stump should be uncovered (Amolo, Irimu, & Njai, 2017).

2.8 Prevalence of essential newborn care practice by mothers

There several studies on newborn care practice of mothers with variations in the prevalence of practice. While some studies found high prevalence of coverage, others found it to be very low depending on the component of newborn care being examined.

A study conducted among mothers in Karachi in Pakistan showed that in 60% of the mothers, a newly purchased razor blade was used to cut the umbilical cord, while 10% reported that a household knife was used. The study also found that 74% of the mothers applied some substance to the cord stump. It was also found that 86% of mothers bathed the newborn within 24 hours which in inconsistent with recommended practice, 68% of the women applied substances other than prescribed medications to their baby’s eyes. The study found that almost all mothers breastfed their baby. However, only 48% started breastfeeding within recommended time and only 26% practiced exclusive breastfeeding. Colostrum was not given by 43% of the mothers, and 73% of the mothers gave prelacteal feeds to their baby during the neonatal period (Khalil, 2014).

In a study on umbilical cord care practices in the Volta region of Ghana, it was found that 68% of the mothers applied methylated spirit to cord, a number of mothers applied other substances to the cord including shea butter (18%), toothpaste (4%), oil (2%), water (2%) and 6% used nothing (Kayingo & Slaughter-acey, 2016).

A study in the northern part of Ghana on patterns and determinants of newborn care practices showed that the prevalence of newborn practices among mothers was generally
very low. Less than 10% of the mothers had safe cord care and optimal thermal care, and about 50% were reported to practice good neonatal feeding (Saaka & Iddrisu, 2014).

In a study in Nepal, it detected that, more than 25% of the respondents start breastfeeding within one hour of birth. Majority (90%) of mothers indicated that they fed baby with colostrum milk. Three percent of mother practice pre-lacteal feeding and they fed honey before breast milk to their newborn. Nearly 44% of the respondents in the study dry their baby after birth. One in four mother practice adequate wrapping of the baby. Nearly 68% of the respondents postponed bath for the first 24 hours after birth. Interestingly, all mothers used sterile blade to cut the umbilical cord. Nearly 15% practice clean and dry umbilical stump practices (Thapa, 2017).

A study in Uganda also revealed that, 38% of mothers were had practiced appropriate cord care, 42% provided correct thermal care, and 57% practiced appropriate neonatal feeding. (Waiswa, Peterson, Tomson, & Pariyo, 2010)

2.9.0 Factors influencing Essential Newborn Care practices of mothers

2.9.1. Socio – demographic characteristics

According to a study conducted in rural communities in Nepal, maternal education was found to have association with early initiation of breast feeding, delayed bathing practices and cord care (Kaphle, Yadav, Neupane, & Sharma, 2013). Similarly studies in conducted in Bangladesh and India showed that mothers’ education status had significant association with newborn care practices such as delay bathing, umbilical care, vaccination and proper eye care (Begum, Faizul, Khan, & Review, 2010).
Again in Uganda, it was found in a population based survey that mothers who had lower educational level and lower social classes more likely to apply inappropriate and harmful substance to the cord stump compared to mothers who had higher educational level (Waiswa et al., 2010). Also, in Ghana, (Saaka et al., 2014) found that women in the age group 25-34 years were more likely to offer good feeding practices to their babies than 35 and above years. In Ethiopia, (Alemayehu, Abreha & Zemicheal, 2014) found that marital status of women was significantly associated with exclusive breastfeeding.

Studies conducted in Ethiopia on newborn care practice also corroborated finding from other studies that found mother’s level of education to be significantly associated with good newborn practice. (Waiswa et al, 2010).

According to Misgna et al (2016), the practice of good newborn care is more prevalent among urban than rural resident mothers. They also found that the practice of good newborn care was common among employed mothers. The likelihood of good newborn care practice was ten times among employed mothers compared to unemployed mothers.

2.9.2 Maternal health services

Studies have shown that delayed bathing of the newborn baby was more practiced among mothers who gave birth in a health facility as compared to mothers who delivered at home (Tegene, Andargie, Nega, & Yimam, 2015). Similarly a studies in India, Uttar Pradesh have shown that antenatal attendance by mothers and skilled attendance at delivery were significantly associated with newborn care practice when compared to mothers who did not attend antenatal and mothers who were attended at delivery by either relatives or traditional birth attendants (Chaudhary, Dhungana, & Ghimire, 2013). In a study conducted
by Kaphle et al (2013), antenatal attendance, antenatal counseling on newborn care, place of delivery and attendant at delivery showed to be associated with early initiation of breast feeding, delayed bathing practices and cord care.

According to Saaka M et al (2014), women who initiated ANC early in the first trimester were more offer good neonatal feeding to their baby than mothers who initiated ANC attendant in the second and third trimesters. Similarly, Setegn T et al (2011) in their study in Ethiopia found that receiving postnatal counseling & place of delivery were independent predictors of early breast feeding.

A study conducted in Ethiopia showed that placing the newborn on the mother’s chest soon after delivery was significantly associated with health facility deliveries compared with home deliveries (Callaghan-koru et al., 2013).

In a study, it was found that PNC visit after delivery and mothers who received counseling on how to care for the newborn care were more likely to practice recommended newborn care compared to mothers who did not attend PNC and did not receive counseling on newborn care (Zone, Kokebie, Aychiluhm, & Degu, 2015).

2.9.3. Obstetrics factors

According to a study conducted in India, the number of births a mother had was found to have significant association with safe cord care. The same study found that the prevalence of recommended newborn care practice was poor among mothers had multiple births when compared to mothers with one birth (Bhatt, Malik, Jindal, Sahoo, & Sangwan, 2015). Contrarily, Misgna et al (2014) found that multiparous mothers had good cord care compared to primiparous mothers. Also, Alemayehu et al (2014) in a study in Ethiopia
found that mode of delivery was significantly association with early initiation of breast feeding. Mothers who had vaginal delivery by cesarean session were less likely to initiate breastfeeding early compared mothers who had normal delivery through the vagina.

2.9.4 Mothers knowledge about ENC

According to a study conducted by Misgna et al (2014), mothers with good knowledge were about six times more likely to practice recommended newborn care practices compared to mothers with poor knowledge. Similarly, it was found that knowledge of mothers about newborn care had significant association with their practice of newborn care. Mothers with good knowledge had good practice (Jiji B et al, Saaka M et al, 2014) in a study also found knowledge of mothers on newborn care to be one of the main predictors of good neonatal feeding. There are other studies that corroborated these findings (Kaphle et al., 2013, Tegene, Andargie, Nega, & Yimam, 2015).

2.9.5 Culture

Traditional and cultural practices are import factors to consider in the accomplishment of better neonatal care in developing countries, this is because basic obstetric health services not adequate or available and so most deliveries occur at home. Nonetheless, babies that are delivered in hospitals are also impacted by traditional beliefs and practices when they go back home, (World health organization, 2006).

A study conducted in western Uttar Pradesh, showed that practically every newborn was left wet and uncovered on the floor until the placenta was delivered. Timely initiation of breastfeeding was not done due to some local beliefs, a practice in the community which everyone had to follow because it is the norm in the community (Vani, Sushma, &
Siddharth, 2005). A similar study in Tanzania showed that the main reason for bathing the babies early is the belief that the baby is dirty, particularly if the baby had mucus on the head, it was believed to be sperm. Keeping the baby warm and covered everyday was considered normal practice. However skin-to-skin care was not seen as a normal practice. Mother perceived kangaroo mother care to be harmful to the fragile baby. (Nigatu, Worku, & Dadi, 2015).
CHAPTER THREE

METHODS

3.1 Introduction

This chapter explains how the study was conducted with details of the processes involved in samples size estimation, sampling procedures data collection and analysis. How ethical issues were addressed are also discussed in this chapter.

3.2 Study design.

This was a quantitative cross-sectional study conducted among mothers with infants aged 6 months or less to examine the factors that influence mother’s practice of the WHO’s recommended newborn care.

3.3.0 Study site

The study was conducted in nine health centers in Savelugu/ Nanton Municipality. These are, Savelugu Hospital, Savelugu, Health Centre, Moglaa Health Centre, Pong-Tamale Health Center, Diare Health Centre, Janjorikukuo Health Centre, Nanton Health Centre, Tampion Health Centre and Zoggu Health Centre,

3.3.1 Location and size

Savelugu/Nanton municipality was part of West Dagbon but was split to the present name in 1988. The municipality is 1,760 square kilometers and shares boundaries with Sagnarigu, Karaga, Mion, West Mamprusi, Kumbungu districts to South, North East, South-east, North and West respectively.
3.3.2 Population

The projected population for the year 2017 based on the 2010 population census is 167,491 whom 83,484 (51%) are females, out of this, 39,360 are in the reproductive age. There 214 communities which is mostly rural with a population density of 91.3/square kilometer. The Dagombas are predominant ethnic group in the municipality with a smaller number of other ethnic groups from other regions who are mostly working in government and non-government establishments.

3.3.3 Socio-cultural activities

Social, cultural, and religious norms in of the study area bestows authority in the hands of traditional rulers, spiritual leaders and family heads who are mostly males. In the area, only males inherit lands and other properties from their parents. These therefore make men have access and control over resources more than women. Decisions regarding the health of families are made by husbands or men. Pregnant women are required to undergo some rituals before their pregnancy is made public. There are other cultural beliefs that proscribe women and children from eating certain types of food.

3.3.4 Geographical profile

The flora is savanna grassland and the topography land is low lying. Two major river run through the study area. These are the White Volta and River Nasia. There are also a number of smaller rivers and streams which sometimes get flooded to displace communities. There are two seasons; the dry season which last for about seven months starting from the middle of November up to May and the rainy season takes over from June to up to the middle of November.
Most parts of the study area can be accessed by transport throughout the year except some communities that get flooded during the rainy season and due to spillage of the Bagre dam in Burkina Faso.

3.3.5 Economic activities
Subsistence farming is the main economic activity in the district. But this is usually challenged by virtue of the fact that it is on rain fed basis which is mostly erratic. There are however a number of miscellaneous economic activities such as petty trading usually by women.

The concept of the large scale mango plantation in the municipality is fast gaining a ground which is expected to boost economic activity and provide employment for the teeming unemployed youth in the municipality. The municipality is also among beneficiary MMDAs for the Millennium Challenge Account (MCA) which provides funding for agricultural activities and other Small and Medium Enterprises (SMEs). The Savelugu, Nanton and Diare communities have satellite markets which usually fall once every week.

As a result of the high poverty levels in the municipality, it has earned the unenviable position as the first in the region regarding the “Kaya yoo” menace in the society.

3.3.6 Transport and communication
On transport and communication, with the thriving mobile telephoning in the country, almost all the communities are accessible with regards to telephone communication as well as with transport, because of the Trans- ECOWAS trunk highway which runs from Accra to Paga. Most communities have a minimal challenge with transport as feeder roads have linked the various communities to the main trunk highway.
3.3.7 Education

The Veterinary College at Pong Tamale is the only tertiary institution in the municipality. There are over 150 basic and primary schools in the study area. The study area also has two secondary schools. The level of illiteracy is high. Gross enrolment is 46% but is 56 for boys and 35% for girls. Dropout rate is 7.7% for boys and 12.1% for girls.

3.3.8 Health infrastructure

The Savelugu-Nanton municipality has eight (8) Health Centres, two (2) private clinics, Fourteen (21) functional CHPS, of which (9) have compounds and One hospital which serves as a referral health facility for the other peripheral health facilities.
Figure 2: Map of study area
3.4 Study population

All mothers with infants less than 6 months old who have stayed in the Savelugu Nanton Municipality for the past twelve months was the study population. The 6-month limit was set with the intention of mitigating recall bias by study participants.

3.5 Sample size calculation

The sample size for this study was calculated using single Cochran’s formula considering prevalence of good newborn care practice of 21% at 95% confidence interval and 5% margin of error plus non-response rate of 10% to give a total number of 280 study participants for this study.

\[ n = \frac{(Z^2pq)}{d^2} \]

Where:
- \( n \) = sample size
- \( Z \) = desired confidence
- \( p \) = population proportion
- \( q = (1-p) \)
- \( d \) = desired precision

\[ n = \frac{(1.96^2 \times 0.21 \times 0.79)}{0.05^2} = 255 + 10\% \text{ non-response rate} = 280 \]

3.6 Sampling procedure

The study sample was drawn from the 9 health facilities providing Postnatal Care (PNC) services in the study area. To ensure a fair representation of each facility, PNC attendance for the past six months was used to compute the average monthly attendance for each facility. The information was then used to determine the proportional representation of each health facility in the total sample size of 280. The proportional distribution of sample
size by health facility is shown in Table 1. Systematic random sampling was used to select the 280 respondents for the study. This sampling technique was employed to ensure that all mothers had equal chance of being selected to participate in the study.

Table 1: Distribution of study sample by health facility

<table>
<thead>
<tr>
<th>S/No</th>
<th>Health Facility</th>
<th>X = Average PNC attendance</th>
<th>Proportional representation [(x/y)*z]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diare Health Centre</td>
<td>42</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Janjorikukuo Health Centre</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Moglaa Health Centre</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Nanton Health Centre</td>
<td>40</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Pong Tamale Health Centre</td>
<td>40</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>Savelugu Health Centre</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>7</td>
<td>Zoggu Health Centre</td>
<td>58</td>
<td>27</td>
</tr>
<tr>
<td>8</td>
<td>Tampion Health Centre</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>9</td>
<td>Savelugu Hospital</td>
<td>336</td>
<td>156</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Y = 603</td>
<td>Z = 280</td>
</tr>
</tbody>
</table>

X = average PNC attendance per facility. Y = Total PNC attendance. Z = study sample size

3.7 Study variables

**Dependent variables**

Newborn Care practice was the outcome variable which include, cord care, thermal care, neonatal feeding, eye care and vaccination,

**Independent variables**

The independent variables were socio-demographic factors including maternal age, level of educational, religion, marital status, and residence, and occupation of mothers. Utilization of antenatal and delivery care services such as antenatal attendance, parity,
knowledge of ENC, place of delivery and maternal knowledge on newborn care, were also assessed as explanatory variables.

3.8 Operational definitions and measurement

Postnatal mother: in this study was defined as women with children less than 6 months.

Skilled provider/skilled attendant: People with midwifery skills (for example, midwives, doctors and nurses) who have been trained in skills necessary to conduct delivery and diagnose or refer obstetric complications.

Essential Newborn Care: It refers to the care provided to the baby from birth to 28 days of age by care giver or by the mothers.

Safe cord care: defined as use of a clean cutting instrument to cut the umbilical cord plus clean thread to tie the cord plus no chlorhexidine or substance applied to the cord stump

Optimal thermal care: defined as baby wiped and wrapped within ten minutes of birth plus baby’s first bath after 6 or more hours.

Good neonatal feeding practices: defined as initiating breastfeeding within the first one hour after birth, giving no pre-lacteal and feeding to the child with colostrum.

Immunization: defined as baby receives BCG and OPV within 14 days after birth.

Eye Care: defined as eye ointment applied to baby’s eyes within 1hour after birth.

Identification new born danger signs: refers to ability of mother to recognize convulsions, fever, poor feeding/suckling, difficult/fast breathing, baby feels cold, baby too small/born too early, redness/discharge at cord, eyes red/swollen/discharge, yellow
palm/soles/eyes, lethargy and unconsciousness as a requirement to send baby to health facility for special care.

**Knowledge item on Essential Newborn Care:** The mothers were asked questions which covered knowledge of essential newborn care that include: cord care, eye care, thermal care, and breast feeding, immunization and identification newborn danger signs. Index questions were developed on knowledge that were assigned a score of 1=correct response (consistence with WHO Essential Newborn Care guidelines) and a score of 0= incorrect response (inconsistence with WHO ENC guidelines). Any mother who didn’t know the answer was considered to have an incorrect response.

**Good knowledge:** was the summary index above the mean score.

**Poor knowledge:** was the summary index below or equal the mean score.

**Knowledge on key danger sign of neonate:** mothers were asked questions and considered as knowledgeable on key danger signs of neonate, if the respondent can mention spontaneously at least three or more of the eleven key danger signs of the neonate.

**Practice item on Essential Newborn Care.** The mothers were asked questions which covers practice of Essential Newborn Care that includes; cord care, thermal care, breast feeding & immunization. A composite score of 1=correct practice (consistence with WHO Essential Newborn Care guidelines) and 0= incorrect practice (inconsistence with WHO Essential Newborn Care guidelines). Any mother who responded “don’t know” was considered to have an incorrect response.

**Good practice:** was a summary index above the mean score.
**Poor practices**: was a summary index below or equal the mean score.

### 3.9 Data collection to tools

A structured questionnaire was used to collect data. The questionnaire was designed to reflect the objectives of the study and variable proposed to measure with open and closed ended questions. The questionnaire has four sections. Section 1; measured mothers’ socio-demographic details such as age, education, residence, religion and marital status, Section 2; measured mother’s obstetric and use of maternal health services such as Parity, use of ANC, place of and attendant at birth Section 3 measured knowledge about Essential Newborn care practices, Section 4 measured mother’s newborn care practice at home. The questionnaire was designed in English but was translated into Dagbani language for respondents who do not understand English language.

Mother’s knowledge was considered as good or poor if the summary index on knowledge items is above the mean score or below the mean score respectively.

**Poor practices**: was a summary index below or equal the mean score.

### 3.10 Pretest of tool

The questionnaire was pretested in health facilities that were not selected to participate in the main study and information gathered was used to validate the questionnaire before data collection was done. Changes made in the questionnaire include; use of boiled razor blade or scissors for cutting of cord, combination of shea butter and Vaseline as items applied to
the eyes and segregation of duration before babies first bath into within one hour after birth, 2-24 hours and after 24 hours.

3.11 Data collection procedure

Five (5) Data Collection Assistants were trained for two and half hours. Data collection was done through face-to-face interviews to ensure consistency and interpretation of question and also probing for clarifications especially on open ended questions. The data collection process took 25-30 minutes to complete per study participant. The data was collected over a period of one month due to the nature of organization of postnatal services,

3.12 Data analysis

Data was entered and analyzed using STATA Version 15 and summarized by using tables and figures. Descriptive statistics were computed to determine knowledge and practice. Logistic regression analysis was performed and crude and adjusted odds ratios calculated with 95% confidence interval to determine the association between outcome measure and the different independent variables. The variables included in the analysis are Socio-demographic variables (age of mother, educational status, marital status, residence, religion, and occupation), parity, attendant at ANC and birth, number of ANC visits, Td vaccination, place of delivery, knowledge on ENC, Counseling on ENC, ENC practices (cord care, eye care, thermal care, breastfeeding and vaccination)

3.13.0 Ethical consideration

Introductory letter was obtained from the Head of Department of Social and Behavioural Science, School of Public Health to The Savelugu/Nanton Municipal Directorate for permission to carry out the study in health facilities in the municipality. Acceptance letter
was be obtained from the Directorate and was attached to the protocol and submitted to Ghana Health Service Ethical Review Board for ethical clearance.

3.13.1 Informed consent

Each study participant was adequately informed about the study and the right to withdraw at any time during the interview without any adverse consequence. Written informed consent forms were given to participants to sign or thumb print after reading it to them.

3.13.2 Confidentiality

Mothers who participated in the study were assured confidentiality. Interview was conducted on one on one basis at a distance where the interviewees were not heard by others. Participants were to ensure anonymity. Informed consent forms signed by participants as well as hard copies of questionnaires were stored in a file cabinet with lock and key.

3.13.3 Potential benefit of the study

Participants were informed that there is no direct benefit of the study to participants. However they were told that the study will help identify the gaps in knowledge and practices of newborn care and the factors that promote or hinder recommended practice. They were also told that, result of the study will also be shared to stakeholders including the Savelugu Municipal Assembly and the Municipal Health Directorate in order to design appropriate interventions to improve the gaps in knowledge and practice of essential newborn care thereby improving neonatal and child survival.
3.13.4 Risks

This study could pose emotional and psychological distress from answering the questions. However, participants were informed of their right to either participate or decline. In addition, participants were reminded that they may respond to all the questions or may not answer to the questions they feel uncomfortable with and may end the interview at any time they want without penalty. Participants were also allowed to ask for clarification of questions which are not clear to them before answering.
CHAPTER FOUR

RESULTS

4.1 Introduction

In this chapter, the results of the study have been presented in tables and figures under different headings and according to the objectives of the study. A total number of 280 mothers with infants aged 6 months or younger were recruited for the study. All mothers participated in the study but 276 questionnaires were fully completed and were entered for analysis.

4.2 Socio-demographic Characteristics of the study sample

The 276 participants were mothers with infants aged 6 month old or younger who had been resident in the Savelugu -Nanton municipality in the past 12 months. The mean age of mothers is 27.2 (SD 7.20) years and ranged from 16-45 years. About half (50.75 %) of the mothers have children in the ages of 1-3 months old. Also more than half of the children were males (51.81%). About 44% of the mothers had no formal education. Only 7% of the mothers had tertiary education. Majority of the participants were married (94.93%). More than a quarter (33.33%) of the mothers were unemployed, 18.84% are Public/Private sector employees whilst 19.57% are farmers. Only 10 (3.62%) are students. The details of the characteristics of sample population including religion and residence are shown in table 4
**Table 2: Socio-demographic Characteristics of study participants**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age groupings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>22</td>
<td>7.97</td>
</tr>
<tr>
<td>20 -25 years</td>
<td>81</td>
<td>29.35</td>
</tr>
<tr>
<td>26-30 years</td>
<td>90</td>
<td>32.61</td>
</tr>
<tr>
<td>31-35 years</td>
<td>58</td>
<td>21.01</td>
</tr>
<tr>
<td>36 years and more</td>
<td>25</td>
<td>9.06</td>
</tr>
<tr>
<td><strong>Marital status of mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>262</td>
<td>94.93</td>
</tr>
<tr>
<td>Single</td>
<td>9</td>
<td>3.26</td>
</tr>
<tr>
<td>Divorce</td>
<td>4</td>
<td>1.45</td>
</tr>
<tr>
<td>Widowed</td>
<td>1</td>
<td>0.36</td>
</tr>
<tr>
<td><strong>Religion of mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>22</td>
<td>7.97</td>
</tr>
<tr>
<td>Islam</td>
<td>252</td>
<td>91.30</td>
</tr>
<tr>
<td>Traditional</td>
<td>2</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Educational level of mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>121</td>
<td>43.84</td>
</tr>
<tr>
<td>Primary</td>
<td>62</td>
<td>22.46</td>
</tr>
<tr>
<td>Middle/JHS</td>
<td>47</td>
<td>17.03</td>
</tr>
<tr>
<td>Secondary/technical</td>
<td>27</td>
<td>9.78</td>
</tr>
<tr>
<td>Tertiary</td>
<td>19</td>
<td>6.88</td>
</tr>
<tr>
<td><strong>Occupation of mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>92</td>
<td>33.33</td>
</tr>
<tr>
<td>Public/Private employee</td>
<td>52</td>
<td>18.84</td>
</tr>
<tr>
<td>Farmer</td>
<td>54</td>
<td>19.57</td>
</tr>
<tr>
<td>Petty Trader</td>
<td>52</td>
<td>18.84</td>
</tr>
<tr>
<td>Students</td>
<td>10</td>
<td>3.62</td>
</tr>
<tr>
<td>Others</td>
<td>16</td>
<td>5.80</td>
</tr>
<tr>
<td><strong>Residence of mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>135</td>
<td>48.91</td>
</tr>
<tr>
<td>Rural</td>
<td>141</td>
<td>51.09</td>
</tr>
<tr>
<td><strong>Sex of infant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>143</td>
<td>51.81</td>
</tr>
<tr>
<td>Female</td>
<td>133</td>
<td>48.19</td>
</tr>
<tr>
<td><strong>Age of children in months</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less 1 month</td>
<td>20</td>
<td>7.25</td>
</tr>
<tr>
<td>1-3 months</td>
<td>140</td>
<td>50.72</td>
</tr>
<tr>
<td>4-6 months</td>
<td>116</td>
<td>42.20</td>
</tr>
</tbody>
</table>
4.3 Utilization of antenatal and delivery services

All mothers 276 (100%) attended antenatal care services in their last pregnancy. Majority of the mothers 258 (98.48%) made at least four visits to the health facility before delivery. Most of the mothers 192 (69.56%) were multiparous. More than half of the mothers 154 (55.80%) started antenatal within the first three months of pregnancy. Only 3 (1.09%) started ANC in the third trimester in their last pregnancy, 257 (93.12%) received tetanus diphtheria vaccination. Majority of the mothers 251 (90.94%) delivered their last baby in a health facility. Only 25 (9.06%) delivered at home. Most of the mothers 213 (77.12%) were delivered by a trained midwife, 38 (13.76%) were delivered either by a Doctor, Physician Assistant or a Nurse. Only 25 (9.06%) were delivered by Traditional Birth Attendants. Majority of the mothers 214 (77.54%) were seen by a health worker within 7 days, 211 (76.45%) received counseling on newborn care.

![Figure 3: Areas of Newborn Care counseling revived reported by mothers](image-url)
Table 3: Obstetric, Antenatal Care and Delivery history of mothers

<table>
<thead>
<tr>
<th>Variable measured</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC attendance during last pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>276</td>
<td>100.00</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number ANC visits made during last pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3 visits</td>
<td>18</td>
<td>6.52</td>
</tr>
<tr>
<td>4 or more visits</td>
<td>158</td>
<td>93.48</td>
</tr>
<tr>
<td>Received TD vaccine during recent pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>257</td>
<td>93.12</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>6.88</td>
</tr>
<tr>
<td>Place of recent delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government hospital</td>
<td>155</td>
<td>56.16</td>
</tr>
<tr>
<td>Government health center</td>
<td>81</td>
<td>29.35</td>
</tr>
<tr>
<td>Health post</td>
<td>5</td>
<td>1.81</td>
</tr>
<tr>
<td>Private health institution</td>
<td>10</td>
<td>3.62</td>
</tr>
<tr>
<td>Home</td>
<td>25</td>
<td>9.06</td>
</tr>
<tr>
<td>Attendant during delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor</td>
<td>15</td>
<td>5.43</td>
</tr>
<tr>
<td>Midwife</td>
<td>213</td>
<td>77.17</td>
</tr>
<tr>
<td>Physician assistant</td>
<td>15</td>
<td>5.43</td>
</tr>
<tr>
<td>Nurse</td>
<td>8</td>
<td>2.90</td>
</tr>
<tr>
<td>TBA</td>
<td>25</td>
<td>9.06</td>
</tr>
<tr>
<td>Mother’s seen within seven days after delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>214</td>
<td>77.54</td>
</tr>
<tr>
<td>No</td>
<td>62</td>
<td>22.46</td>
</tr>
<tr>
<td>Mother counseled within on newborn care after delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>211</td>
<td>76.45</td>
</tr>
<tr>
<td>No</td>
<td>65</td>
<td>23.55</td>
</tr>
<tr>
<td>Gestational Age at first ANC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Trimester</td>
<td>154</td>
<td>55.80</td>
</tr>
<tr>
<td>Second Trimester</td>
<td>119</td>
<td>43.12</td>
</tr>
<tr>
<td>Third Trimester</td>
<td>3</td>
<td>1.09</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 births</td>
<td>84</td>
<td>30.43</td>
</tr>
<tr>
<td>2-3 births</td>
<td>108</td>
<td>39.13</td>
</tr>
<tr>
<td>4 or more births</td>
<td>84</td>
<td>30.43</td>
</tr>
</tbody>
</table>
4.4 Knowledge of mothers on Essential Newborn Care

Result from the study shows that majority of mothers 188(68%) had good knowledge on essential newborn care (composite score of than 50% on correctly answered knowledge questions) whilst 23(12%) had poor knowledge (composite score of 50% or less on correctly answered knowledge questions). More than half of the mothers 176(63.8%) indicated that a new razor blade should be used to cut the newborn baby’s cord. However, 7(2.5%) and 37(13.4%) indicated that previously used razor blade and others such as scissors and knife respectively could be used to cut the cord. On how to control temperature, more than half (66.0%) of the mothers indicated that the baby should be wrapped in immediately (before delivery of placenta) and 146(53.0) indicated that the baby should be placed at the belly/chest of the mother. The details of other finding on knowledge including knowledge on breastfeeding, substance to application to the cord and eye are and shown in Table 4&5 and Figure 4-6

![Pie chart showing breastfeeding timing](Figure 4: Mothers Knowledge on timing of Breastfeeding of baby after delivery)
Table 4: Knowledge of mother on essential newborn care (n=276)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of instrument to be use to cut the cord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New razor blade</td>
<td>176</td>
<td>63.77</td>
</tr>
<tr>
<td>Boiled razor blade/scissors</td>
<td>56</td>
<td>20.29</td>
</tr>
<tr>
<td>Previously used razor blade</td>
<td>7</td>
<td>2.54</td>
</tr>
<tr>
<td>Others including scissors</td>
<td>37</td>
<td>13.41</td>
</tr>
<tr>
<td>Knowledge on material to use to tie the cord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New string/thread</td>
<td>182</td>
<td>65.94</td>
</tr>
<tr>
<td>Any string/thread/fiber from plant</td>
<td>41</td>
<td>14.85</td>
</tr>
<tr>
<td>Cord not be tied</td>
<td>3</td>
<td>1.09</td>
</tr>
<tr>
<td>Cord clump</td>
<td>21</td>
<td>7.61</td>
</tr>
<tr>
<td>Don’t know</td>
<td>29</td>
<td>10.51</td>
</tr>
<tr>
<td>Knowledge on substance to be applied to the cord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nothing or Chlorhexidine</td>
<td>98</td>
<td>35.51</td>
</tr>
<tr>
<td>Shea butter/Vaseline</td>
<td>162</td>
<td>58.70</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>1.44</td>
</tr>
<tr>
<td>Don’t know</td>
<td>12</td>
<td>4.35</td>
</tr>
<tr>
<td>Knowledge on timing of wrapping baby after birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before delivery of placenta</td>
<td>182</td>
<td>65.94</td>
</tr>
<tr>
<td>After delivery of placenta</td>
<td>67</td>
<td>24.28</td>
</tr>
<tr>
<td>Don’t know</td>
<td>27</td>
<td>9.78</td>
</tr>
<tr>
<td>Knowledge on where to keep baby after birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On the mother’s chest/belly</td>
<td>146</td>
<td>52.90</td>
</tr>
<tr>
<td>Beside the mother</td>
<td>96</td>
<td>25.00</td>
</tr>
<tr>
<td>On the newborn bed/table</td>
<td>42</td>
<td>15.22</td>
</tr>
<tr>
<td>On the floor/with someone else</td>
<td>13</td>
<td>4.71</td>
</tr>
<tr>
<td>Don’t know</td>
<td>6</td>
<td>2.17</td>
</tr>
<tr>
<td>Knowledge on timing of baby’s first bath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within one hour</td>
<td>28</td>
<td>46.38</td>
</tr>
<tr>
<td>Between 2-24 hours</td>
<td>65</td>
<td>23.55</td>
</tr>
<tr>
<td>After 24 hours</td>
<td>57</td>
<td>20.65</td>
</tr>
<tr>
<td>Don’t know</td>
<td>26</td>
<td>9.42</td>
</tr>
<tr>
<td>Knowledge on how to care for the newborn baby’s eye</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean the eyes separately with clean sterile swab</td>
<td>98</td>
<td>35.51</td>
</tr>
<tr>
<td>Clean eye with clean cloth</td>
<td>122</td>
<td>44.20</td>
</tr>
<tr>
<td>Clean with fingers</td>
<td>10</td>
<td>3.62</td>
</tr>
<tr>
<td>Others (“chilo”)</td>
<td>7</td>
<td>2.54</td>
</tr>
<tr>
<td>Don’t know</td>
<td>39</td>
<td>14.13</td>
</tr>
<tr>
<td>Knowledge on what baby to be fed first</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast milk/colostrum</td>
<td>273</td>
<td>98.91</td>
</tr>
<tr>
<td>Water</td>
<td>1</td>
<td>0.36</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>0.72</td>
</tr>
</tbody>
</table>


Figure 5: Percentage of mothers with knowledge on application of antibiotic ointment to baby’s eyes after delivery

Table 5: Composite score on knowledge of mothers on essential newborn care

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate knowledge (Good)</td>
<td>188</td>
<td>68.12</td>
</tr>
<tr>
<td>Inadequate knowledge (Poor)</td>
<td>88</td>
<td>18.84</td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Newborn Care Practices of mothers at home were assessed to determine whether they are in line with recommended practice. The results show that more than half of the mothers (56.52%) practiced recommended essential newborn care practices (composite score of more than 50% on recommended newborn care practice items). On cord care, majority of the mothers 231(83.7%) indicated that something was applied to cord stump. Out of this, 121 (53.4%) applied either shea butter or Vaseline to the cord, 107(46.32%) applied spirit or chlorhexidine to the cord.

Figure 6: Knowledge of mothers on neonatal danger signs
With regards to temperature regulation, more than half of the mothers 153 (55.4%) indicated that their last baby was wrapped and placed on their chest/belly.

The result also show that almost all the mothers 265(96.0%) fed their baby with breastmilk/colostrum first. However, only 65 (23.6%) of the mothers practiced exclusive breastfeeding for the first one month. The details of the results are shown in table 6 and 7.

**Table 6: Percentage composite score of mothers of newborn care practice**

<table>
<thead>
<tr>
<th>Level of practice newborn care practice</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good practices</td>
<td>156</td>
<td>56.52</td>
</tr>
<tr>
<td>Poor practices</td>
<td>120</td>
<td>43.48</td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table 7: Frequency and percentage of newborn care practice of mothers

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance application to the cord stump (n=276)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>231</td>
<td>83.70</td>
</tr>
<tr>
<td>No</td>
<td>45</td>
<td>16.30</td>
</tr>
<tr>
<td>Substance applied to the cord stump (n=231)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shea butter</td>
<td>121</td>
<td>53.38</td>
</tr>
<tr>
<td>Spirit/Chlorhexidine/Nothing</td>
<td>107</td>
<td>46.32</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>2.60</td>
</tr>
<tr>
<td>Place baby kept before delivery of placenta (n=276)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On the mother’s chest/ belly</td>
<td>153</td>
<td>55.43</td>
</tr>
<tr>
<td>Beside the mother</td>
<td>71</td>
<td>25.72</td>
</tr>
<tr>
<td>On newborn bed/table</td>
<td>42</td>
<td>15.22</td>
</tr>
<tr>
<td>With someone else/ On the floor</td>
<td>10</td>
<td>3.63</td>
</tr>
<tr>
<td>Timing of baby’s first bath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within one hour</td>
<td>139</td>
<td>50.36</td>
</tr>
<tr>
<td>2-24 hours</td>
<td>55</td>
<td>19.93</td>
</tr>
<tr>
<td>After 24 hours</td>
<td>64</td>
<td>23.19</td>
</tr>
<tr>
<td>Don’t know</td>
<td>18</td>
<td>6.52</td>
</tr>
<tr>
<td>Timing of initiation of breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within one hour</td>
<td>221</td>
<td>80.07</td>
</tr>
<tr>
<td>Between 2-24 hours</td>
<td>30</td>
<td>10.87</td>
</tr>
<tr>
<td>After 24 hours</td>
<td>16</td>
<td>5.80</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
<td>3.26</td>
</tr>
<tr>
<td>First feed of bay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast milk/colostrum</td>
<td>265</td>
<td>96.01</td>
</tr>
<tr>
<td>Water</td>
<td>7</td>
<td>2.54</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1.45</td>
</tr>
<tr>
<td>Exclusive breastfeeding in the first one month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65</td>
<td>23.55</td>
</tr>
<tr>
<td>No</td>
<td>211</td>
<td>76.45</td>
</tr>
<tr>
<td>BCG vaccination at birth (within 14 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>210</td>
<td>76.09</td>
</tr>
<tr>
<td>No</td>
<td>66</td>
<td>23.91</td>
</tr>
<tr>
<td>Polio vaccination at birth (within 14 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>209</td>
<td>75.72</td>
</tr>
<tr>
<td>No</td>
<td>67</td>
<td>24.28</td>
</tr>
</tbody>
</table>
4.6 Factors associated with mother’s practice of essential newborn care

Results on bivariate analysis showed that, age of mother, educational status, occupation, parity, place of delivery, attendant at birth, new born care counseling soon after delivery, and maternal knowledge of essential newborn care were associated with essential newborn care utilization.

However, on multivariate logistic regression analysis, only age of mother and place of delivery were the significantly associated factors with essential newborn care practice.

Mothers aged 25-36 are four times more likely to practice essential new born care practice than mothers younger than 20 years (AOR =4.0; CI 1.19 - 13.26). Also, mothers who delivered their baby at health centres were twice more likely to practice essential newborn care compared to mothers who delivered at the hospital. (AOR=2.06; CI 1.03 - 4.12).
Table 8: Associated factors of newborn care practice of mothers

<table>
<thead>
<tr>
<th>Variable measured</th>
<th>Good Practices</th>
<th>Odds ratio (95% CI)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>COR</td>
</tr>
<tr>
<td>Age group of mothers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>7</td>
<td>15</td>
<td>+1</td>
</tr>
<tr>
<td>20-25 years</td>
<td>41</td>
<td>40</td>
<td>3.53(1.32 - 9.53)</td>
</tr>
<tr>
<td>26-30 years</td>
<td>56</td>
<td>34</td>
<td>3.78(1.33 - 10.73)</td>
</tr>
<tr>
<td>31-35 years</td>
<td>37</td>
<td>21</td>
<td>3.78(1.33 - 10.73)</td>
</tr>
<tr>
<td>&gt;35 years</td>
<td>15</td>
<td>10</td>
<td>3.21(0.97 - 10.70)</td>
</tr>
<tr>
<td>Place of delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government hospital</td>
<td>87</td>
<td>68</td>
<td>+1</td>
</tr>
<tr>
<td>Gov. health center</td>
<td>55</td>
<td>26</td>
<td>1.65(0.94 - 2.90)</td>
</tr>
<tr>
<td>Health post</td>
<td>1</td>
<td>4</td>
<td>0.20(0.21 - 1.79)</td>
</tr>
<tr>
<td>Private health institution</td>
<td>7</td>
<td>3</td>
<td>1.80(0.46 - 7.32)</td>
</tr>
<tr>
<td>Home</td>
<td>6</td>
<td>19</td>
<td>0.20(0.93 - 0.65)</td>
</tr>
<tr>
<td>Assistant during delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor</td>
<td>7</td>
<td>8</td>
<td>+1</td>
</tr>
<tr>
<td>Midwife</td>
<td>137</td>
<td>76</td>
<td>2.06(0.72 - 5.91)</td>
</tr>
<tr>
<td>Physician assistant</td>
<td>5</td>
<td>10</td>
<td>0.57(0.13 - 2.50)</td>
</tr>
<tr>
<td>Nurse</td>
<td>1</td>
<td>7</td>
<td>0.16 (0.02 - 1.67)</td>
</tr>
<tr>
<td>TBA</td>
<td>1</td>
<td>19</td>
<td>0.36(0.09 - 1.42)</td>
</tr>
<tr>
<td>Mother counselled within 7days after delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>136</td>
<td>75</td>
<td>+1</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>45</td>
<td>0.22(0.135 - 0.45)</td>
</tr>
<tr>
<td>Newborn care Knowledge of mothers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate(Good)</td>
<td>120</td>
<td>68</td>
<td>+1</td>
</tr>
<tr>
<td>Inadequate(Poor)</td>
<td>36</td>
<td>52</td>
<td>2.55(1.52 - 4.28)</td>
</tr>
</tbody>
</table>
CHAPTER FIVE
DISCUSSION

5.1 Introduction

In this chapter, the results of the study have been discussed under various headings and according to the objectives of the study. The findings of this study have been compared with findings from other studies, highlighting similarities and variations in the findings.

5.2 Knowledge on essential newborn care

Reducing neonatal morbidity and mortality requires providing mothers with correct knowledge on newborn care to ensure appropriate practices. The World Health Organization recommends that mothers should have adequate knowledge on the components of the essential newborn care which include cord care, thermal control, infection prevention, eye care, breastfeeding and immunization.

The findings in this study show that more than half of the mothers have good knowledge (68%) on essential newborn care. This is in contrast with findings of a similar study conducted by Saaka et al in 2014 in rural areas in the Northern region of Ghana where mother’s knowledge on neonatal danger signs was used as a proxy found that 20% of mothers were able to mention at least four newborn danger signs. The possible explanation for the difference could be that, over time, mothers have become more aware of essential newborn care in the present time than in 4 years ago. However, the findings on knowledge in this study is lower than what was found in a similar study conducted in Ethiopia by Misgna et al (2016) where they found that 84% of mothers had good knowledge (responded greater than 50% knowledge questions correctly) on essential newborn care.
Specifically, on cord care, more than half of the mothers (64%) in this study indicated that a new razor blade should be used to cut the baby’s cord while less than half (35%) of the mothers also indicated that, chlorhexidine could be applied to the stump cord but in the absence of chlorhexidine, nothing should be applied. This is consistent with World Health Organization’s recommendation on cord care.

With regards to thermal control, it is recommended that, the baby is wrapped immediately after birth and placed on the mother’s chest/belly and the first bath delayed preferably for 24 hours. In this study, more than half of the mothers indicated that the baby should be wrapped and placed on the mother’s chest which is consistent with WHO’s recommendation. However, less than a 25% of the mothers knew about the correct timing of the first bath of the baby. This was found to be similar to findings from a study by Misgna et al (2014) where only 7% of mothers knew the appropriate time for the baby’s first bath. Early bathing exposes the newborn to hypothermia and this could have serious health implications for the baby.

On neonatal feeding, more than half of the mothers (55%) knew about the correct time for initiating breastfeeding. This was found to be consistent with studies conducted in Ghana (Saaka et al, 2014). Starting breastfeeding early is encouraged for a number of reasons. Mothers benefit from early breastfeeding as it stimulates breast milk production and facilitates the release of oxytocin, which helps the contraction of the uterus and reduces postpartum blood loss. The first breast milk contains colostrum, which is very rich in nutrients and contains antibodies that protect the newborn from diseases.
5.3 Newborn care practices of mothers

With regards to mother’s practice of essential newborn care, five components of essential newborn care with 14 practice items covering cord care, thermal care, eye care, breastfeeding and vaccination were analyzed. A composite score on practice items greater than 50% was considered as good practice.

It was found in this study that more than half (56.5%) of the mothers practiced good essential newborn care. This was found to be at variance with finding from a study by Saaka et al (2014) where they found that less than 25% of mothers practice good newborn care.

On umbilical cord care, more than half (64%) of the mothers in this study indicated that a new razor blade was used to cut the cord of their baby which was found be consistent with result of a study conducted in Pakistan by Khalil (2014) where it was found that 60% mothers used newly purchased razor blade to cut the umbilical cord. The world health organization recommends that chlorhexidine should be applied to the umbilical cord stump. However where chlorhexidine is not available, nothing should be applied. In this study it was found that more than half (56%) of the mothers either applied shea butter or Vaseline to the cord stump. Only 46% of the mothers in this study practiced good cord care. This was found to be at variance with finding from the study by Saaka et al (2014) and Kayingo et al (2016 that were conducted in the Northern and Volta regions of Ghana respectively where they found good umbilical cord care to be 0.2% and 68% respectively. These variations may be due to improvements in newborn care practice over time in comparison with findings by Saaka and others or socio-demographical differences between participants with regards to the findings by Kayingo and others.
With regard to optimal thermal care, delayed bathing of the baby for 24 hours or more and wrapping and placing baby on the mother’s chest/ belly are encouraged. However, in this study only 23% of the mothers bathed their baby after 24 hours and in more than half of the mothers, the baby was wrapped and placed on the chest. Some studies revealed higher prevalence of thermal care (Khalil, 2014, Thapa, 2017. Others also indicated lower prevalence (Saaka et al, 2014).

In this study 80% of the mothers initiated breastfeeding within one hour, and 96% fed their baby with colostrum which is consistent with recommended practice and also consistent with other studies (Thapa, 2017).

5.4.0 Factor affecting newborn care practice of mothers

5.4.1. Socio – demographic characteristics

In this study the only socio-demographic variable that showed significant association was age of mother. Mothers aged 26-35 years old were four times likely to practice good newborn care compare to mothers who are younger or older. This was found to be similar to finding by (Saaka et al, 2014) where they found that women in the age group of 25-34 years were more likely to give good feeding practices to their babies than mothers who are 36 or more years. In contrast to this study other studies found a relationship between other socio-demographic characteristics of mother. Kaphle et al (2013) in their study found that maternal education found associated with early initiation of breast feeding, delayed bathing practices and cord care. Similarly studies conducted in Uganda and India showed that mothers’ education status had significant association with newborn care practices such as delay bathing, umbilical care, vaccination and proper eye care (Wiaiswa et al, 2010, Bugum et al, 2013). Studies conducted in Ethiopia on newborn care practice also
corroborated finding from other studies that found mother’s level of education to be positively associated with good newborn practice. (Tegene et al, Kokebie, Aychiluhu & Degu, 2015).

Studies also found significant association between marital statuses of women with exclusive breastfeeding (Alemayehu M. et al, 2014).

According to Misgna et al (2016), urban resident mothers are about seven times likely to practice essential newborn care compared to rural resident mothers. They also found that employed mothers were ten times likely to practice essential newborn care compared to unemployed mothers.

The observed differences in the findings of this study and others in literature regarding relationship between socio-demographic characteristics of mothers and newborn care practices may be due to differences in socio-demographic characteristics. There could be other powerful factors that influence newborn care practice of mothers in this study that were not explored.

5.4.2 Maternal health services

In this study, only place of delivery was found to have significant association with practice of essential newborn care. Mothers who deliver at health centres were twice likely to practice good newborn care compared to mothers who deliver at other places. This finding was found to be consistent with findings by Tegene et al (2015) where they found that delay bathing of the newborn baby was more practiced among mothers who delivered their baby in a health facility as compared to mothers who delivered at home. Other studies found association between other maternal health services. Chaudhary et al (2015) found that antenatal attendance by mothers and skilled attendance at delivery were significantly
associated with newborn care as compared to mothers who did not attend antenatal and mothers who were attended at delivery by either relatives or traditional birth attendants.

Antenatal attendance, antenatal counseling on newborn care, place of delivery and attendant at delivery were found to be associated with early initiation of breast feeding, delayed bathing practices and cord care (Kaphle et al, 2013).

Saaka M et al (2014), women who initiated ANC early in the first trimester were more likely to give good neonatal feeding to their baby than mothers who initiated ANC attendant in later trimesters. Consistent with this, Setegn T et al (2011) in their study on timely initiation of breastfeeding among mothers in Ethiopia found that receiving postnatal counseling & place of delivery independently predicted timely initiation of breast feeding.

Postnatal visit after delivery and mothers who received counseling about essential newborn care practices were more likely to practice recommended newborn care compared to mothers who did not attend PNC and did not receive counseling on newborn care. (Kokebie et al 2015).

The differences in the findings of this study and other previous studies reported in literature may be due to differences in factors that determine utilization of maternal health services such as availability and quality of maternal services, the knowledge and skills of service providers. Also power relations and mother’s access and control over resources may contribute to utilization of maternal services and practice of essential newborn care.

5.4.3 Obstetrics factors

Although obstetric factors were included as independent variables in this study, none was found to significantly influence the newborn care practice of mothers. Other studies have
established association between some obstetric factors. A study conducted in India shows that the number of births a mother had was significantly associated with safe cord care. Additionally, the study found that mothers who had more than one births were less likely to have good cord care practices when compared to mothers who had one birth. (Bhatt B, Malik, Jindal & Sahoo, 2015). Conversely, Misgna et al (2014) found that multiparous mothers had good cord care compared to primiparous mothers. Mode of delivery was also found in other studies to have a strong relationship with newborn care practice of mothers (Alemayehu et al, 2014) in a study in Ethiopia found that mode of delivery had significant association with early initiation of breast feeding. Mothers who had vaginal delivery were more likely to initiate breastfeeding early than mothers who deliver by cesarean session. Variations in findings regarding effects of obstetric factors on practice of newborn care in this study and other studies reported in literature may could be attributed to differences in interventions that reinforce mother’s practice of recommended newborn care practices.

5.4.4 Mothers knowledge about Essential Newborn Care

It was expected that mother’s knowledge on newborn care would have a strong effect on their practice. However, this study found no significant association between mothers’ knowledge of essential newborn care and their practice. This contradicts other findings reported in literature. According to Misgna et al (2014), mothers with good knowledge were about six times more likely to practice recommended newborn care practices compared to mothers with poor knowledge.

Similarly, Jiji et al (2014) found that knowledge of mothers about newborn care had significant association with their practice of newborn care. Mothers with good knowledge had good practice. Saaka M et al (2014) in a study in northern Ghana also found knowledge
of mothers on newborn care to be one of the main predictors of good neonatal feeding. The observed differences in finding may be due to differences in power relations regarding decision on how the newborn should be cared for. In the Northern region of Ghana, mother in-laws and father in-lows exert more influence on decision regarding the care of newborns although the mother may have good knowledge on essential newborn care.

Seeking timely medical attention for the sick newborn depends heavily on the mother’s ability to recognize danger sings in the newborn. In this study it was found that, more than three-quarters of the mothers were able to mention more three or more danger signs.
CHAPTER SIX

6.1 Conclusion

In general, knowledge of essential newborn is good among the study participants. However, there are knowledge gaps in some components of essential newborn care. The prevalence of good neonatal practice is also good but there are also gaps in the practice of some components of the recommended newborn practices. The study found no relationship between knowledge and the practice of good neonatal care.

Among the socio-demographic, antenatal and delivery factors, only age of mother and place of delivery significantly influence the practice of good neonatal care among the study participants. There may be other factors that influence mother’s practice of essential newborn care that could be explored.

6.2 Recommendations

1. There is the need for Health Managers in the Savelugu/Nanton municipality to design interventions that ensure focused counseling on all ENC practices with more emphasis on building skills and self-efficacy of younger mother who are probably having their first child.

2. Community Health Nurses and Midwives should follow up by home visits and encourage mothers to practice the knowledge and skills they have acquired during counseling.

3. There is also the need for health managers in the municipality to develop strategies to encourage mothers to deliver at the health facility where appropriate newborn care and counseling are provided.
4. Further studies should be conducted to explore other household and community factors that could influence mother’s practice of recommended newborn care.
REFERENCES


GDHS. (2014). Ghana Demographic and Health Survey 2014. Rockville, Maryland, USA.


Khalil, R. (2014). Newborn care knowledge and practices among mothers attending pediatric outpatient clinic of a hospital in Karachi, Pakistan, 8(2).


Thapa, S. (2017). Knowledge and Practice of Newborn Care Among Mothers of Infants in

University of Ghana http://ugspace.ug.edu.gh


APPENDICES

Appendix I: Information Sheet

Greeting Good morning / afternoon

My Name is…………………………. I am a data collector for master of public health student project at the University of Ghana on “Factors influencing newborn care practices of mothers among mothers in the Savelugu/Nanton Municipality”. Now, all participants including yourself are randomly selected for the study. The questions usually take about 25 to 30 minute.

2. The objective of the study: To assess level of knowledge and practice about Essential Newborn Care among women who have recently delivered in the Savelugu/Nanton Municipality.

3. The benefit of the study: There has no direct benefit of the study to participant. However the findings of this study will help the health authority in designing evidence based interventions to improve newborn care.

3. The risk of the study: Participating in this study will not have any risk or harm.

4. Right of participants: You have the right to either participate or decline participation in this study without penalty. You may respond to all the questions or you may not answer to the questions you don’t want and you may end the interview at any time you want. You can ask any questions which is not clear to you.

Confidentiality: Any information that you give will be kept confidential and names will not be written or specified on any document.
Appendix II: Informed Consent Form

As to the information given ahead, I understand that participating in this study has minimal risk or harm. My name will not be written on the questionnaire but the consent form and the information I give will never be shared to others. I also know I may not answer any questions that I don’t want to answer and I may end this interview at any time I want without penalty. I also know that I have been selected randomly to participate in this study and understand that my genuine response to interviews will be very important for the purpose of the study.

I have read this form or it has been read to me in the language I comprehend and understand all condition stated above.

I hereby willingly give my consent to participate in the study as evidenced by signature or thumbprint.

Name of participant………………………………………………………………………………...

Thumb Print/ signature of respondent…………………………………………………………

Date………/…………/………………

Name of the principal investigator: Atiagbo Francis

Cell phone No: 0209094436. E mail: fkatiafbo33@yahoo.com

Name of interviewer………………………………………………………………………………

Data of interview ____/______/_________
Appendix III. QUESTIONNAIRE
Instruction: circle the response from the alternative and write the responses for open ended questions on the space provided.

<table>
<thead>
<tr>
<th>SNO.</th>
<th>QUESTION</th>
<th>RESPONSES</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>How old were you at your last birthday?</td>
<td>_______ Age in complete year</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>Residence?</td>
<td>1. Urban 2. Rural</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>What is your recent child age?</td>
<td>_______ month (s)</td>
<td></td>
</tr>
</tbody>
</table>
| 108 | What is your recent child sex? | 1. Male  
2. Female |
| --- | --- | --- |

**Section Two: Obstetrics and maternal health services information**

| 201 | How many births did you have? | 
| 202 | Did you attend ANC during your recent pregnancy? | 1. Yes  
2. No |
| 203 | If yes, whom did you see during your recent ANC visit? | 1. Doctor  
2. Midwife  
3. Physician Assistant  
4. Nurse  
5. TBA  
6. Others(specify) |
| 204 | How old was your pregnancy before you started ANC? | _______ weeks |
| 205 | How many times have you attended ANC in your recent pregnancy? | _______ |
| 206 | Did you receive any counseling during your recent antenatal period about newborn care? | 1. Yes  
2. No |
| 207 | If yes, in which area of newborn care? (Multiple answers possible) | 1. Cord care  
2. Kept the newborn warm.  
3. Immunization  
4. Breast feeding and nutrition.  
5. Eye care  
6. Early recognition of illness in newborn  
7. Care of low birth weight |
| 208 | Did you receive TT vaccine in your recent pregnancy? | 1. Yes  
2. No |
| 209 | How times did you take TT vaccine in your recent pregnancy? | _______ |

62
| 210 | Where did you deliver your recent baby? | 1. Government hospital  
2. Government health center  
3. Health post  
4. Private health institution  
5. Home  
6. Other (specify) |  
| 211 | Who assisted you during your recent delivery? | 1. Doctor  
2. Midwife  
3. Physician Assistant  
4. Nurse  
5. TBA  
6. Others (specify) |  
| 212 | Were you seen by health workers within 7 days after delivery? | 1. Yes  
2. No |  
| 213 | Did you receive any counseling within seven days delivery about newborn care? | 1. Yes  
2. No |  
| 214 | If yes, in which area of newborn care? (Multiple answers are possible). | 1. Cord care  
2. Kept the newborn warm.  
3. Immunization  
4. Breast feeding and nutrition.  
5. Eye care  
6. Early recognition of illness in newborn  
7. Care of low birth weight |  

Section 3: Knowledge on Essential Newborn Care

| 301 | Do you know how to care of a newborn baby? | 1. Yes  
2. No |  
| 302 | What kind of instrument should be used to cut the cord? | 1. New razor blade  
2. Boiled razor blade/scissors  
3. Previously used razor blade  
4. Any Scissors  
4. Other (Specify) |  
5. Don’t know |  
| 303 | What kind of materials should be used to tie the cord? | 1. New string/thread  
2. String/thread  
3. Fiber from plant  
4. Cord not tied  
5. Don’t know |
| 304 | What substance should be applied to the cord immediately after cut up to 7 days except ordered medication? | 1. Nothing/Chlorhexidine  
2. Shea Butter/Vaseline applied.  
3. Other (specify)__________  
4. Don’t Know |
| 305 | How should the umbilical cord be handled after cut? | 1. With dressing/cover  
2. Without dressing  
3. Don’t know  
4. Other(Specify)__________ |
| 306 | When should the new born be wrapped after birth? | 1. Before delivery of placenta  
2. After delivery of placenta  
3. Don’t know |
| 307 | Here should the new born be kept immediately after birth? | 1. On the floor  
2. On the mother’s chest/belly  
3. Beside the mother  
4. With someone else  
5. On newborn bed/table  
6. Other (Specify)__________  
7. Don’t know |
| 308 | How long after birth should the newborn be washed / bathed for the first time? | 1. Within one hour  
2. 2- 24 hours  
3. After 24 hours  
4. Don’t know |
| 309 | How should the eyes of the newborn be cared for? | 1. Clean the eyes separately with sterile swab  
2. Clean eye with clean cloth  
3. Clean with fingers  
4. Other(Specify)__________  
5. Don’t know |
| 310 | Should eye ointment be applied to the eyes of the newborn within one hour of birth? | 1. Yes  
2. No |
| 311 | How long after birth the newborn should be breast fed? | 1. 1 hour after birth.  
2. 24 hours after birth.  
3. .48 hours after birth.  
4. Within one hour |
| 312 | What should a mother feed her newborn baby first? | 1. Water  
2. Porridge  
3. Breast milk / colostrum  
5. Milk (other than breast milk)  
6. Other (Specify)__________  
7. Don’t know |
<table>
<thead>
<tr>
<th>313</th>
<th>How long should a mother exclusively breast feed her child?</th>
<th>__________Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>314</td>
<td>When should the newborn be immunized with B.C.G. vaccine on the right upper arm??</td>
<td>__________</td>
</tr>
<tr>
<td>315</td>
<td>When should the newborn receive the immunized OPV</td>
<td>__________</td>
</tr>
<tr>
<td>316</td>
<td>Do you know about newborn danger sign?</td>
<td></td>
</tr>
</tbody>
</table>
| 317 | If yes could you mention all the danger sign you know (Multiple answers are possible) | 1. Convulsions  
2. Fever  
3. Poor feeding/suckling  
4. Difficult/fast breathing  
5. Baby feels cold  
6. Baby too small/born too early  
7. Redness/discharge at cord  
8. Eyes red/swollen/discharge  
9. Yellow palms/soles/eyes  
10. Lethargy  
11. Unconscious |

### Section 4: Practices of Essential Newborn Care

| 401 | Did you apply anything on the stump after the baby’s cord was cut up to seven days except ordered medication? | 1. Yes  
2. No |
|-----|-------------------------------------------------------------------------------------------------|---------------|
| 402 | If yes, what did they apply? (multiple answers are possible) | 1. Shea Butter  
2. Spirit/chlorhexidine  
3. Alcohol  
4. Other (Specify)________  
5. Don’t know |
| 402 | Where did you put your newborn immediately after delivery? | 1. On the floor  
2. On the mother’s chest/belly  
3. Beside the mother  
4. With someone else  
5. On newborn bed/table |
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 405 How long after birth did your baby take bath for the first time?    | 1. Within one hour  
2. 2-23 hours  
3. After 24 hours  
4. Don’t know |
| 406 Did you breast feed your last born child?                           | 1. Yes  
2. No |
| 407 How long did it take after birth before you started breastfeeding your last baby? | Within one hour  
2. 2-24hours after birth  
3. After 24 hours  
4. Don’t know. |
| 408 What was your newborn fed first?                                    | 1. Water  
2. Porridge  
3. Breast milk / colostrum  
5. Milk (other than breast milk)  
6. Other (Specify)___________  
7. Don’t know |
| 409 Three days after birth have you given anything to your baby to drink other than breastmilk? | 1. Yes  
2. No |
| 410 If yes, what was given? (multiple answers are possible)             | 1. Water  
2. Porridge  
3. Breast milk / colostrum  
5. Milk (other than breast milk)  
6. Other (Specify)___________ |
| 411 Was your baby vaccinated immediate after birth for BCG on the right upper arm? | 1. Yes  
2. No |
| 412 Was your baby vaccinated immediately after birth with oral drops of polo? | 1. Yes  
2. No |
Appendix IV: Ethical Clearance Letter