ENSIGN GLOBAL COLLEGE, KPONG

EASTERN REGION, GHANA

FACULTY OF PUBLIC HEALTH

DEPARTMENT OF COMMUNITY HEALTH

KNOWLEDGE OF ESSENTIAL NEWBORN-CARE AND ASSOCIATED FACTORS AMONG NURSES AND MIDWIVES AT TWO SELECTED HEALTH FACILITIES IN THE EASTERN REGION OF GHANA

BY

AGYEI GIFTY SERWAA

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SEPTEMBER, 2024

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A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH, FACULTY OF PUBLIC HEALTH, ENSIGN GLOBAL COLLEGE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

MASTER OF PUBLIC HEALTH DEGREE

SEPTEMBER, 2024

DECLARATION

I hereby certify that except for references to other people's work, which I have duly cited, this project submitted to the Department of Community Health, Ensign Global College, Kpong is the result of my own investigation, and has not been presented for any other degree elsewhere.

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(Certified by)		
DR. STEPHEN MANORTEY	……	…….
(Head of Academic Program)	Signature	Date

DEDICATION

I dedicate this dissertation to my entire family and friends. There is no doubt in my mind that without your continuous support and counsel, completing this program would have been impossible.

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I would like to first of all thank the good Lord for how far He has brought me in life. I acknowledge the practical, wholesome, inspirational tuition and guidance given to me by my academic advisor and supervisor, Dr. Stephen Manortey, experienced lecturers and abled staff at the Ensign Global College as I embarked on my educational journey. The cordial relationship encouraged me to discuss my opinions freely and helped to boost my academic confidence. Your quick responses to my submissions are worthy of notice and appreciation. I thank you so much.

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ABSTRACT

Background: The health and survival of newborns depend on the quality of essential care received during the early moments of life. This study examines the knowledge of essential newborn care (ENC) and its associated factors among nurses and midwives at the VRA and Akuse Government Hospitals in the Eastern Region of Ghana.

Methodology: A hospital-based cross-sectional descriptive study design was employed, using structured questionnaires and systemic sampling to collect data. The sample size was reached using Cochran's formula and the data collected was analyzed using STATA, Version 18.0. Descriptive statistical analysis was carried out. Odds ratios were reported with their 95% confidence interval and the level of statistical significance was set at p-value <0.05 for all tests.

Results: Among the 236 respondents, 161(68.22%) and 186(78.8%) had good knowledge and good practice of ENC, respectively. Education level (p-value<0.001) was significantly associated with strong knowledge of ENC. Respondents with advanced (above 10 years) experience were 2.6 times more likely to have strong knowledge of ENC controlling for all other covariates [AOR=2.587(95% CI=0.43-15.47)].

Conclusion: Nurses and midwives were knowledgeable and had good practice of essential newborn care. On-the-job training, education level and frequency of training opportunities and years of experience were the factors associated with a strong knowledge and practice of ENC.

LIST OF ABBREVIATIONS

AAP	American Academy of Pediatrics
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
BEmONC	Basic Emergency Obstetric and Newborn Care
CI	Confidence Interval
CHPS	Community Health Planning and Services
CNO	Chief Nursing Officer
DHRCIRB	Dodowa Health Research Centre Institutional Review Board
ECEB	Essential Care for Every Baby
ENC	Essential Newborn-care
GHS	Ghana Health Service
HBB	Helping Babies Breathe
ICM	International Confederation of Midwives
IP	Infection Prevention
KMC	Kangaroo Mother Care
MEBCI	Making Every Baby Count Initiative
MNH	Maternal and Newborn Health
NICU	Neonatal Intensive Care Unit
PCPNC	Pregnancy Childbirth Postpartum Newborn Care
PMTCT	Prevention of Mother - To - Child Transmission
SDG	Sustainable Development Goal

UNFPA	United Nations Population’s Fund
UNICEF	United Nations Children's Emergency Fund
VR	Volta Regions
VRA	Volta River Authority
WHO	World Health Organisation

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background

Newborns' health and survival hinge greatly on the quality of essential care they receive during their crucial early moments of life. This care is needed both within healthcare facilities and within the home environment. Essential newborn care (ENC) encompasses immediate attention at birth and throughout the neonatal period, playing a pivotal role in reducing neonatal mortality rates and fostering infants' overall well-being (Agu *et al.*, 2022). This encompasses a range of interventions, including immediate birth care such as delayed cord clamping, thorough drying, breathing assessment, skin-to-skin contact, and early breastfeeding initiation. Additionally, it involves thermal care and resuscitation as necessary, breastfeeding support, nurturing care, infection prevention, health problem assessment, recognition and response to danger signs, and prompt and safe referral if required (WHO, 2017). Good and quality neonatal care is the fundamental human right for every newborn, regardless of location. All neonates should have access to ENC, which is critical during the first 28 days of life, ensuring protection from harm or infection, warmth, adequate feeding, and normal breathing (WHO, 2017).

Nurses and midwives play a central role in delivering ENC practices and improving the health outcomes of newborns. Problems from inappropriate newborn care after childbirth are leading causes of neonatal deaths and nurses and midwives' knowledge of how to manage complications and care for the newborn is significant. Skilled care during delivery, coupled with prompt management of complications, can prevent approximately 50% of newborn deaths. Additionally, consistent provision of adequate newborn care during the postnatal period has the potential to

prevent 75% of current neonatal deaths (Donkor *et al.*, 2023). The ENC protocol is made up of a series of time-sensitive and sequential care steps administered by nurses and midwives at birth. This protocol includes tasks such as drying and stimulating the newborn, assessing breathing, caring for the umbilical cord, ensuring the newborn stays warm, initiating breastfeeding within the first hour, administering eye drops or ointment to prevent eye infections, administering intramuscular vitamin K, applying identification bands, weighing the newborn once stable and warm, and meticulously documenting all observations and treatments provided (Donkor *et al.*, 2023).

Saaka's (2018) study revealed that essential newborn care practices in Ghana's Lawra district were generally subpar. These practices were notably linked to factors such as higher maternal education levels, frequent use of antenatal care services, and thorough maternal awareness of newborn danger signs imparted by healthcare professionals. Among 418 newborns studied, only 36.8% received proper cord care, 34.9% received adequate thermal care, and 73.7% were appropriately fed. Overall, the incidence of comprehensive newborn care, encompassing safe cord care, optimal thermal care, and adequate feeding, was a mere 15.8%. Notably, women who delivered in healthcare facilities were significantly more likely to provide safe cord care compared to those who delivered at home (Saaka *et al.*, 2018).

Understanding the knowledge levels of nurses and midwives regarding essential newborn care and its associated factors is vital for enhancing newborn outcomes. This research seeks to explore the knowledge of ENC among nurses and midwives at two healthcare facilities in Ghana's Eastern Region, along with the factors influencing this knowledge.

1.2 Problem Statement

Globally, about 2.5 million children lost their lives within the first 28 days of life in 2017, with an average rate of 18 deaths per 1,000 live births. This translates to about 7,000 newborn deaths daily, constituting roughly 47% of all child deaths. However, there has been a significant reduction in neonatal deaths worldwide, dropping from 5 million in 1990 to 2.5 million in 2017 with the practice of ENC (Ayele *et al.*, 2022). As part of the Sustainable Development Goals (SDGs), the United Nations aims to further decrease preventable neonatal deaths from 22 deaths per 1,000 live births to 12 deaths per 1,000 live births or less by 2030. Promoting ENC is recognized as an approach to improving neonatal health outcomes, yet its standardized practice is not widely adopted. In Uganda, for instance, low levels of healthcare workers' knowledge regarding newborn care have been identified as a contributing factor to neonatal deaths (Arba *et al.*, 2020).

Studies conducted in Africa revealed varying practices among healthcare providers, with some adhering to recommended practices such as drying newborns with towels and cutting the cord with clean blades, while others engage in outdated practices like routine suctioning of airways and immediate cord clamping, contrary to WHO/UNICEF recommendations (Esan *et al.*, 2020).

In Ghana, the neonatal mortality rate is 1 in 59 live births, with a target to achieve an SDG 3 rate of 1 in 83 or less by 2030. Some countries with low neonatal mortality rates attribute their success to adhering to evidence-based 'Essential Newborn Care' guidelines established by the World Health Organization. However, challenges persist, particularly in regions like the Eastern Region of Ghana, where the neonatal, infant, and under-5 mortality rates remain high compared to other regions like Greater Accra (42 deaths per 1000 live births and 20 deaths per 1000 live births respectively) (DHS, 2022).

Addressing these challenges necessitates further research in the Eastern Region, focusing on healthcare providers' knowledge levels and associated factors such as education, experience, and training. Enhancing the knowledge and skills required for essential newborn care is paramount in reducing neonatal mortality rates globally and within regions like the Eastern Region of Ghana.

1.3 Rationale of The Study

Neonatal mortality remains a pressing public health issue in many developing nations, including Ghana, where nurses and midwives play pivotal roles in mitigating this challenge through proficient ENC. This cross-sectional study conducted in the Asuogyaman and Lower Manya Krobo districts of Ghana's Eastern Region aims to evaluate the knowledge levels of evidence-based ENC practices among nurses and midwives at two major hospitals within these districts. Identifying knowledge gaps will facilitate targeted training initiatives for healthcare providers, ensuring they possess accurate and current information, thereby contributing to improved quality of care for newborns and mothers.

Furthermore, this research seeks to address a literature gap by shedding light on the specific knowledge levels of ENC among nurses and midwives in the Eastern Region of Ghana. This insight can inform tailored interventions to address the region's distinct challenges and guide policymakers at both regional and national levels in enhancing training programs for healthcare providers. Understanding the sociocultural factors influencing newborn care practices can facilitate more effective engagement between healthcare providers and communities, fostering better communication and collaboration in promoting essential newborn care practices. Additionally, insights gained from this study may contribute to the global understanding of factors influencing essential newborn care practices among healthcare providers, potentially informing similar studies in diverse contexts.

In summary, the study's rationale lies in its potential to contribute to improved newborn care practices, reduced neonatal mortality rates, enhanced healthcare provider training and more effective healthcare policies in the Eastern Region of Ghana.

1.4 Conceptual Framework

This framework is based on the dependent, independent, moderating, and mediating variables and how the other variables influence the dependent variable. **Figure 1** below shows the link between the knowledge of ENC among nurses and midwives and the ENC administered to newborns under its prevailing factors. The figure elaborates on the link between the knowledge of ENC among nurses and midwives and the essential newborn-care administered to newborns based on the trainings received, workshops attended, years of work experience, whether the health worker is a general nurse with some midwifery experience or directly a midwife, that is job titles and the type of facility and the available work equipment and instruments and other factors such as the age of nurse or midwife, gender of nurse or midwife, location of facility and the religion of the nurse or midwife. Under these factors, the conceptual framework elucidates how the knowledge of ENC among nurses and midwives affects the ENC administered to newborns.

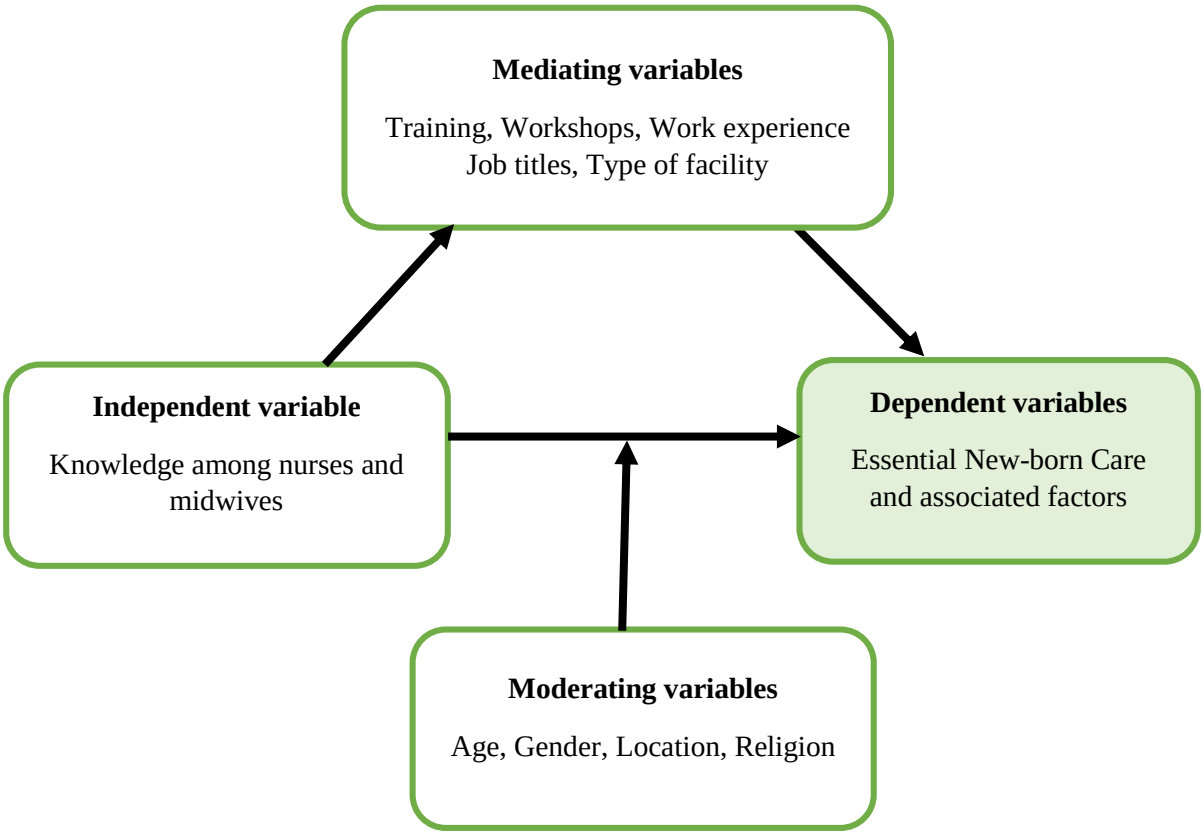

Figure 1: Conceptual Framework

Source: Author's Own Construct.

1.4.1 Independent variable

In this research context, knowledge of ENC among nurses and midwives is the primary variable of interest that is being studied for its potential impact on ENC and associated factors. It is considered independent because it is the variable that is assumed to have an effect on the dependent variables (ENC and associated factors).

1.4.2 Dependent variable

The dependent variables for this study are “Essential Newborn care” and Associated Factors”. These specific measures are considered dependent variables because they are outcomes that are hypothesized to be influenced by knowledge of ENC among nurses and midwives (Arba *et al.*, 2020). Knowledge of ENC among nurses and midwives may directly impact ENC and associated factors administered to a newborn.

In this research, ENC and associated factors such as training, years of experience and education are the primary outcomes of interest that is being studied to understand how it may be influenced by knowledge of ENC among nurses and midwives. It is considered a dependent variable because it is the outcome that is hypothesized to be influenced by the independent variable (knowledge of ENC among nurses and midwives).

1.4.3 Mediating Variables

The mediating variables play a crucial role in potentially influencing the relationship between the knowledge of ENC among nurses and midwives and the ENC administered to new-borns.

These include the number of trainings received, workshops attended, years of work experience, whether the health worker is a general nurse with some midwifery experience or directly a midwife, that is job titles and the type of facility and the available work equipment and instruments.

1.4.4 Moderating Variables

The moderating variables are Ages of the nurses or midwives, the Gender of the nurse or midwife, Location of facility and the Religion of the nurse or midwife. These moderating variables provide important contextual information that can help to refine and qualify the relationship between the knowledge of ENC among nurses and midwives and the essential newborn-care administered to

newborns in the specific populations served by the VRA Hospital, Akosombo and Akuse Government Hospital in the Eastern Region of Ghana. Understanding how the age, gender, setting of health facility and the religion of the nurse or midwife may influence these relationships is crucial for tailoring interventions and care strategies for newborns.

1.5 Research Questions

1. What is the current level of knowledge among nurses and midwives regarding ENC at selected health facilities located in the Eastern Region?
2. How do the educational backgrounds and years of experience of nurses and midwives relate to their knowledge of ENC in the Eastern Region?
3. What is the association between the availability of training opportunities and the knowledge of ENC among nurses and midwives in selected health facilities within the Eastern Region?

1.6 General Objective

The general objective of this research is to assess the knowledge of essential newborn care and associated factors among nurses and midwives working in the selected health facilities in the Eastern Region.

1.7 Specific Objectives

1. To assess the current level of knowledge among nurses and midwives regarding ENC practices at selected health facilities located in the Eastern Region.
2. To examine the relationship between educational background and years of experience of nurses and midwives in the selected facilities and their knowledge of ENC in the Eastern Region.

3. To determine the impact of the availability of training opportunities on the knowledge of ENC among nurses and midwives in selected health facilities located in the Eastern Region.

1.8 Profile of The Study Area

a) The VRA Hospital, Akosombo

The Volta River Authority (VRA) Hospital is located in the Asuogyaman district: one of the 261 Metropolitan, Municipal and District Assemblies in Ghana. It has a total of 55 health facilities including; 11 clinics, 4 health centers, 40 CHPS compounds and also two hospitals: VRA Hospital and the Asuogyaman District Hospital (currently under construction)(GhanaDistricts, 2021). The VRA Hospital is one of the major hospitals in the district. It is run and maintained by the Volta River Authority (VRA) to provide important health-care services to communities, surrounding the Volta lake. The hospital has an emergency unit, maternity ward, medical ward, surgical ward and an ultramodern suite which is made available on demand. It is staffed with doctors, physician assistants, nurses, midwives, laboratory and imaging technicians, pharmacists and several other specialties with a total of about a 55-bed capacity.

b) The Akuse Government Hospital

Akuse Government Hospital, established in 1911 by the Germans, stands as one of Ghana's oldest medical facilities. Situated on land generously donated by the Ocansey family in the Lower Manya Krobo Municipality (GhanaDistricts, 2021), it serves numerous communities across the Lower Manya Krobo District and neighboring districts such as Yilo Krobo, Asuogyaman, North Tongu, and Dangme West. With a capacity of 58 beds, the hospital operates with a staff complement of 74, including 36 nurses along with other clinical and non-clinical personnel. On average, it attends to approximately 2,456 clients, both insured and uninsured, each month (Owusu Ansah, 2012).

1.9 Scope of Study

This study is focused on assessing the knowledge of ENC and associated factors such as education, years of experience and availability of training opportunities among nurses and midwives at two selected facilities within two districts in the Eastern Region of Ghana with 271 participants who per their occupation, practice ENC and its associated factors in their health facilities. The respondents would use the structured questionnaire as means of data collection. The study is expected to span for three months.

1.10 Organization of Report

The structure of the research project report is detailed across six chapters. Chapter One serves as the introduction, setting the stage by presenting the study's context, including background information, the statement of the problem, rationale for the study, conceptual framework, research questions, and study objectives. Chapter Two comprises a comprehensive review of related literature pertinent to the study topic. Chapter Three delves into the research design and methodology employed in conducting the study. This section elaborates on sampling techniques, research instruments utilized, data collection procedures, and data analysis techniques. In Chapter Four, the focus shifts to presenting the outcomes derived from the analysis of the collected study data. Chapter Five engages in a discussion of the key findings within the broader context of published literature, providing insights and comparisons where applicable. Finally, Chapter Six encapsulates the report by offering a conclusion based on the study's outcomes, along with targeted recommendations stemming from the research findings.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Introduction

In the critical first 28 days of life, newborns face the highest risk of mortality, making it imperative to prioritize their survival. This requires strengthening healthcare services, ensuring skilled attendance at every birth, and providing access to hospital care for emergencies. Early essential newborn care, such as immediate and prolonged skin-to-skin contact and early and exclusive breastfeeding, is crucial for improving newborn survival rates and establishing a foundation for a healthy life (WHO, 2017). Unfortunately, the majority of neonatal deaths occur in developing countries like Ghana, where healthcare access is limited (Assembly, 2015).

A comprehensive understanding of ENC practices is essential for ensuring proper newborn care, with nurses and midwives playing key roles in delivering quality healthcare, especially in maternal and newborn services. This research specifically investigates the knowledge of ENC among nurses and midwives at two selected health facilities in the Eastern Region of Ghana. The review encompasses international and Ghanaian contexts to provide a thorough understanding of the topic. It explores the importance of ENC, the pivotal role of nurses and midwives, their knowledge levels, factors influencing their knowledge and practices, challenges in newborn care, and the specific context within the Eastern Region of Ghana

The significance of this study lies in its potential to contribute valuable insights into the factors influencing the proficiency of healthcare professionals in providing essential newborn care, ultimately influencing the overall neonatal health outcomes in the region.

2.2 Importance of Essential Newborn Care

ENC, as outlined by the World Health Organization (WHO), encompasses a comprehensive set of recommendations aimed at improving the health of newborns immediately after birth and during the postnatal period (Leta, 2022). These recommendations include various interventions such as thermal care, clean delivery, cord care, initiation of breastfeeding within the first hour, immunization, eye care, recognition of danger signs, care of preterm/low birth weight infants, and management of newborn diseases (Kirkwood *et al.*, 2017).

Specific essential newborn care practices highlighted by the WHO are vital for reducing neonatal mortality rates and enhancing the overall well-being of infants. These practices include immediate care at birth, such as delayed cord clamping, thorough drying, assessment of breathing, skin-to-skin contact, and early initiation of breastfeeding. Additionally, essential newborn care involves thermal care, resuscitation when necessary, support for breastfeeding, infection prevention, nurturing care, assessment of health problems, recognition and response to danger signs, and timely and safe referral when needed (WHO, 2017). Sufficient knowledge and implementation of these practices by healthcare professionals are crucial for reducing neonatal morbidity and mortality rates.

2.3 Role of Nurses and Midwives in Newborn Care

The SDG indicator 3.1.2 defines skilled health workers as professionals in Maternal and Newborn Health (MNH) who possess comprehensive education, training, and adherence to national and international standards. These professionals are proficient in providing evidence-based, human-rights-based, quality, culturally sensitive, and dignified care to women and newborns. They also facilitate physiological processes during labor and delivery to ensure a positive childbirth experience and are capable of recognizing and managing or referring women and/or newborns

with complications. Working within an integrated team of MNH professionals, which includes midwives, nurses, obstetricians, pediatricians, and anesthetists, they perform all necessary functions of emergency maternal and newborn care to enhance the health and well-being of women and newborns. In settings conducive to their practice, midwives trained to International Confederation of Midwives (ICM) standards can deliver nearly all essential care required for women and newborns. However, these competencies may be held by health workers with different occupational titles across various countries (WHO, 2018).

A midwife is an individual who has completed a midwifery educational program recognized by their country, successfully finished the prescribed course of midwifery studies, and obtained the necessary qualifications to be registered and/or legally licensed to practice midwifery (ICM, 2018). Similarly, a nurse is a person who has undergone training and obtained legal recognition to practice nursing according to the specific requirements of their country.

Both nurses and midwives are integral to healthcare, often serving as the unsung heroes in healthcare facilities and emergency responses. They are frequently the first to identify health emergencies and operate on the front lines of disease prevention and primary healthcare delivery, encompassing promotion, prevention, treatment, and rehabilitation (WHO, 2022).

The practice of nursing involves self-directed and collaborative care for individuals of all ages, families, groups, and communities, whether sick or well, and in any setting. It encompasses health promotion, illness prevention, and the care of individuals who are ill, disabled, or dying. In many countries, nurses constitute half of all healthcare professionals and play a vital role in shaping and implementing health actions, both at frontline and managerial levels. Often, they are the first, and

sometimes only, healthcare professionals a patient encounter. Therefore, the quality of their initial assessment and subsequent care is crucial for ensuring favorable health outcomes (WHO, 2022).

Nurses as well as midwives play vital roles in providing maternal and newborn care and also, serving as front-line healthcare workers. Their knowledge, skills, and practices directly influence the quality of care received by newborns and mothers. There are several studies that emphasize the importance of continuous training and education for healthcare professionals in order to ensure the delivery of evidence-based care. Their knowledge and adherence to essential newborn care guidelines significantly influence the health outcomes of newborns and mothers. Studies suggest that gaps in knowledge among healthcare workers especially nurses and midwives can contribute to suboptimal newborn care practices.

2.4 Knowledge Levels Among Healthcare Professionals

According to a 2015 global report by the WHO, approximately 2.7 million neonates perish annually during the neonatal period, making up 45% of under-5 mortalities and roughly 58% of infant mortality. A significant portion of these deaths, approximately 75%, transpires within the first week of the neonatal period (UNICEF *et al.*, 2015). The majority of these newborn fatalities are concentrated in low and middle-income countries, where they represent an increasing proportion of all under-five mortality within those nations. The knowledge level of healthcare professionals played a significant role even in instances where all necessary tools and equipment were available (Lee *et al.*, 2011).

Assessments of healthcare professionals' knowledge of ENC have been conducted in several regions and contexts. Findings often reveal variations in knowledge levels, with factors such as

education, experience, and exposure to updated guidelines influencing competency. Identifying specific knowledge gaps is crucial for planning targeted interventions.

A study conducted in Afghanistan to evaluate healthcare providers' knowledge and skills of newborn resuscitation interviewed 82 doctors and 142 midwives across 78 facilities, assessing their knowledge through questions and observing their performance on an anatomical model. Results indicated that over 90% of facilities possessed essential working tools for newborn resuscitation, such as a mucus extractor, bag, and mask. While more than 80% of providers had received training on newborn resuscitation, midwives were more likely than doctors to receive such training as part of pre-service education (59% vs. 35%, respectively).

Interestingly, no substantial differences were found between doctors and midwives in terms of knowledge, clinical skills, or confidence in performing newborn resuscitation. Both groups scored similarly on knowledge questions (71% for doctors, 66% for midwives) and skills assessment (66% for doctors, 71% for midwives). Additionally, a high proportion of both doctors and midwives expressed confidence in their ability to perform newborn resuscitation (75% of doctors, 83% of midwives) (Kim *et al.*, 2013).

A systematic review, meta-analysis, and Delphi estimation conducted (Lee *et al.* , 2011) revealed that neonatal resuscitation training in healthcare facilities reduces term intrapartum-related mortalities by 30%. However, the utilization of this intervention remains low in regions where most newborn deaths occur, representing a missed opportunity to save lives. The professional opinion suggests that newborn resuscitation has minor effects on preterm mortality in healthcare facilities and on basic resuscitation, newborn assessment, and stimulation at the community level.

Further evaluation is needed to understand the impact, cost, and implementation strategies of newborn resuscitation across various perspectives.

A study conducted in Ethiopia among 215 healthcare workers in public health facilities in the eastern zone found that 74.65% had adequate knowledge of immediate newborn care, and 72.77% demonstrated good newborn care practices. Among the participants, 70.9% had access to the newborn care national guideline, while only 46% had received newborn care training within the past two years before the study. Factors such as having sufficient equipment, access to national guidelines, recent training, and the type of health facility were significant predictors of newborn care practices (Berhe *et al.*, 2017).

In regions like sub-Saharan Africa or South Asia, newborns are ten times more likely to die in the first 28 days of life compared to those born in high-income countries (WHO, 2020). In sub-Saharan Africa and Central and South Asia, approximately 27 and 24 newborns per 1,000 births, respectively, succumb to neonatal mortality (Richardson *et al.*, 2020). Consequently, more than 60 nations are expected to accelerate progress towards achieving the Sustainable Development Goals (SDGs) on neonatal mortality by 2030 (Hug *et al.*, 2019).

Another cross-sectional study conducted among health workers in Ethiopia revealed that 38.2% had good knowledge and 61.8% had good practice of Essential Newborn Care (ENC) (Yosef *et al.*, 2021). However, some studies in Ethiopia indicated that 25% of healthcare providers lacked adequate knowledge, and 28% did not exhibit good essential newborn care practices (Berhe *et al.*, 2017). Additionally, a study in the eastern part of Ethiopia found that only 9.8% of participants were knowledgeable about newborn resuscitation (Sintayehu *et al.*, 2020). Similarly, studies

conducted in Uganda indicated that approximately half of healthcare providers lacked the knowledge to provide essential care to newborns (Arba *et al.,* 2020).

2.5 Factors and Challenges Influencing Essential Newborn Care Knowledge and Practices

Multiple factors may contribute to variations in the knowledge and practices of nurses and midwives related to newborn care. These factors can include the availability of resources, ongoing professional development opportunities, cultural beliefs, and the overall healthcare infrastructure. Understanding these determinants is essential for designing effective interventions tailored to the local context.

In a cross-sectional study conducted among health professionals in the Bench-Sheko Zone of southwest Ethiopia, 38.2% of the 157 respondents exhibited good knowledge, and 61.8% demonstrated good practice of Essential Newborn Care (ENC). Factors associated with good knowledge included being female, receiving on-the-job training, and expressing interest in working in the delivery room. Conversely, better educational qualifications and access to on-the-job training were associated with good practice of ENC. Although the study concluded that knowledge of ENC among health professionals was very low, the practice of essential newborn care was relatively average compared to other studies in Ethiopia (Yosef *et al.,* 2021).

Similar studies highlighted that being female, having access to on-the-job training, and self-motivated interest in working in the delivery room were associated with good knowledge of ENC. Conversely, educational qualifications, years of experience, and access to on-the-job training were associated with good practice of ENC. Improvements in ENC knowledge among health workers were recommended, including the provision of on-the-job training refreshments, upgrading the

qualifications of health professionals, and providing incentives to enhance interest in working in the delivery room.

In assessing factors affecting the practice of immediate newborn care among healthcare providers, studies conducted in Ethiopia found that male gender, diploma educational status, workload, and unavailability of drugs and vaccines were predictors of poor practice of essential newborn care (Tasew *et al.*, 2019). Another study in South Gondar revealed that healthcare providers with diploma qualifications were three times more likely to exhibit poor ENC practice compared to those with higher educational levels. Additionally, healthcare workers with higher workloads were 2.9 times more likely to have poor ENC practice, and those who had not received ENC training were 3.9 times more likely to exhibit poor ENC practice (Chanie *et al.*, 2021).

The overall practice of ENC among healthcare workers at the South Gondar health facility was found to be 74.8%, consistent with similar studies in Tigray, Ethiopia 72.77% (Berhe *et al.*, 2017) and Addis Ababa, Ethiopia 80.7% (Wondaferash, 2021). However, this finding was higher than studies conducted in Uganda 46.5% (Ayiasi *et al.*, 2014) and Sudan 41.1% (FAN, 2016).

The disparities observed in the aforementioned studies may stem from variations in the availability of study participants and equipment utilized. While most of the cited studies encompassed all healthcare providers, the current study exclusively included nurses and midwives, potentially influencing the outcomes. Furthermore, differences in the study period could also contribute to the variations observed. The consistent finding across studies regarding the increased likelihood of poor ENC practice among healthcare workers with diploma qualifications, as compared to those with higher educational qualifications, underscores the importance of educational attainment.

Healthcare workers with advanced degrees may possess enhanced skills and decision-making abilities, particularly in managing complex newborn health issues (Arba *et al.*, 2020)..

Another research in the Jimma Zone in Ethiopia indicates that healthcare providers with higher levels of education generally exhibit greater proficiency in implementing essential newborn care practices. Moreover, they may have access to a broader range of training opportunities, further enhancing their capabilities in this domain (Negussie *et al.*, 2018).

Neonatal healthcare providers with higher acuity deliveries often face heightened workloads, which can compromise the quality of care provided. Heavy workloads may limit the time available for performing essential tasks, potentially jeopardizing patient safety (Zehnder *et al.*, 2020).

The challenges observed in achieving adequate ENC, particularly in resource-limited settings, highlight the importance of addressing gaps in knowledge and practice. Ensuring the availability of essential equipment is paramount for improving neonatal health outcomes and reducing neonatal mortality rates. For instance, utilizing sterile scissors for umbilical cord cutting significantly reduces infection and complication rates among newborns clamps (Tsegay Gebru *et al.*, 2019). However, deficiencies in the availability of cutting materials, as observed in some studies, can hinder healthcare providers' ability to deliver essential newborn care services effectively. Therefore, efforts to enhance the availability of essential equipment are essential for optimizing neonatal health outcomes (Yemaneh, 2017).

A multicenter cross-sectional study conducted in Ethiopia on the challenges associated with ENC practices among healthcare providers at South Gondar health institutions revealed that ENC practice was poor due to the challenges which included; low educational status, high workload, drug and vaccine unavailability and having no on-the-job training. Due to these results, periodic

evaluation, monitoring and plans are needed to address the above challenges. Similarly, healthcare workers who had not taken ENC training were 3.9 times more likely to practice poor of ENC than the healthcare workers who had trainings on ENC. The healthcare workers who took ENC trainings can ensure up-to-date evidence-based information for the skillful management of a newborn's needs in the first 28 days of life (Chanie *et al.*, 2021).

2.6 Local Context of ENC in the Eastern Region of Ghana

In 2008, Ghana faced a neonatal mortality rate of 43 per 1000 live births, prompting a training initiative aimed at updating medical officers and Prevention of Mother to Child Transmission (PMTCT) focal persons from Ghana and Sierra Leone. The training was conducted using the WHO Pregnancy Childbirth Postpartum Newborn Care (PCPNC) program, aimed to equip workers with evidence-based knowledge and skills in newborn care, ultimately enhanced their clinical and interpersonal capabilities and additionally, these trained individuals served as trainers to further disseminate the ENC Course (WHO, 2008).

To address the persisting challenge of neonatal mortality, the Making Every Baby Count Initiative (MEBCI) commenced in Ghana in September 2013. This program integrated components such as Helping Babies Breathe (HBB), Essential Care for Every Baby (ECEB), and Infection Prevention (IP) with the objective of improving newborn care at regional and district levels. The initiative focused on four regions - Ashanti, Brong Ahafo, Eastern, and Volta (VR) regions - collectively constituting approximately 58% of the nation's population. These regions were chosen due to their notably high neonatal mortality rates (GSS, 2012).

The majority of healthcare workers trained under MEBCI were midwives (58.8%), predominantly from district-level hospitals (88.4%). Notably, a high proportion of healthcare workers

successfully passed the HBB Objective Structured Clinical Examination (OSCE) with a pass rate of 99.9%. However, challenges were observed in initiating ventilation within the Golden Minute, with 78.5% of healthcare workers passing this aspect across all regions. Nevertheless, the overall pass rate for ECEB OSCEs was exceptional at 99.9% across all regions. The integrated training approach of MEBCI, encompassing HBB-ECEB-IP, proved effective in fostering mastery of essential clinical knowledge and skills required to uphold high-quality newborn care standards while scaling the program nationally (Chinbuah *et al.*, 2020).

In summary, this literature review highlights the importance of ENC, the roles and knowledge of nurses and midwives in ENC, factors influencing their knowledge and practices of ENC, challenges in Newborn Care, and the Local Context in the Eastern Region of Ghana. The research aims to contribute to the existing body of knowledge by examining the knowledge levels of ENC among healthcare professionals in the Eastern Region of Ghana and identifying associated factors that may inform targeted interventions and policy improvements.

CHAPTER 3

3.0 METHODOLOGY

3.1 Study Design

This study aims to evaluate the understanding of ENC among nurses and midwives at two healthcare facilities in the Eastern Region of Ghana, specifically in the Asuogyaman and Lower Manya Krobo Districts. Quantitative methods were employed to analyze data collected through a questionnaire. The research adopted a hospital-based cross-sectional descriptive approach to identify challenges in current practices, make informed assessments, and compare practices with those in similar contexts. This design involved gathering data at a single point in time to gauge the variables of interest among nurses and midwives at the selected facilities, enabling an exploration of the factors influencing knowledge of ENC and their impact on newborn care practices.

3.2 Study Site

The data was collected from the wards and consulting rooms of the VRA Hospital, Akosombo in the Asuogyaman Municipality and Akuse Government Hospital in the Lower Manya Krobo Municipality of Eastern Region, Ghana. These are two renowned hospitals in the Eastern region of Ghana. The VRA Hospital which is a quasi-health facility serves as the district hospital for the Asougyaman District and the Akuse Government Hospital is one of the oldest government hospitals built in 1911 and major hospitals in the Lower Manya Krobo district. A blend of a government and a quasi-health facility from the Lower Manya Krobo and Asougyaman districts will provide a more generalized and evenly sorted results to represent the Eastern Region of Ghana.

3.3 Study Population

The study population covers all nurses and midwives of all ages who worked at the VRA Hospital, Akosombo and the Akuse Government Hospital located in the Asuogyaman and Lower Manya Krobo Municipality. A total of 271 study participants: 134 from the VRA Hospital and 137 from the Akuse Government Hospital were assessed.

3.4 Inclusion Criteria

All nurses and midwives stationed at the VRA Hospital and Akuse Government Hospital who were available at post within the period of 1st January to 31st May 2024 were included for selection in the study.

3.5 Exclusion Criteria

All other health professionals such as doctors, physician assistants, and laboratory technicians were not included in the study. Nurses and midwives who were ill and on annual leave at the time of administering the survey were also not included in the study.

3.6 Sample Size and Sampling Technique

The sample size was calculated using Cochran's formula to ensure an appropriate sample size as shown below. The proportion of 80% indicates that 80% of the population has the attribute of interest (Arba *et al.*,2020).

$$n = \frac{Z^2 \times (P)(1-P)}{d^2},$$

where

Z = Reliability co-efficient (1.96 of 95% CI)

P = Proportion of study population = 0.8, (Arba *et al.*, 2020)

d = margin of error (0.05 or 5%).

n = the projected sample size.

Therefore,

$$n = \frac{1.96^2[(0.8)(1-0.8)]}{0.05^2} = 245.86 \approx 246,$$

A 10% non-response rate was estimated on the calculated sample (≈25) and then added to it bringing the total working sample to 271. Using the formula, the proportional allocation technique was then used to determine the needed stratum size for each of the two (2) selected hospitals.

$$n_h = \left(\frac{N_h}{N}\right) \times n$$

where

n_h = sample size of a particular hospital

N_h = Population size of a particular hospital

N = Total population of the two hospital

n = working sample size

The facility-focused sample size was then computed using the proportional allocation formula and displayed in **Table 1** below;

Table 1: Required sample sizes by facility

Health facility	Number of nurses and midwives available in the facility (n)	Estimated stratum size
VRA Hospital	238	134
Akuse Government Hospital	245	137
Total (N)	**483**	**271**

The sampling technique employed was systemic sampling. Nurses and midwives who met the inclusion criteria, which include all nurses and midwives stationed at the VRA Hospital and Akuse Government Hospital who were available at post within the period of 1st January to 31st May 2024 were included for selection in the study. This technique is chosen because it helps minimize sampling error and ensure an evenly sampled population.

3.7 Data Collection Methods and Instruments

A structured questionnaire served as the primary tool for data collection due to its convenience and accessibility for gathering necessary information. Careful attention was given to designing the questionnaire to ensure clarity and objectivity, minimizing potential ambiguities and biases. The questionnaire comprised both open and closed-ended questions and was administered to participants at both health facilities. Systematic sampling, a method where every Kth member of the population is selected for inclusion after the initial member is chosen randomly from among the first K members, was employed in this study. The value of K is determined by dividing the population size by the desired sample size. This sampling technique was chosen for its suitability in targeting a specific group of healthcare professionals with distinct characteristics and experiences.

The sections of the questionnaire include; Section 1: demographic information, Section 2: knowledge of essential newborn care, Section 3: participants' training and education, Section 4: factors influencing knowledge and Section 5: suggestions and feedback. A total of 19 questions which would take about 15-20 minutes for each participant to complete. A pre-testing of the questionnaire was done before the collection of data.

The importance of respondents' involvement in the study and their rights as respondents were explained to the consenting target population. Participants were guaranteed of the confidentiality and anonymity of any information provided on the questionnaire. The questionnaires were both self-administered and researcher-assisted to the respondents after seeking their informed consent. Only consenting participants were included in the study. All individuals within the population who declined to participate were excluded.

3.8 Pre-Testing

Questionnaires for the study were pretested among a sample of 10 nurses and midwives who were randomly selected from the Atua Government Hospital. This facility is in the same region and with similar facilities as the selected health facilities. The pre-test made it possible to test the participants' level of understanding and helped to further refine the questionnaires. Based on the responses that were received, some questions were clarified and modified to ensure the reliability of responses. These acceptable results from the pretesting was not included in the main study.

3.9 Data Handling and Analysis

All data were confirmed for consistency, coded, and keyed into Microsoft Excel spreadsheet 2016. The principal investigator was in charge of data handling. Data collected with questionnaires were assessed for completeness and errors. All data sets and work done were sent to the investigator by email and external drive which were under data protection, all hard copies were retrieved and stored appropriately.

Data collected from the survey questionnaire was subjected to diverse statistical techniques to analyse the knowledge essential to new born care among nurses and midwives. Descriptive statistics was used to summarize the demographic characteristics, knowledge scores, and practices of the respondents. Individuals who selected all the components of ENC were re-classified to be

of "Strong Knowledge" whilst their counterparts who reported otherwise were categorized to have a "Low Knowledge" level. Participants who answered all practical questions correctly were reassigned as good practice while participants who did not answer at least all practical questions correctly were reassigned as poor practice.

Logistic Regression analysis was used to examine the effects of independent variables such as age, education, experience, and training on the dependent variable of knowledge score. Correlation analysis was used to measure the strength and direction of the relationship between knowledge score and practice score. Additionally, multivariate and bivariate analysis were performed using the Stata software to explore the associations between multiple variables and outcomes. The results of these analyses were integrated and interpreted to provide a comprehensive picture of the neonatal care knowledge among the participants in the selected health facilities.

3.10 Ethical Issues

Ethics encompass fundamental principles of proper conduct, particularly in research involving the gathering of data on individuals. In order to safeguard privacy, confidentiality must be ensured to protect the privacy of all participants and to maintain ethical standards and the integrity of the research process. Prior to commencing the study, ethical clearance was sought from Dodowa Health Research Centre Institutional Review Board (DHRCIRB). Administrative clearance was obtained from the Ethical Review Committee of Ensign Global College. Also, administrative permission was sought from the VRA and Akuse Government Health Services prior to data collection. Throughout the research process, ethical principles such as beneficence, that is to do what would benefit all and non-maleficence which is to do no harm was observed to ensure that the outcomes of the study meet set standards. Informed consent were obtained from all participants guaranteeing their voluntary participation and the confidentiality of their personal information.

Clear and understandable information about the purpose, procedures, risks and benefits, and the voluntary nature of the participation. The privacy and confidentiality of research participants was protected.

3.11 Limitations of the Study

A limitation of the study was the size of the sample used thereby preventing the generalization of the result to a larger population. Also, the issue of recalling the right responses by the respondents masked the findings. Other challenges encountered included limited time in conducting research, the unwillingness of some health professionals in filling the questionnaire which led to a low turnout than anticipated. Issues of inadequate funding to cover travel cost and other related expenses. Another challenge which influenced responses of the participants was being an employee of the VRA or Akuse Government Hospitals with so much patriotism such that, they did not want to expose their shortcomings as a facility or give personal experiences on the knowledge of ENC and its associated factors.

3.12 Assumptions

It was assumed that all participants of the sample size used were nurses or midwives and have taken care of a new born baby, one way or the other in other health facilities or the health facilities within a year or more at the VRA and Akuse Government Hospitals. The instrument used to gather the data for the research was valid and measured the desired hypotheses. It was also assumed that the health professionals who partook in the structured questionnaire answered truthfully.

CHAPTER 4

4.0 RESULTS

4.1 Introduction

This Chapter presents the findings of the study conducted in the Akuse Government and VRA Hospital, Akosombo, assessing the knowledge of ENC and associated factors among nurses and midwives at the two selected health facilities in the Eastern Region of Ghana. It consists of the socio-demographic information, knowledge of ENC, training and education of respondents, factors influencing the knowledge and the challenges encountered among the respondents. The study comprised a total of 236 responses as against an expected 271 responses, yielding a study response rate of about 86.13%.

4.2 Socio-demographic characteristics of respondents

The 236 respondents were nurses and midwives who worked in either VRA or Akuse Hospitals. A male to female ratio of 1: 4 and most of them 119 (50.42%) were within the age range 20–29 years. In addition, 200(84.75%) of the respondents had received training on ENC in the past 2 years with majority 138(58.47%) of them being beginners (having less than 5 years of work experience), 72(30.51%) being intermediates (having between 5-10 years' work experience) and 26(11.02%) having advanced work experience (more than 10 years). The details of the sample characteristics including profession, marital status and educational level distribution are shown in **Table 2** below. Most of the health workers 147 (62.29%) had Diploma education, 76 (32.20%) had Bachelors education and 13(5.51%) had Master's education.

Table 2: *Sociodemographic characteristics*

Variables	Characteristics	Frequency (n) =236	Percentage (%)
NAME OF FACILITY	Akuse Government Hospital	133	56.36%
	VRA Hospital, Akosombo	103	43.64%
PROFESSION	Nurse	160	67.80%
	Midwife	76	32.20%
GENDER	Male	46	19.49%
	Female	190	80.51%
AGE	20-29	119	50.42%
	30-39	91	38.56%
	40-above	26	11.02%
MARITAL STATUS	Single	112	47.46%
	Married	124	52.54%
YEARS OF EXPERIENCE	Beginners	138	58.47%
	Intermediates	72	30.51%
	Advanced	26	11.02%
TRAINING IN TWO YEARS	Yes	200	84.75%
	No	36	15.25%
HIGHEST LEVEL OF EDUCATION	Diploma	147	62.29%
	Bachelors	76	32.20%
	Master's	13	5.51%
KNOWLEDGE LEVEL OF ENC	Low Strength	75	31.78%
	Strong Strength	161	68.22%
PRACTICE LEVEL OF ENC	Poor	50	21.19%
	Good	186	78.81%

Source: *Field data, 2024*

4.3 Knowledge of essential newborn-care among respondents

The bar chart in **Figure 2** below describes the respondents' rating of their knowledge of ENC on a scale of 1 to 5. With a sample mean of (3.746 ± 0.674), and a skewness of -0.316. Majority

responded to having a good knowledge of ENC which accounted for 138(58.47%). This was followed by having a fair idea of ENC, 67(28.39%), and then excellent knowledge accounting for 23(9.75%). Eight (8) of the participants responded to having poor knowledge (3.39%) and none responded to having very poor knowledge (**See Figure 2**).

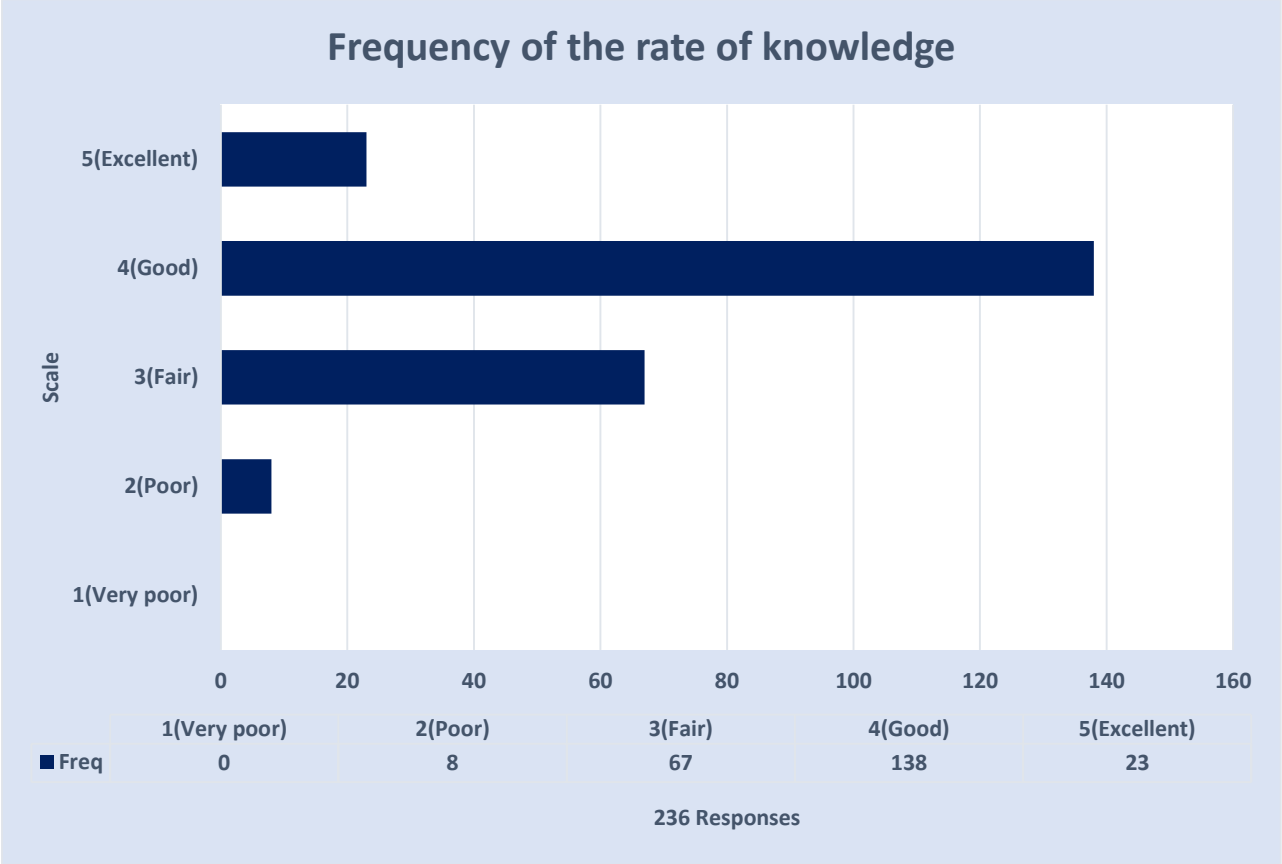

Figure 2: *Respondents 'knowledge on ENC*

Out of the 236 participants, 232 (96.7%) responded to early initiation of breastfeeding, hygiene and cord care and eye care as being the components of ENC, 228 (95%) selected vitamin K administration as part of the components of ENC, 213(88.8%) of the 236 respondents selected neonatal resuscitation, 212(88.3%) selected thermal care as a component and 175(72.9%) selected KMC as a component of ENC. This is represented in **Figure 3** below.

Individuals who selected all the components of ENC were re-classified to be of "Strong Knowledge" whilst their counterparts who reported otherwise were categorized to have a "Low Knowledge" level. The reclassification yielded respondent grouping with 68.22% individuals with "strong knowledge" base in ENC (**See Table 2 above**).

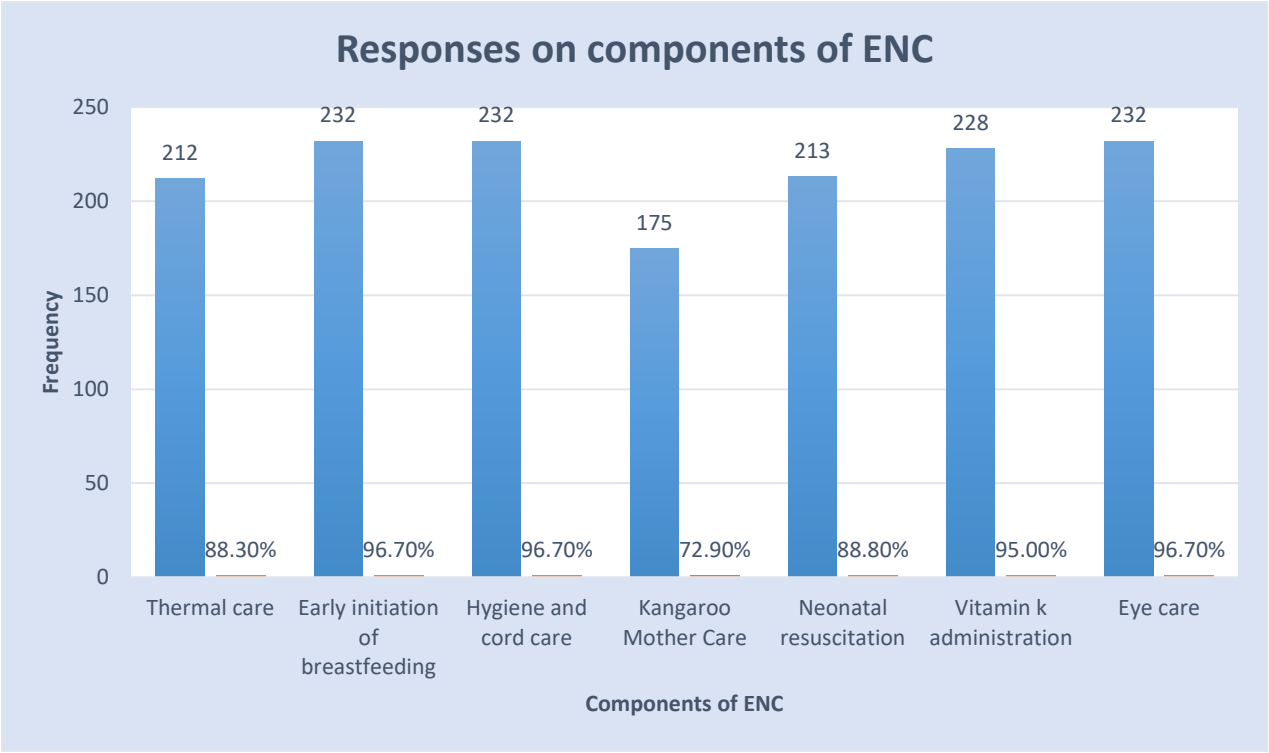

Figure 3: *Responses on the components of ENC*

4.4 The Practice of ENC

An associated factor of ENC is the practice of ENC. The practice was assessed based on the answers to practical questions in the questionnaire. These included: right time to start ENC, the right place to keep baby after delivery, the measure to take if the newborn baby is not breathing well after drying, clearing the airway, and rubbing the back once or twice, the expected breath counts of a newborn and the best thing to do to avoid eye infections of the newborn baby after delivery. Participants who answered all 5 questions correctly were reassigned as good practice

while participants who did not answer at least all five (5) questions correctly were reassigned as poor practice. 186(78.81%) nurses and midwives had good practice while 50(21.19%) had poor practice of ENC (**See Table 2 above).** The details of the five (5) questions are represented in **Table 3** below.

Table 3: *Representation of the questionnaires used to assess good or bad practice of ENC*

Variable	**Frequency (n)236**	**Percentage %**
What is the right time to start newborn care?		
Before birth	10	4.24%
During birth	24	10.17%
After birth	202	85.59%
Which is the right place to keep a healthy newborn baby immediately after birth?		
Beside the mother	42	17.80%
With someone else	1	0.42%
On the mother's chest/belly	189	80.08%
On newborn bed/table	4	1.69%
What measure is to be taken if the baby is not breathing well after drying, clearing the airway, and rubbing the back once or twice?		
More stimulation to breathe	31	13.14%
Ventilation with bag and mask	205	86.86%
What is the expected breath count per minute for the newborn baby?		
30 breaths/min	50	21.19%
40 breaths/min	25	10.59%
60 breaths/min	161	68.22%
What is the best thing to do to avoid eye infections of the newborn baby after delivery?		

apply silver nitrate/tetracycline	217	91.95%
clean eye with sterile water	11	4.66%
apply breastmilk on the eye	5	2.12%
the best was to apply nothing.	3	1.27%

Source: *Field data, 2024*

4.5 Bivariate Analysis of demographic variables on knowledge and practice level of ENC

A bivariate analysis of the socio-demographic variables and knowledge level of ENC to test association revealed that, some variables are statistically significant while others are not significant statistically in association with knowledge. The chi-square test of association of the profession, age, marital status, years of experience, training in two years and highest education level was identified to be significantly associated with knowledge of ENC with a p-value of <0.001which is within the chosen p-value (<0.05). The facility and gender of the nurse or midwife has no significant association with the knowledge of ENC (p-value = 0.888 and 0.077 respectively). This is represented in **Table 4** below.

Similarly, association was tested between the practice of ENC and the demographic variables. A chi-square test revealed a significant association between profession (p-value= 0.017), gender (p-value= 0.016), marital status (p-value = 0.010) and years of experience (p-value < 0.001) and the practice of ENC. There was no statistically significant association with the facility (p-value= 0.262), age (p-value = 0.050), training in two years (p-value = 1.000) and level of education (p-value = 0.176). This information is represented in **Table 5** below.

A bivariate analysis of the knowledge level and practice of ENC revealed that, 136 nurses and midwives had good practice and strong knowledge of ENC while 25 nurses and midwives had

poor practice and low knowledge. This Chi-Square test showed a significant statistic association level of 0.003.

Table 4: *Bivariate analysis of socio-demographic factors associated with knowledge of ENC among respondents*

Variable	Category	Knowledge Levels		p-value
		Low knowledge n(%)	Strong knowledge n(%)	
NAME OF FACILITY	Akuse Gov't Hosp	43(32.33)	90(67.67)	0.888
	VRA Hosp, Ak	32(31.07)	71(68.93)	
PROFESSION	Nurse	71(44.38)	89(55.62)	**<0.001**
	Midwife	4(5.26)	72(94.74)	
GENDER	Male	20(43.48)	26(56.52)	0.077
	Female	55(28.95)	135(71.05)	
AGE	20-29	56(47.06)	63(52.94)	**<0.001**
	30-39	16(17.58)	75(82.42)	
	40-above	3(11.57)	23(88.46)	
MARITAL STATUS	Single	56(50.00)	56(50.00)	**<0.001**
	Married	19(15.32)	105(84.68)	
YEARS OF EXPERIENCE	Beginners	59(42.57)	79(57.25)	**<0.001**
	Intermediates	13(18.06)	59(81.94)	
	Advanced	3(11.54)	23(88.46)	
TRAINING IN TWO YEARS	Yes	40(20.00)	160(80.00)	**<0.001**
	No	35(97.22)	1(2.78)	
HIGHEST LEVEL OF EDUCATION	Diploma	61(41.50)	86(58.50)	**<0.001**
	Bachelors	11(14.47)	65(83.53)	
	Master's	3(23.08)	10(76.92)	

Source: *Field data, 2024*

4.3 Bivariate Analysis of selected demographic variables on practice level

Table 5: *Bivariate analysis of selected factors associated with practice of ENC among respondents*

Variable	Category	Practice Levels		p-value
		Poor practice n(%)	Good practice n(%)	
NAME OF FACILITY	Akuse Gov't Hosp	32(24.06)	101(75.94)	0.262
	VRA Hosp, Ak	18(17.48)	85(82.52)	
PROFESSION	Nurse	41(25.62)	119(74.38)	**0.017**
	Midwife	9(11.84)	67(88.16)	
GENDER	Male	16(34.78)	30(65.22)	**0.016**
	Female	34(17.89)	156(82.11)	
AGE	20-29	33(27.73)	86(72.27)	0.050
	30-39	14(15.38)	77(84.62)	
	40-above	3(11.54)	23(88.46)	
MARITAL STATUS	Single	32(28.57)	80(71.43)	**0.010**
	Married	18(14.52)	106(85.48)	
YEARS OF EXPERIENCE	Beginners	40(28.99)	98(71.01)	**<0.001**
	Intermediates	2(2.78)	70(97.22)	
	Advanced	8(30.77)	18(69.23)	
TRAINING IN TWO YEARS	Yes	43(21.50)	157(78.50)	1.000
	No	7(19.44)	29(80.56)	
HIGHEST LEVEL OF EDUCATION	Diploma	37(25.17)	110(74.83)	0.176
	Bachelors	11(14.47)	65(85.53)	
	Master's	2 (15.38)	11(84.62)	
KNOWLEDGE OF ENC	Low strength	25 (33.33)	50 (66.67)	**0.003**
	Strong strength	25 (15.53)	136 (84.47)	

Source: *Field data, 2024*

4.6 Training and Education

Out of the 236 participants, 44 representing 18.64% reported they regularly attended refresher courses or training sessions related to newborn care, 163(69.07%) had these courses occasionally, 17(7.20%) rarely had these courses and 12(5.08%) had never attended refresher courses or training sessions. The frequency of the attendance of trainings and seminars by nurses and midwives is represented in **Figure 4** below.

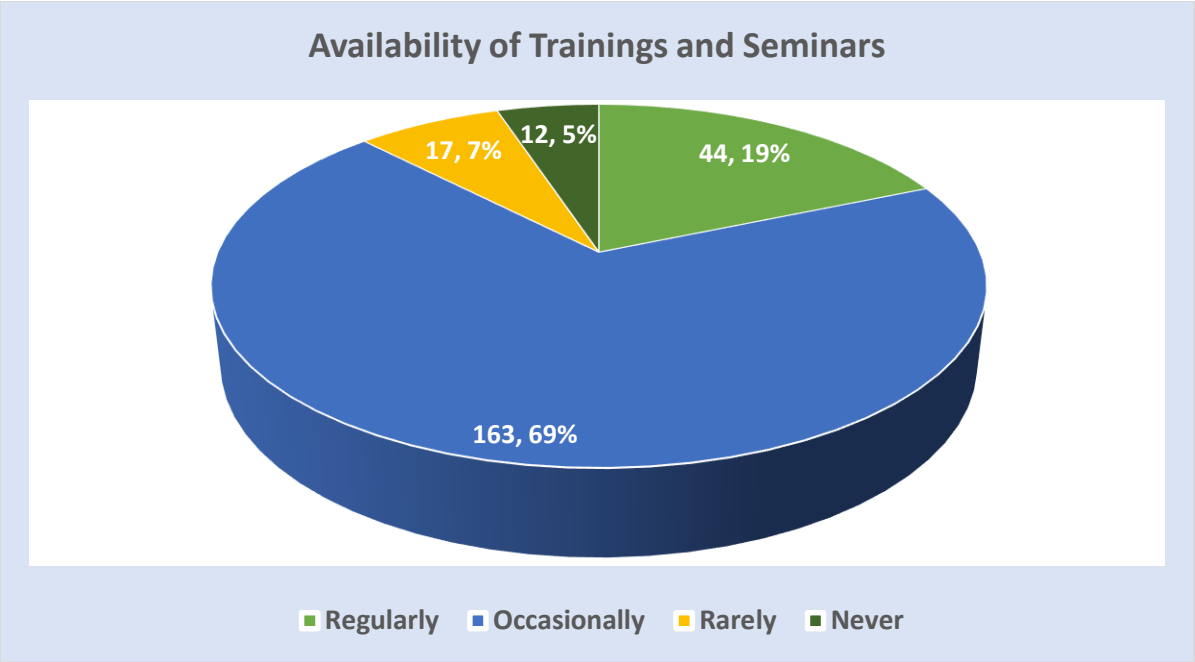

Figure 4: *Frequency of training and seminars*

4.6.1 Bivariate analysis of the availability of training opportunities' association with knowledge of ENC

Fisher Exact Chi-Square test was conducted to ascertain the level of association between the frequency of the training opportunities of the respondents with respect to their level of knowledge on ENC. The result revealed a statistically significant association at an observed p-value far less than the chosen threshold of 0.05. This is represented in **Table 6** below.

Table 6: *Bivariate analysis of the availability of training opportunities' association with knowledge of ENC among respondents*

Variable	Frequency of refresher training n, %				P-Value
Knowledge strength	Never	Rarely	Occasional	Regularly	
Low knowledge	6(50.00)	3(17.65)	21(12.88)	3(6.82)	0.005
Strong knowledge	6(50.00)	14(82.35)	142(87.12)	41(93.18)	

4.7 Factors influencing the knowledge

Participants were asked to rate the following factors on a scale from 1(not influential), 2(least influential), 3(somehow influential), 4(very influential) to 5(most influential) regarding their impact on their knowledge of ENC: Availability of resources and equipment, Supportive supervision and mentorship, Access to updated guidelines and protocols, Workload and time constraints and Personal motivation and interest. This is represented in **Figure 5** below.

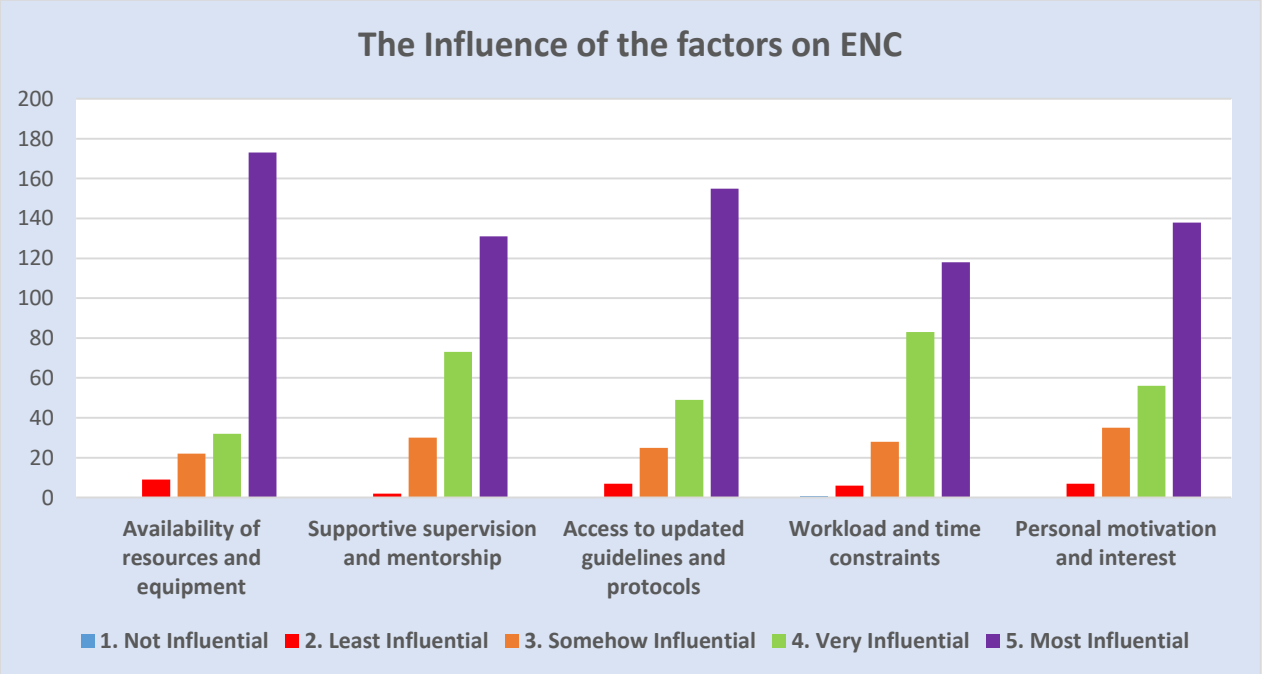

Figure 5: *The Impact of the factors on the knowledge of essential newborn care*

4.7.1 Test for Reliability on Factors impacting Respondents' Performance on ENC services

Table 7 below shows the distribution of responses and Cronbach's Alpha analysis of the questionnaire on a Likert Scale. This type of analysis is employed to evaluate reliability by examining the extent of shared variance or covariance among the components comprising a tool in comparison to the total variance. The underlying concept suggests that if the tool is reliable, there should be a significant level of covariance among its components relative to the overall variance (Collins, 2007). It ranges from 1 and below. A value of 0.01-0.60 is unacceptable, 0.61-0.70 is acceptable. 0.71- 0.80 indicates good and acceptable results, 0.81-0.90 indicates good results and 0.91-1.00 indicates excellent results (Konting *et al.*, 2009).

The Alpha values showed that, the results are reliable at a range between 0.71 and 0.80. The overall Alpha test scale recorded 0.769 indicationg good and acceptable results. All the results are positively skewed (> 0) with a median of 2. The mean, standard deviation (SD) and other measurments are represented in **Table 7** below.

Table 7: *Distribution of responses and Cronbach's Alpha Analysis of the questionnaire on a Likert Scale*

Items	Mean	Median	SD	Skewness	Alpha	Label
1	2.5593	2	1.1489	1.3056	0.742	Impact of Availability of resources
2	2.7203	2	0.9215	0.4500	0.730	Impact of Supportive supervision
3	2.7966	2	1.2853	0.8773	0.722	Impact of Guidelines
4	3.2712	2	1.4212	0.2008	0.725	Impact of Workload
5	2.9703	2	1.3445	0.5594	0.718	Impact of Personal motivation
Test scale					**0.769**	**Mean (standardized items)**

Source: *Field data, 2024*

4.8 Challenges Faced by Respondent in Providing ENC Services

The challenge that was mostly mentioned as being faced by nurses and midwives in providing ENC includes is the lack of resources and equipment (128 participants, 50%) such as consumables (spirit, gauze, cotton, thermometer, pulse oximeters, suctioning machines and tubes), beds, incubators, lightening system and a neonatal intensive care unit (NICU). Participants (14) attributed the lack of resources and equipment to poor logistics.

Out of 236 participants, 16 representing 6.8% mentioned low patient compliance due to financial constraints as a challenge, 11 mentioned lack of maternal preparation or preparedness for a baby being the challenge and 4 mentioned language barrier. Other challenges faced include difficulty reaching referral site (6 responses), poor ANC attendance (3 responses), lack of a pediatrician (5 responses), workload and staff strength (11 responses), lack of motivation and supervision (23 responses).

Cultural or traditional practices that hinder ENC include; application of cow dang, ashes, palm kennel, mud or herbs to baby cord which sometimes results in cord sepsis. Also, preference for home delivery, not allowing baby feed on colostrum (first milk) and the male gender being the sole decision-maker in the home. Out of the 236 participants, 222 (94%) responded to having access to updated guidelines and protocols for newborn care at their facility

The challenges encountered in providing ENC in the Eastern Region of Ghana are tabulated below based on responses provided by participants. The responses were mainly grouped under; resources and equipment, training and continuous education, supervision and motivation, staff to patient ratio, affordability, referrals and research on ENC. This is represented in **Table 8** below.

TABLE 8: *Challenges encountered in providing ENC*

Variables	Challenges encountered in providing ENC
RESOURCES AND EQUIPMENT	Limited availability of essential supplies, medications and medical equipment thereby impeding the provision of necessary care.
TRAINING AND CONTINOUS EDUCATION	Lack of training on the job Poor cord care and low ANC attendance Traditional customs or beliefs sometimes influence newborn care practices, poor cord care thereby conflicting with recommended medical interventions and adherence
SUPERVISION AND MOTIVATION	Lack of Supervision and motivation
STAFF TO PATIENT RATIO	Staff to patient ratio is not ideal, resulting in some overlaps. Also, lack of a pediatrician is a challenge.
FINANCES	Financial constraints resulting in difficulty affording baby cloths, items and feeding
REFERRAL	Difficulty getting babies to referral site or reaching referral sites
RESEARCH	Enough research has not been done on newborn care in Ghana

Source: *Field data, 2024*

4.9 Multivariate analysis of the selected factors and the knowledge and practice level of ENC

The logistic regression of the knowledge of ENC and the practice of ENC revealed that, some factors were significantly associated while others were not in relationship to the chosen outcome variables.

Considering the knowledge levels of the respondents, males were about 1.6 times more likely to have strong knowledge of ENC as compared to their female counterparts controlling for all other covariates [AOR=1.568 (95% CI=0.59-4.19]. Respondents with advanced (above 10 years) experience were 2.6 times more likely to have strong knowledge of ENC as compared to the

beginners (below 5 years) or intermediaries (5-10 years), controlling for all other covariates [AOR=2.587(95% CI=0.43-15.47)]. Participants who had received training on ENC in the past two (2) years recorded the highest odds ratio and likelihood of association. They were 105 times more likely to have strong knowledge of ENC as compared to participants who had not received training in the past two (2) years, controlling for all other covariates [AOR=105.066(95% CI=12.49-883.87)]. Being a nurse had a lower odds of association with strong knowledge. Nurses were 0.926 times less likely to have strong knowledge of ENC as compared to midwives, controlling for all other covariates [AOR= 0.074(95% CI= 0.02-0.31)].

Considering the practice levels of ENC among respondents, intermediates with 5-10 years' work experience were 13 times more likely to have good practice of ENC as compared to participants with advanced (above 10years) and beginners (below 5 years) work experience, controlling for all other covariates [AOR 13.094(95% CI= 2.81-61.04)]. Testing association between educational level and practice of ENC revealed that, participants with Diploma were 0.467 times less likely to have good practice as compared to participants with Bachelors and Masters level of education, adjusting for all other covariates [AOR= 0.533(95% CI= 0.22-1.29)] while respondents who had received training in the past two (2) years were 0.63 times less likely to have good practice as compared to participants who did otherwise, adjusting for all other covariates [AOR=0.370(95% CI= 0.13-1.02)]. The results of the logistic regression are represented in the **Table 9** below.

Table 9: *Multivariate analysis of factors associated with knowledge of ENC among respondents*

Variable	Category	Knowledge of ENC				Practice of ENC			
		p-value	COR (95% CI)	p-value	AOR (95% CI)	p-value	COR (95% CI)	p-value	AOR (95% CI)
Facility	Akuse Hosp	-	1	-	1	-	1	-	1
	VRA Hosp,	0.836	1.060(0.61-1.84)	0.309	1.543(0.67-3.56)	0.221	1.496(0.79- 2.85)	0.108	1.829(0.88-3.82)
Profession	Midwife	-	1	-	1	-	1	-	1
	Nurse	<0.001*	0.070(0.02-0.20)	<0.001*	0.074(0.02-0.31)	0.018*	0.390(0.18-0.85)	0.108	0.479(0.20-1.18)
Gender	Female	-	1	-	1	-	1	-	1
	Male	0.060	0.530(0.27-1.03)	0.371	1.568(0.59-4.19)	0.014*	0.409(0.20-0.83)	0.113	0.491(0.20-1.18)
Age	20-29	-	1	-	-	-	1	-	1
	30-39	<0.001*	4.167(2.18-7.97)	0.718	1.221(0.41-3.60)	0.036*	2.11(1.05-4.24)	0.464	1.465(0.53-4.08)
	40-above	0.003*	6.815(1.94-23.93)	0.964	0.955(0.13-6.83)	0.095	2.942(0.83-10.46)	0.559	1.789(0.26-12.57)
Marital Status	Married	-	1	-	1	-	1	-	1
	Single	<0.001*	0.181(0.10-0.33)	0.011*	0.277(0.10-0.75)	0.009*	0.425(0.22-0.81)	0.520	0.755(0.32-1.78)
Years of Experience	Beginners	-	1	-	1	-	1	-	1
	Intermediate	0.001*	3.389(1.70-6.75)	0.091	2.532(0.86-7.44)	<0.001*	14.286(3.34-61.08)	0.001*	13.094(2.81-61.04)
	Advanced	0.006*	5.726(1.64-19.98)	0.297	2.587(0.43-15.47)	0.855	0.918(0.37-2.28)	0.431	0.592(0.16-2.18)
Training in Two Years	No	-	1	-	1	-	1	-	1
	Yes	<0.001*	140(18.61-1052.98)	<0.001*	105.066(12.49-883.87)	0.781	0.881(0.36-2.15)	0.055	0.370(0.13-1.02)
Highest Level of Education	Bachelors	-	1	1	-	-	1	-	1
	Diploma	<0.001*	0.239(0.12-0.49)	0.117	0.463(0.18-1.21)	0.069	0.503(0.24-1.05)	0.164	0.533(0.22-1.29)
	Master's	0.436	0.564(0.13-2.38)	0.245	0.336(0.05-2.11)	0.932	0.931(0.18-4.78)	0.912	0.902(0.15-5.60)

Source: *Field data, 2024* ** Statistical significant at a 95% CI*

CHAPTER 5

5.0 DISCUSSION

This is one of the few hospital-based cross-sectional research that has been conducted in the Eastern Region of Ghana to assess the knowledge of ENC and associated factors. The outcomes are discussed below.

5.1 Socio-demographic data

A total of 236 participants including nurses and midwives who worked at either VRA or Akuse Hospitals were involved in the study. The study had a male-to-female ratio of 1: 4 with most of them 119 (50.42%) within the ages of 20–29 years. This outcome is the same as a study in the Northwest Zone of Ethiopia among healthcare providers of ages 20 and above. Majority, 142 (79.3%) of the respondents were between the ages of 20 and 35 years (Tasew *et al.*, 2019). Majority 138(58.47%) of the respondents were beginners with years of work experience below 5 years. A proportion of 72(30.51%) had a work experience of 5-10 years and 26(11.02%) had a work experience of more than 10years. This is the same as a study done in the Wolaita Zone of Ethiopia among nurses and midwives where 74.5% of the respondents had < 6 years work experience (Arba *et al.*, 2020).

Out of these individuals, 200(84.75%) had received some form of training on ENC in the past 2 years and 36(15.25%) had not. Majority of the health workers 147(62.29%) had Diploma education, 76(32.20%) had Bachelors' education and 13(5.51%) had Master's education. This is similar to a study in Ethiopia, in which 70.4% had Diploma (Arba *et al.*, 2020) and not in line with a study done in the Northwest Zone of Ethiopia where majority (53.6%) had Degree certificates (Tasew *et al.*, 2019).

These similarities suggest that, the current state of socio-demographics among the participants in relation to these findings are generally the same as the other countries compared and could have similar effects on the knowledge and practice of ENC.

5.2 Knowledge and practices of ENC

Considering the association of the socio-demographic factors and knowledge level of ENC, profession, age, marital status, years of experience, training in two (2) years and educational level were factors significantly associated with knowledge of ENC at a p-value <0.001. This is similar to a study conducted in Tamale, Ghana where years of experience and age were significantly associated with knowledge of newborn care (Adams *et al.*, 2023).

The number of participants who had a strong knowledge of ENC was 161(68.22%). This finding is higher than similar findings in Rwanda 65.1% (Batamuriza *et al.*, 2020), Wolaita Zone in Ethiopia 57.9% (Arba *et al.*, 2020), Bahir Dar City 56% (Yemaneh, 2017), 47.8% in Jima zone (Negussie *et al.*, 2018), 46.5% in Uganda (Ayiasi *et al.*, 2014) and 56.2% in Ekiti State, Nigeria (Esan *et al.*, 2020). A study conducted in the Tigray region showed 74.7% knowledge (Berhe *et al.*, 2017) which was higher than this finding. Overall, 71.05% of females had a strong knowledge of ENC while 56.52% of males had a strong knowledge of ENC.

Considering the relationship between the socio-demographic factors and the practice of ENC, the profession, gender, age, marital status and years of experience were significantly associated with the practice of ENC whereas training in two (2) years and educational level were not significantly associated with the practice of ENC. This finding is contrary to a finding in the Bench-Sheko Zone in Ethiopia where receiving training on-the-job and educational level were factors associated with the practice of ENC (Yosef *et al.*, 2021). Having knowledge of ENC

was significantly associated with the practice of ENC (p-value- 0.003). This finding is supported by (Yosef *et al.*, 2021) where healthcare providers who had good knowledge of ENC had an association and a 2.7 times more likelihood of having a good practice of ENC.

Concerning the profession, the proportion of nurses and midwives who had good practice of ENC was 186(78.81%) of the 236 participants. Five practices were measured including the right time to start ENC, the right place to keep a healthy newborn, the measure to take if a newborn cannot breathe well after drying, clearing the airway, and rubbing the back once or twice, the expected breath count per minute for the newborn baby and the best thing to apply on the eyes of a newborn to avoid eye infections after delivery. This outcome was in line with similar findings in the Tigray region, 72.8% Ethiopia (Berhe *et al*., 2017) and higher than outcomes in Ekiti State, 62.9% Nigeria (Esan *et al*., 2020), 51.1% in the Jima zone, Ethiopia (Negussie *et al.*, 2018) and 59.7% in Bahir Dar city (Yemaneh, 2017).

The observed differences might be because of the differences in the working definition used. This study used fractions, percentages and 95% CI to assess the knowledge and practice of study participants, while others used mean score value. In addition, the study participants in this study were all nurses and midwives, while others involved all health professionals. This may overestimate the outcomes of the study as more accurate responses can be expected from midwives and nurses than other professionals due to their regular contact with the ENC intervention. In addition, this could be because of the differences in the study setting, size, the study period and also, the differences in educational qualification across countries and regions.

Testing the association between socio-demographic factors and the knowledge of ENC, males were about 1.6 times more likely to have strong knowledge of ENC as compared to their female

counterparts. This outcome is similar to a finding in the Afar regional states where male health professional were found to be more knowledgeable than their female counterparts (Abdu *et al.*, 2019). This may be due to the additional family duties and child training functions which results in a privation of time to read and update their level of knowledge. Respondents with more than 10 years' experience were 2.6 times more likely to have strong knowledge of ENC as compared to participants with lesser years of experience. This finding is however different from a study in Ethiopia which revealed that, there was no association with the knowledge and years of experience (Berhe *et al.*, 2017). Participants who had received training on ENC in the past two (2) years recorded the highest odds ratio and likelihood of association. They were 105 times more likely to have strong knowledge of ENC as compared to participants who had not received training in the past two (2) years. This is similar to other studies conducted in which health professionals who received on-the-job training were 3 times more likely to have knowledge about the essential care of newborns than those who had not received on-the-job training (Yosef *et al.*, 2021). This may be due to the fact that people get more updated information of knowledge on ENC during the frequent ENC trainings. Receiving on-the-job training is a way of improving upon previous knowledge, skills and expertise of ENC by health workers (The Health Foundation, 2012). However, another research done in Wolaita, Ethiopia, found that receiving on-the-job training did not show a significant link with knowledge of ENC among health care workers (Arba *et al.*, 2020).

Regarding the type of profession, there was no association between being a midwife and the knowledge level of ENC. Being a nurse was less likely associated with the knowledge of ENC. This outcome is contrary to that of a study conducted in the Jimma zone (Negussie *et al.*, 2018) and however, similar to a study conducted in Kaplivastu District, which reports that there is no

arithmetic difference in the level of knowledge among nurses and midwives (Acharya *et al.*, 2016). The differences in the study findings may be due to the differences in the study sample size and period.

Concerning the association between the educational qualifications and knowledge level of ENC, participants with Bachelor's degree had no association with knowledge of ENC. Participants with Diploma and Masters certificate had a less likely association with knowledge of ENC. A study conducted in the Jimma zone revealed that, holding a Bachelor's degree was more likely associated with knowledge of ENC (Negussie *et al.*, 2018) which is contrary to this finding.

Considering the practice levels of ENC among respondents, intermediates with 5-10 years' work experience were 13 times more likely to have good practice of ENC as compared to participants with advanced (above 10years) and beginners (below 5 years) work experience. This finding is somehow similar to a study finding in Ethiopia where health workers with less than 6 years' work experience had poor practice of ENC compared to their coworkers with more work experience (Abdu *et al.*, 2019). However, this finding is different from a study done in Eastern Tigray (Berhe *et al.*, 2017) where there was no association between workers years of experience and the practice of ENC. This difference may be due to the differences in the in-service training offered to healthcare workers in the different and the states.

Respondents who had received training in the past two (2) years were 0.63 times less likely to have good practice as likened to participants who did otherwise. This is contrary to other findings which revealed that, nurses and midwives who had newborn care training were more than two times likely to have good ENC practice likened with those who had not received

training, Afar region (Abdu *et al.*, 2019) and Northwestern Tigray (Tasew *et al.*, 2019). However, study in central Tigray showed that the two groups had the same outcome which is contrary to this finding (Tsegay Gebru *et al.*, 2019). This difference might be due to the differences in the educational and practice background of the study participants.

Health professionals with Diploma and Master's degree were 0.467 and 0.098 times less likely to have a good practice of ENC respectively indicating that, though there is a reduced likelihood in the two certificates, having a Diploma certificate was further less likely compared to a Master's degree. This finding was supported by similar studies conducted in the Tigray region, Ethiopia (Berhe *et al.*, 2017). This may be because of the provision of more general knowledge and skills about the topic at the higher educational level than the basic knowledge and skill level required for work-related tasks at a Diploma level (DiFranza, 2019).

Considering a Fisher Exact Chi-Square association between the frequency of the training opportunities of the respondents with respect to their level of knowledge on ENC, a statistically significant association at an observed p-value far less than the chosen threshold of 0.05 was observed. Majority of the participants who regularly received training had strong knowledge of ENC with a lower percentage having low knowledge (6.82%) while about 50% of participants who never had training had a low knowledge of ENC. This outcome is similar to a study conducted in Ethiopia (Yosef *et al.*, 2021). However, another study conducted in Wolaita, Ethiopia, found that receiving on-the-job training frequently did not show a significant link with knowledge of ENC among health care workers (Arba *et al.*, 2020). These on-the-job trainings upgrade the existing newborn care skills and knowledge of health workers (The Health Foundation, 2012).

The Alpha Cronbach's reliability analysis of the questionnaire on a Likert Scale indicated a good and acceptable results of the impact of availability, supportive supervision, guidelines, workload and personal motivation (0.769). All the results were positively skewed (> 0) with a median of two (2). There was no study in relation to this finding however, having access to updated guidelines is significantly associated with knowledge of ENC (p-value =0.008) which is similar to a study conducted (Arba *et al.*, 2020) in which health workers who worked in health facilities equipped with BEmONC guidelines were two times more knowledgeable of ENC than health professionals who did not. There was no study that contradicts this finding. The number of respondents who had access to updated guidelines and protocols at their facility were 218(92.37%) while 18(7.63%) did not have access to updated guidelines.

5.3 Challenges in providing ENC

The major challenges faced by nurses and midwives in providing ENC includes; lack of resources and equipment which is similar to a study in which unavailability of resources and training were identified to be independent predictors for poor ENC practices in health institutions (Chanie *et al.*, 2021). Cultural or traditional practices that hinder ENC include; application of cow dang, ashes, palm kennel, mud or herbs to baby cord which sometimes results in cord sepsis. This finding is similar to a study conducted in Zambia (Herlihy *et al.*, 2013).

CHAPTER 6

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Nurses and midwives in the Eastern Region are knowledgeable of the ENC. Associated factors including the practice of ENC was also equally adequate however, there is not enough available research done on the concept of new born care knowledge and associated factors in the Eastern Region and Ghana as a whole. The level of knowledge and practice was higher compared to other studies in Africa. Other associated factors such as higher educational level, training opportunities and seminars on refresher courses are necessary for strong knowledge and good practice of ENC. Participants who have access to updated guidelines and adequate resources are able to provide precise healthcare services to newborns and mothers in need.

The availability of on-the-job training and training in two years are the factors associated with a good knowledge of ENC; while years of experience is the factor associated with a good practice of ENC.

Having access to updated guidelines, adequate resources and supportive supervision help improve healthcare services for new born. This can contribute to reducing the global neonatal mortality burden, thereby impacting the SDG Target 3.2.

Some outmoded cultural practices result in cord sepsis which can lead to the loss of life of the newborn contributing to the global neonatal mortality burden influencing the SDG Target 3.2 negatively.

6.2 Recommendations

Based on the findings from this study, the following are recommended:

(i) The Ministry of Health should encourage research on ENC knowledge and associated factors in the Eastern Region and Ghana as a whole in order to help identify issues that need to be addressed with regards to new born care. Further studies on essential newborn care knowledge and associated factors should be carried out in the Eastern Region and Ghana as a whole.

(ii) The Directors of Public Health and Clinical Care should intensify education on the ENC trainings and also, provide incentives to experienced health workers in order to improve the knowledge and practice of ENC.

(iii) Heads of health institutions should coordinate and provide supportive supervision on refresher courses and CPD on ENC and also, updated guidelines and manuals should be made available to nurses and midwives in order to equip them with adequate updated knowledge on new born care. Continuous training opportunities and supportive supervision on essential newborn care refresher courses and also, updated guidelines and manuals should be made available to nurses and midwives in order to continuously equip them with adequate updated knowledge on newborn care.

(iv) Mothers and care takers should be educated on the dangers of the practice of some outmoded cultural practice which result in cord sepsis and even loss of the life of the newborn.

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APPENDICES

1. INFORMED CONSENT

Principal Investigator: AGYEI GIFTY SERWAA

Institution: ENSIGN GLOBAL COLLEGE

Hello Sir/Madam

Introduction

My name is Agyei Gifty Serwaa, a student pursuing Master of Public Health in Ensign Global College, Kpong. This research would investigate the knowledge of essential newborn-care and associated factors among nurses and midwives at two selected health facilities in the Eastern Region of Ghana.

Invitation to participate

I cordially invite you to take part in this research because you have a good understanding of the knowledge of essential newborn-care and associated factors. I ask that you read this form and ask any questions that you may have before deciding whether to participate in the study. The findings of this study would add to the current knowledge of essential newborn-care and would potentially form a basis for future research and interventions in similar settings. The results of this research would also be published.

Description of the Study

If you agree to take part in the study, I would give you a questionnaire to answer, which would take about ten to fifteen minutes of your time. A copy of the information sheet and a consent form were given to you if you agree to participate in the study.

Risks and Benefits of Being in the Study

The benefit of participation is that your responses would contribute to research in this field to ultimately inform policy to address the knowledge of essential newborn-care and associated factors. The data collected in this study was kept strictly confidential. You would not be identified in any published work or report. However, views of all participants were summarized. Any information obtained during the course of this study was stored and analyzed for the purposes of this study for a period not exceeding two years if the research report is published and six years if no publications emanate. The information that is shared in this interview was kept confidential by myself, and by all investigators involved in the study.

Payments

There is no payment for participating in this interview.

Right to Refuse or Withdraw

Your participation in this interview is voluntary. You may refuse to take part in the study at any time without affecting your relationship with the investigators of this study.

Right to Ask Questions and Report Concerns

You have the right to ask questions about this research and to have those questions answered by me before, during or after the research. If you have any questions afterwards about this research, feel free to contact me on the details listed below; (Agyei Gifty Serwaa, 0559039957). You can also contact my supervisor on (Dr. Steve Manortey by email:

steve.manortey@ensign.edu.gh). If you have any queries, concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the Administrator of Dodowa Health Research Centre Institutional Review Board (DHRCIRB), Ms. Adjoa Brenya by email: irbdodowa@gmail.com

CONSENT FORM

STUDY TITLE: KNOWLEDGE OF ESSENTIAL NEWBORN-CARE AND ASSOCIATED FACTORS AMONG NURSES AND MIDWIVES AT TWO SELECTED HEALTH FACILITIES IN THE EASTERN REGION OF GHANA

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand. I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant……..

Participants' Signature ……...OR Thumb Print……

Date:…….

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the English language to his proper understanding. All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……

Signature of Interpreter…….. OR Thumb Print …….....

Date:……

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood.

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:……

Signature…….... OR Thumb Print …….....

Date:……

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name…….

Signature …….

Date……

2. QUESTIONNAIRE

KNOWLEDGE OF ESSENTIAL NEWBORN-CARE AND ASSOCIATED FACTORS AMONG NURSES AND MIDWIVES AT TWO SELECTED HEALTH FACILITIES IN THE EASTERN REGION OF GHANA

Section 1: Demographic Information

1. What is the name of your facility?

☐ VRA Hospital ☐ Akuse Gov't Hospital

2. What is your profession or job title?

☐ Nurse ☐ Midwife ☐ Other (please specify)

3. How many years of work experience do you have? …….

4. Have you received any training or workshops related to newborn care in the past two years?

☐ Yes ☐ No

5. What is your gender? …….

6. How old are you? ……..

7. What is your marital status?

☐ Single ☐ Married ☐ Widowed/Divorced

8. What is your highest level of education?

☐ Diploma ☐ Bachelor's degree ☐ Master's degree ☐ Other (please specify) ……..

Section 2: Knowledge of Essential Newborn Care

9. Do you know the essential steps for immediate newborn care after birth?

☐ Yes ☐ No ☐ Not Sure

10. Rate your knowledge of essential newborn care on a scale of 1 to 5.

1 (Very Poor) 2 (Poor) 3 (Fair) 4 (Good) 5 (Excellent)

11. Which of the following are components of essential newborn care? (**Select all that apply**)

☐ Thermal care ☐ Early initiation of breastfeeding ☐ Hygiene and cord care

☐ Eye care ☐ Kangaroo Mother Care (KMC) ☐ Neonatal resuscitation

☐ Vitamin K administration ☐ Other (please specify)…….

Section 3: Training and Education

12. Have you attended any seminars or workshops related to newborn care in the past year?

☐ Yes ☐ No

13. How often do you attend refresher courses or training sessions related to newborn care?

☐ Regularly ☐ Occasionally ☐ Rarely ☐ Never

14. What are the major challenges you face in providing essential newborn care? (**Open-ended**)

……

……..……..

15. Do you have access to the WHO updated guidelines and protocols for newborn care at your facility?

☐ Yes ☐ No

16. Have you ever encountered cultural or traditional practices that hinder essential newborn care?

☐ Yes ☐ No

- If **YES**, please provide examples. (Open-ended)

……..……

……..……

……..……

Section 4: Factors Influencing Knowledge

17. Please rate the following factors on a scale from **1 (not influential), 2 (least influential), 3 (somehow influential), 4 (very influential) to 5 (most influential)** regarding their impact on your knowledge of essential newborn care:

- Availability of resources and equipment …….
- Supportive supervision and mentorship ……
- Access to updated guidelines and protocols ……
- Workload and time constraints ……
- Personal motivation and interest ……

18. What is the right time to start newborn care?

☐ Before birth ☐ During birth ☐ After birth

19. Which is the right place to keep a newborn baby immediately after birth?

☐ Beside the mother ☐ With someone else ☐ On the mother's chest/belly

☐ On newborn bed/table

20. What measure is to be taken if the baby is not breathing well after drying, clearing the airway, and rubbing the back once or twice?

☐ More stimulation to breathe ☐ Ventilation with bag and mask

21. What is the expected breath count per minute for the newborn baby?

☐ 30 breaths/min ☐ 40 breaths/min ☐ 60 breaths/min

22. What is the best thing to do to avoid eye infections of the newborn baby after delivery?

☐ Apply nothing ☐ Apply breastmilk on the eye ☐ Clean eye with sterile water

☐Apply silver nitrate/tetracycline

Section 5: Suggestions and Feedback

23. What challenges, if any, have you encountered in providing essential newborn care?

……

……

24. Do you have any suggestions for improving essential newborn care training or resources in your facility?

……

……

25. Do you have any additional comments or suggestions related to newborn care in the Eastern Region of Ghana? (**Open-ended**).……..……

……

……

3. ETHICAL CLEARANCE

ENSIGN GLOBAL
COLLEGE

OUR REF: ENSIGN/IRB/EL/SN-248 January 16, 2024.
YOUR REF:

INSTITUTIONAL REVIEW BOARD SECRETARIAT

Gifty Agyei
Ensign Global College
Kpong.

Dear Gifty,

ETHICAL CLEARANCE TO UNDERTAKE POSTGRADUATE RESEARCH

At the General Research Proposals Review Meeting of the *INSTITUTIONAL REVIEW BOARD (IRB)* of Ensign Global College held on Monday, January 15, 2024, your research proposal entitled **"Knowledge of Essential Newborn-Care and Associated Factors among Nurses and Midwives in Two Districts in the Eastern Region"** was considered.

You have been granted Ethical Clearance to collect data for the said research under academic supervision within the IRB's specified frameworks and guidelines.

We wish you all the best.

Sincerely,

Dr. (Mrs.) Rebecca Acquaah-Arhin
IRB Chairperson

4. APPROVAL LETTERS

VRA HEALTH SERVICES LIMITED

Our Ref: HS-1/903/042/24
Your Ref:
Date: January 12, 2023

The Chairperson
Institutional Review Board
DHRCIRB
Dodowa.

Dear Sir/Madam

RE: REQUEST FOR APPROVAL TO CONDUCT RESEARCH AT VRA HOSPITAL

This serves to confirm that Ms. Gifty Serwaa Agyei (Student No. 237100248), a Student of the Master of Public Health (MPH) degree program of the Ensign Global College has indicated her intention to undertake her research work at the VRA Hospital Akosombo.

We write to express our approval and support for the proposed research on the topic "Knowledge of Essential Newborn-care And Associated Factors Among Nurses and Midwives In Two District In The Eastern Region Of Ghana".

We look forward to giving her all the necessary support to complete this academic research work following your ethical approval and clearance.

Yours faithfully

DR. CHARLES ARHINFUL
AG. MEDICAL SUPERINTENDENT, AKOSOMBO

CC: Medical Director, VHSL
Ms. Gifty Serwaa Agyei

VRA Health Services Ltd (VHSL), P. O. Box 77, Akosombo, Digital Address: EA-0375-0005
Health Directorate - 0343 020 260/0343 020 763, Akosombo Hospital - 0343 020 576/0343 021 202
Accra Hospital - 0302 218 883, Abeadze - 0312 291 255/0312 091 339
info@vhslgh.com www.vhslgh.com

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

Ghana Health Service Core Values:
- PEOPLE-CENTRED
- PROFESSIONALISM
- TEAM WORK
- INNOVATION & EXCELLENCE
- DISCIPLINE
- INTERGRITY

Your Health - Our Concern

AKUSE GOVERNMENT HOSPITAL

P.O. BOX 3, AKUSE E/R DIGITAL ADDRESS EL-1039-7930 TEL: 0501330940/ 0247539883 Email: akusegovernmenthospital@gmail.com

My Ref No: AKH/DPL/110/24 Date: 12th January 2024

Your Ref No:

THE CHAIRPERSON
INSTITUTIONAL REVIEW BOARD
DHRCIRB
DODOWA.

RE: REQUEST FOR APPROVAL TO CONDUCT RESEARCH AT AKUSE GOVERNMENT HOSPITAL

This serves to confirm and certify that Gifty Serwaa Agyei (Student No.: 237100248), a Student of the Master of Public Health (MPH) degree program of the Ensign Global College has indicated her intention to undertake her dissertation study at the Akuse Government Hospital on **"Knowledge of Essential New Born-Care and Associated Factors Among Nurses and Midwives in Two District in the Eastern Region of Ghana."**

This is to formally inform you of Management's preparedness to permit her to collect data from the Hospital for the purposes of her study granted that she meets all the requirements.

Thank you.

F. K. OSEI - SAFO
HEAD OF ADMINISTRATION
AKUSE GOV'T HOSPITAL

Mr. Felix K. Osei-Safo
Hospital Administrator

CC: GIFTY SERWAA AGYEI
(PRINCIPAL INVESTIGATOR)

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

My Ref. DHRC/1RB/036/02/24
Your Ref. No.

Dodowa Health Research Centre
Ghana Health Service
P. O. Box DD1
Dodowa

Email: irbdodowa@gmail.com

15th February 2024

Agyei Gifty Serwaa
C/O Ensign Global College
P.O. Box AK 136
Akosombo

Dear Madam,

ETHICAL CLEARANCE

TITLE OF PROTOCOL: KNOWLEDGE OF ESSENTIAL NEWBORN-CARE AND ASSOCIATED FACTORS AMONG NURSES AND MIDWIVES IN TWO DISTRICTS IN THE EASTERN REGION OF GHANA

Protocol ID: DHRCIRB/018/01/24

Principal Investigator: Agyei Gifty Serwaa

Upon addressing the comments raised, the IRB has approved your proposal.
The approval requires that you submit a periodic report on the progress of the project during the implementation period and a final full report to the Institutional Review Board (IRB) on completion of the study.
The IRB may observe or cause to be observed procedures and records of the study during and after implementation. Please note that any modification of the project must be submitted to the IRB for review and approval before its implementation.

You are required to report all serious adverse events related to your study to the IRB where applicable within seven days verbally and fourteen days in writing. You are also to inform the IRB and your Institution before any publication of the research findings.
This certificate is valid till 14th February 2025. Please quote the protocol identification number in all future correspondence in relation to this protocol.

.....
Mrs. Gifty Ofori Ansah
(DHRCIRB Chairperson)