KNOWLEDGE AND SKILLS OF NURSE-MIDWIVES IN BASIC NEWBORN RESUSCITATION AT ELGEYO-MARAKWET COUNTY HOSPITALS-KENYA

BY

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THEREQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTERS OF SCIENCE IN NURSING AT THE MOI UNIVERSITY ELDORET, KENYA.

DECLARATION

Declaration by the student

This research thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

This thesis is dedicated to my spouse; my children. God bless you for the sacrifices you have made to support me.

ACKOWLEDGEMENTS

My special appreciation goes to the following for their cherished support during the course of this study progress.

1. Jesus Christ, my Lord and Savior, I give glory and honor to Him for granting me the inner strength to complete this study.
2. Moi University School of Nursing for their technical and administrative support.
3. My supervisors, Dr. D. Chelagat and Dr. I. Marete for their invaluable guidance and advice.
4. Department of Midwifery and Gender for their support.
5. Ms. Mercy Abere Moi Teaching and Referral Hospital for her assistance in technical help, data analysis and proof reading.
6. Mrs. Mercy Chumo for providing the equipment for this study.
7. My siblings, friends and colleagues for their support and encouragement.

LIST OF ABBREVIATIONS

BEmONC	Basic Emergency Obstetric Neonatal Care
BScN	Bachelor of Science in Nursing
CIDP	County integrated Development Plan
EPLS	European Paediatric Life Support
ETAT+	Emergency Triage Assessment and Treatment
HBB	Help Baby Breathe
IREC	Institutional Research, Ethics Committee
KDHS	Kenya Demographic Health Survey
KRCHN	Kenya registered community health nurses
NICHD	National Institution of Child Health and Human development
NR	Neonatal Resuscitation
NRP	Neonatal Resuscitation Practices
SDG	Sustainable Developmental Goal
UN	United Nations
USAID	United States Agency International Development
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Basic new-born resuscitation: Provision of warmth, airway clearing (sucking), and head positioning.

Knowledge: A total score of > 80 % is regarded as the nurse-midwife has adequate knowledge on newborn resuscitation.

Nurse-Midwife: Is a person who is qualified as a nurse in the facility who at any point conducts delivery.

Skills: A total skill of > 80 % is regarded as the nurse-midwife has adequate skills on newborn resuscitation.

In-service training: A nurse-midwife who has received formal training in newborn resuscitation after completion on his/her basic training.

County Hospital: A Hospital in capacity of receiving all referral patients from sub-county hospitals and there is one in each county.

Sub-County Hospital: Hospital receiving patients referred from primary care services facilities such as dispensaries and health Centre previously referred to as level III hospital.

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ABSTRACT

Introduction: Majority of neonatal deaths could be prevented with proper pre-natal; intrapartum care and training of midwives on neonatal resuscitation techniques which help reduce early neonatal deaths. Elgeyo-Marakwet County has a neonatal mortality rate of 62/1000 live births which is higher than the national mortality rate of 20/1000 live births. One of the major causes of neonatal deaths is birth asphyxia

Objective: To determine the knowledge and skills of basic neonatal resuscitation among nurse midwives and to determine the factors associated with their knowledge and skills on newborn resuscitation at Elgeyo-Marakwet County Hospitals.

Study methods: A cross-sectional study design carried out at 9 health care facilities in Elgeyo-Marakwet County. A sample of 78 out of 94 nurse-midwives was selected usingconveniencesamplingtechnique.Datawascollectedusingbothstructuredquestionnaires and two Observation Checklists based on the Help Baby breathe tool. The questionnaire was self-administered by the nurse midwives, whereas the performance on skills was used on mannequin using two scenarios. Data was analyzed using SPSS Version 21. Descriptive statistics were used for continuous variables while categorical variables were presented in graphs and tables. Chi square and Fishers Exact were used to test for association between categorical variables. A p-value of <0.05 at95% confidence interval was considered significant.

Results: Majority of participants (60) 77% were diploma holders, graduates were (2)3%. Only (44) 56% received in-service training on newborn resuscitation. Performance on knowledge score indicated that only 14% were knowledgeable (>80%) using HBB standards. Average Skills on baby born through meconium was 76% and Baby born and does not cry when cord is cut score 85%. Performance on skills gave an average of scored 80%. The skill that was performed best was looking into the baby mouth at 96%.Chi square and Fishers were used to test for association between the characteristics of the nurse-midwives' knowledge and performance of skills. There was significance difference between in-service training and newborn resuscitation p=0.002 and also between knowledge verses supervision at p=0.005.

Conclusion: The study shows, Nurse-midwives in Elgeyo-Marakwet County do not have adequate level of knowledge and clinical skills performance on basic newborn resuscitation. Nurse-midwives have deficient performance on clinical skills on newborn resuscitation. There was positive association between in service training and newborn resuscitation.

Recommendations: There is need for refresher course trainings and more frequent re-assessment on knowledge. Skills improvement for the nurse-midwives to be conducted through on-going clinical practice, Continuous Medical Education and monitoring to acceptable standards. Supportive supervision is needed to mentor nurse-midwives on clinical skills and knowledge.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter describes the background, statement of the research problem and objectives of the study. It also presents the research questions and the conception frame-work.

1.1 Background

Almost 2.7 million newborns die every year universally. Substantial efforts have been put in place to reduce the world-wide mortality in children under the age of five. The neonatal deaths have however remained constantly high as established by the United Nations' Sustainable Developmental Goal 3, (Holden, Linnerud, & Banister, 2017). Neonatal mortality rates and especially deaths due to birth asphyxia have failed to improve at the same rate as other child health indicators and in some places have remained stagnant (Reisman *et al*., 2016).

Globally, studies have shown that there is an increase in newborn deaths resulting from intrapartum asphyxia/hypoxia (Lawn, Zupan, Begkoyian, & Knippenberg, 2015). The leading causes of neonatal mortality include Prematurity (28%), infections (26%), and birth asphyxia (23%). The reduction of these complications depends on appropriate interventions such as drying gently by rubbing the back using a dry towel, removing the wet cloth and keeping the baby warm among others (Shikuku et al., 2017)

Midwives play a crucial role in this reduction when they possess required knowledge and skills of basic neonatal resuscitation. Multi-dimensional approaches are required in controlling neonatal mortality and midwives play a pivotal role (Somannavar et

al.,2015). Intrapartum or birth asphyxia is the main reason of neonatal deaths, accounting for one-quarter (21-28%) of all neonatal deaths (Reisman *et al*., 2016).

In high income countries, curbing of neonatal mortality rates has been due to the knowledge and skills of health care providers principally the midwives (Ndzima-Konzeka, 2017). The introduction of training programs on neonatal resuscitation in United Kingdom was associated with the reduction in neonatal morbidity and mortality (Reisman et al., 2016), and therefore this simple low-cost intervention that has been very handy in reducing neonatal mortality. Programs to equip health care workers in addressing gaps in implementation with the goal of improving neonatal survival have been initiated(Kamath-Rayne et al., 2018).

In middle and low-income countries, emphasis is on advancement and competitiveness in acquisition of knowledge that is prioritized appropriately to improve health-care services delivery hence effective use of evidence-based knowledge by health care personnel could thus forestall obstacles in the work-place (Ndzima-Konzeka, 2017). In a hospital set-up, knowledge of midwives in carrying out their duties, for instance, resuscitation of neonates prevents neonatal mortality. The concern of knowledge transfer which can be done through pre-service and in-service education serve as a procedure of empowerment for professional staff, predominantly, midwives (Reisman et al., 2016).

Neonatal resuscitation skills are critical for all health care providers who are involved in the delivery of newborns. The Helping Babies Breathe (HBB), which is an invention of the American Academy of pediatrics and other partners like United States Agency for International Development (USAID), The Eunice Kennedy Shriver National Institution of Child Health and Human development (NICHD) Saving

Newborn Lives/Save the Children, and the Millennium Villages Projects, is a global newborn resuscitation training initiative tailored for low and middle in-come countries. Its main objective of the initiative is to ensure that all babies are born in the presence of a skilled birth attendant. The initial steps taught in Help Baby Breathe can save lives and give a much better start to babies who struggle to breathe at birth focusing on meeting the needs of every born baby. HBB focuses on "The Golden Minute" after birth which emphasizes the need for skilled attendants at birth, assessment of every baby, temperature support, stimulation to breathe and assisted ventilation all preformed within this time (Ndzima-Konzeka, 2017).

Help Baby Breathe uses picture-based training and pocket friendly inflatable mannequins for simulation and lays emphasis on establishing ventilation in newborns within the first60 seconds of life. HBB has been established and implemented globally. Declining of skills and knowledge after training in newborn resuscitation has been well documented in high income countries. Several studies did highlight poor retention of knowledge and skills after training courses which are likely to signify a barrier in improving neonatal mortality worldwide (Reisman et al., 2016).

Good neonatal resuscitation skills may fail to develop especially when the acquired knowledge lacks practice. Lack of practice is associated with in-adequate essential neonatal resuscitative equipment (Lassina et al., 2017). Newborn resuscitation success depends upon the knowledge and skills of birth attendants in addition to availability of the basic equipment and materials. The equipment and materials include towels or blankets for drying, a bag and mask resuscitator and a suction device. Annual evaluation of the provision of health services in Africa and Asia has established that

trained health workers and equipment and material for newborn resuscitation are not consistently available in all facilities (Mersha et al., 2019).

In Kenya, Intrapartum asphyxia still remains the leading cause of neonatal mortality at 29% (Shikuku et al., 2017). Midwives' skills regarding Neonatal Resuscitation are very important to ensure good immediate neonatal outcome (Shikuku, et al., 2017). Studies have shown that 10% of neonates require some assistance to begin breathing at birth and only 1 percent would require a full resuscitation (Lawn et al., 2015). It has been further been established that majority of early neonatal deaths are avoidable (Koum et al., 2015). For a successful resuscitation to occur in a delivery room, a midwife and the team must have proper planning and preparations as well as outlining the steps to be taken during resuscitation. The steps include; Initial stabilization that is; drying the baby, keeping warm, positioning, assessing the airway, and stimulating to breathe. This is followed by ventilation which includes bag and mask ventilation initially on room air. Then chest compressions coordinated with ventilation. One breath to three compressions (1:3) lastly, use medications and volume expansions (Newell et al., 2018).

1.2 Statement of the Problem

Globally, asphyxia has been established as the third major cause of neonatal mortality at 23 percent (Shikuku et al., 2017)). Adequate knowledge and skills have played a pivot role in counteracting the effects of neonatal mortality and its adverse consequences(*P KAMAU* , 2018). In 2017, the United Nations set new goals namely the Sustainable Developmental Goals (SDGs) in which SDG 3 was to ensure healthy lives and promotion of well-being for all ages. Specific targets related to infants and

child mortality were to reduce neonatal mortality to at least as low as 12 per 1000 live births by 2030 (The United Nations, 2017).

However in Kenya, neonatal mortality is currently at 20 per 1000 live births from 39/1000 live births in 2019 Health Demographic Survey(Council et al., 2020) indicating that Kenya is still behind the universal target. Hence there's need to assess the knowledge and skills of nurse-midwife on basic newborn resuscitation more so in Elgeyo-Marakwet County Hospitals which have a neonatal mortality rate at 62 per 1000 live births with 67.4% of the births being conducted in the hospital setting ("Health at a Glance," 2015).

1.3 Justification of the study.

No similar study has been done in Elgeyo-Marakwet County yet from preliminary report, the mortality rate is still high at 62 per 1000 live birth, therefore there is need to investigate and document the reasons for such high mortality.

Further this study results may be used to inform policy on various issues concerning neonatal survival.

1.4 Significance

Understanding knowledge, skills and practice of neonatal resuscitation among midwives in Sub-county hospitals will be very crucial in designing and implementing interventions to achieve SDGS goal 3, health for all ages. This will enable the achievement of Sustainable Developmental Goal on child survival of every country (The United Nations, 2017).

1.5 Objectives

1.5.1 General objective

The main objective of this study was to assess the knowledge and skills of basic neonatal resuscitation among nurse-midwives in Elgeyo-Marakwet County and sub-County hospitals.

1.5.2 Specific Objectives

1. To determine nurse-midwives' knowledge on newborn resuscitation (NR) at Elgeyo-Marakwet County hospitals.

2. To assess practical skills of midwives' in newborn resuscitation (NR) at Elgeyo-Marakwet County Hospitals.

3. To determine factors associated with knowledge and skills among nurse midwives' on newborn resuscitation (NR) at Elgeyo-Marakwet County Hospitals.

1.6 Conceptual frame work

The study will adopt the following Conceptual frame-work

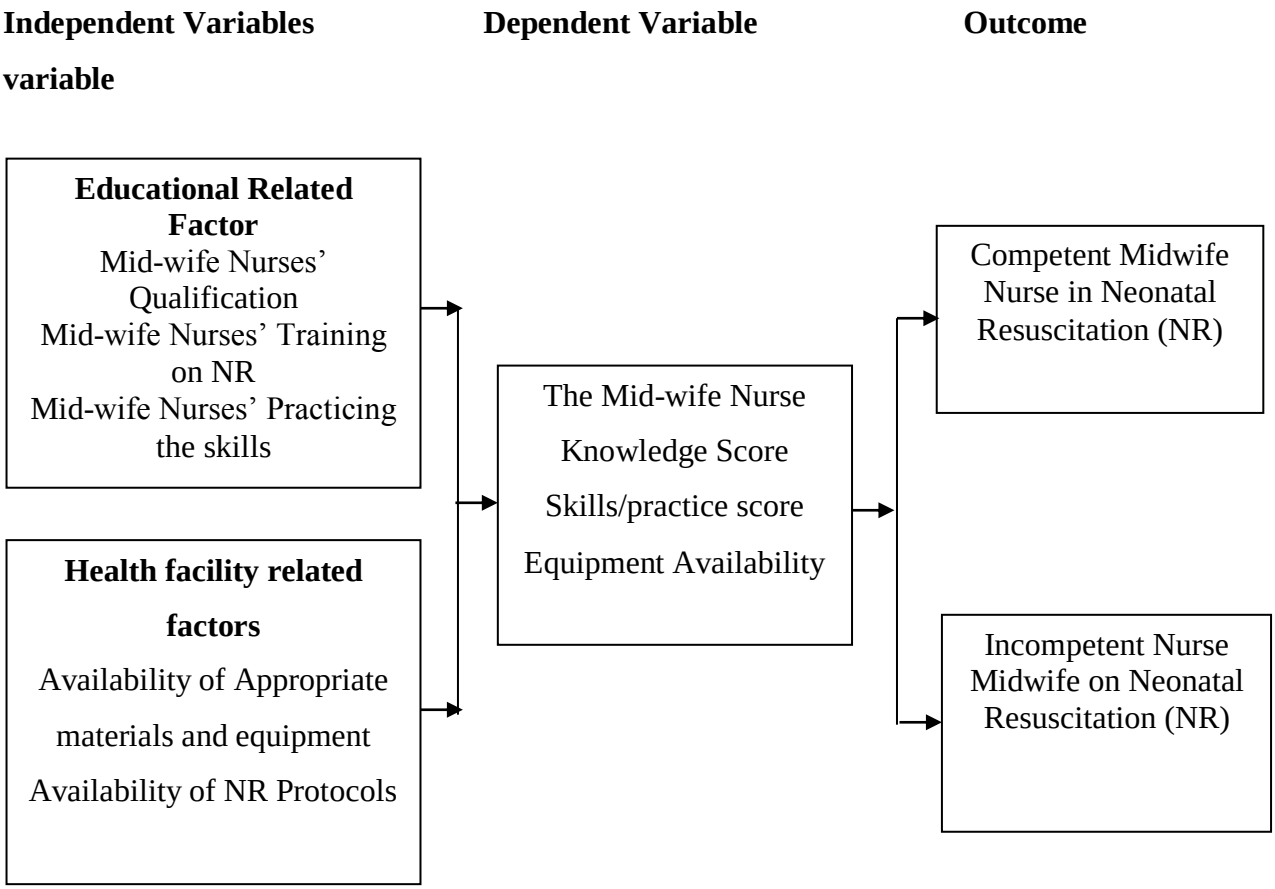

Figure 1: Conceptual frame work availability

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter discusses general overview of the new-born resuscitation as well as a summary of the literature review.

2.1 Introduction.

Literature review is based on the crucial role of the nurse-midwife in reducing new-born mortality due to intrapartum asphyxia. Furthermore, literature indicates that new-born resuscitation is key in curbing new-born deaths at birth. The knowledge and skills of the nurse mid-wives regarding newborn resuscitation at birth is crucial. Literature includes approaches and/or strategies that are applied in various countries in order to minimize newborn deaths.

2.2 Birth Asphyxia.

World Health Organization has defined birth asphyxia as failure to initiate and sustain breathing at birth ((*P. Thairu*, 2018). A baby who does not breathe or is gasping during the 30 seconds after birth must be resuscitated (Shikuku et al., 2017). Competency in neonatal resuscitation is crucial in the delivery rooms to ensure the safety and health of neonates. Appropriate and precise resuscitation improves the aftermaths of asphyxiated neonates thus lowering neonatal mortality rate and improving the infants' survival (Shikuku et al., 2017).

Worldwide, perinatal asphyxia is a major cause of newborn deaths in settings where sources are limited. Confirmation from observational studies revealed that facility based neonatal resuscitation may obviate 30% of intrapartum associated neonatal deaths (Koum et al., 2015).

2.3. Knowledge of Newborn Resuscitation.

Knowledge is power; it is beneficial for midwives to be engaged in knowledge acquisition as means of empowerment to increase proficiency in their work (Ndzima-Konzeka, 2017). A Kenyan study carried out in 47 counties by Murila (Murila et al., 2012) on assessment of knowledge on neonatal resuscitation amongst health care providers in Kenya showed that 70% of health professionals considered that their knowledge on Neonatal Resuscitation was inadequate; the study further highlighted the need to investigate the knowledge of health-care provider in resuscitation of the new-born(Council et al., 2020). Lack of knowledge by health care provider was identified as a critical concern in the management of neonatal resuscitation (Mountford & Travkina, 2016.) A study done in Ghana, Tamale demonstrated that, midwives' lack of knowledge on neonatal resuscitation could possibly be responsible for perinatal asphyxia (Alhassan et al., 2019). A replication of the same study in Kakamega County showed that the key steps in Neonatal Resuscitation were poorly performed during drying/warming, airway maintenance in presence of meconium and subsequent ventilation (Shikuku et al., 2017).

2.4 Skills of Health-Care Provider

A combination of theoretical knowledge and hands on skills are required for competent neonatal resuscitation (Shikuku et al., 2017). Unsatisfactory performance in this essential skills and non-uniformity in awareness of different steps of basic neonatal resuscitation denote urgent need for thorough training. Various studies done in India by Kim and Sureh on evaluation of knowledge and skills on Neonatal Resuscitation among nurses revealed disappointing performance in the essential skills and inconsistency in awareness of different steps of basic neonatal resuscitation (Kim

et al.,2013). A study done in Kenya-Kakamega County suggested the need to do follow-up procedures on knowledge, practical skills gained, periodic neonatal resuscitation practical's, refresher courses and evaluation (Shikuku et al., 2017).

Neonatal resuscitation is only effective when health professionals have sufficient knowledge and skills (Reisman et al., 2016). Skilled attendance at delivery, emergency obstetric care for complications among others averts neonatal deaths caused by intrapartum-related hypoxic events. Consequently, studies done in Pumwani Maternity Hospital by Opiyo, Kakamega County and referral Hospital by Shikuku revealed; in-adequate, out-dated knowledge among midwives, in-adequate skills, poor knowledge and mal-practices of Neonatal resuscitation despite undergraduate and pre-service trainings (Opiyo, 2012 shikuku 2017).

For a resuscitation to be successful, midwives need to have a thorough understanding, knowledge and skills on basic newborn resuscitation. Therefore, adequate knowledge and proficiency plays a pivotal role in early diagnosis, appropriate management and reduction of undesirable consequences. Furthermore, regular assessment of knowledge and skills of clinicians is important for reliable performance of Neonatal Resuscitation as it plays a crucial role in counteracting the effects of neonatal mortality (Draiko et al., 2019). Teaching health care providers on newborn resuscitation skills like proper drying, simulation and clearing the airway decreased birth asphyxia (Eblovi et al., 2017).

2.5 Factors Associated with Knowledge and Skills in Newborn Resuscitation.

Several factors affect knowledge and skills on resuscitation. These factors are associated with the health care workers and/or facility characteristics. Examples of health care worker related factors are Cadre, number of years in offering emergency

obstetric and neonatal care services, confidence in carrying out new-born resuscitation and training(Shikuku et al., 2017). In another study carried out in Garissa Provincial General Hospital it was reported that the basic newborn resuscitation practices according to the guidelines were poorly adhered to at 26.5% (Otido., 2017). Recommendation on availability of equipment to perform neonatal resuscitation (NR) and periodic re-evaluation of the trained persons to maintain level of practice and up-date was emphasized (Mildenberger, Ellis, & Lee, 2017).

According to Kuom, lack of essential medicines, supplies and equipment, in-adequate hygiene are barriers to performance of Newborn Resuscitation (Koum etal., 2015).A study by Addu in Ethiopia noted that smaller facilities experienced lower neonatal mortality rate than larger hospital because they referred difficult cases to provincial and regional hospital (Addu et al., 2015).WHO recommended target for neonatal mortality rate at 12 per 1000 live birth (The United Nations, 2017). However, Kenya's rating of infant mortality rate is at 20 per 1000 live birth from 39 per 1000 live birth (Council et al., 2020). Several Strategies have been devised that would result in the reduction of newborn mortality. The simplicity in the application of basic resuscitation procedure by midwives seems to be the most effective in achieving the best results (Ndzima-Konzeka, 2017). Kenya through Ministry of Health acknowledges the importance of Neonatal Resuscitation services as part of the Kenya Basic Pediatric Protocols and basic obstetric and neonatal care (BEmONC). A study done in Tanzania to improve the effectiveness of the use of Help Baby Breathe (HBB) showed improved results when midwives adhered to the guidelines on basic resuscitation as set by WHO (Joho et al., 2020). Competence-based-pre-service and in-service training, complemented by supportive supervision is an effective way to build provider capacity to perform (Koum et al.,2015).

A study by Otido 2017, on adherence of newborn resuscitation in Garissa Provincial General Hospital revealed that only one mid-wife is available during child birth hence newborn resuscitation is compromised since the midwife has divided attention between the neonate and the mother. Otido further noted that in order to provide basic neonatal resuscitation for all neonates in need, midwives are obligated to practice, sustain skills as well as functioning equipment and accessible supplies (Otido, 2017).

Resuscitation of newborn infants can be predicted during the golden minute thus creating an opportunity to select an optimal setting, prepare appropriate equipment and mobilize other midwives. WHO recommends that healthcare workers' knowledge and skills be updated regularly preferably every two years which is similar to a study done in Kenya that recommends periodic assessments of skills (Goudar et al., 2013).

CHAPTER THREE: RESEARCH METHODS

3.0 Introduction

This chapter presents the design and methods that were used to collect the relevant data for the research. The data was analyzed to answer the research questions. The chapter includes research design, description of the target population, sample size and sampling technique procedures that were applied, research instruments and their administration on the participants, data collection methods, data analysis procedures and ethical considerations.

3.1 Study design

The study adopted a cross-sectional study design. The study design was considered appropriate for this study for several reasons. First, the research collects data from members of a population in order to determine their current knowledge and skills with respect to one or more variables. Secondly, it was an appropriate way of eliciting the most complete response from a sample of individuals presumed to have experienced the phenomena of interest. Besides, it collected information from respondents and relies on the individual self-report of their knowledge and skills (Pandis, 2014).

3.2 Study Area

The study was carried out in Elgeyo-Marakwet County and referral hospital-Iten and its Sub-County hospitals. Elgeyo-Marakwet County is one of Kenya's 47 Counties and is located in the former Rift-Valley Province. Its capital and largest town is Iten. It borders the counties of West-Pokot to the North, Baringo County to the East, South-east and South, Uasin-Gishu to the South-west and Trans-Nzoia to the North-west.

Elgeyo-Marakwet county and referral hospital-Iten, is in Keiyo North and is a level four county hospital situated off the Eldoret-Kabarnet highway. The hospital provides preventive, curative and rehabilitative services. The hospital is a referral center within the Elgeyo-Marakwet County. It also serves as an attachment Hospital to various institutions notably Kenya Medical Training College (KMTC) -Iten, College of Health Sciences (CHS), Moi University, Moi Teaching and Referral Hospital for upgrading students, KMTC Kabarnet, Moi University CHS for COBES V and Kapsowar.

Keiyo North has one sub-county hospital namely Tambach. The hospital provides preventive, curative and rehabilitative services. It has one incubator no nursing students on attachment.

Keiyo South has three (3) sub-county hospitals comprising of Kaptarakwa, Kamwosor, and Kocholwa. The hospitals provide preventive, curative and rehabilitative services.

Marakwet East (TOT) Sub-County hospital has two (2) sub-county hospitals and Chesoi. The hospitals provide preventive, curative and rehabilitative services.

Marakwet West is composed of Chebiemit sub-county hospital and the only Faith based private sub-county hospital namely Kapsowar.

3.3 Study Population

The study population comprised of all nurse-midwives working in the County Referral hospital and the eight Sub-county hospitals distributed as follows:

Iten county and referral hospital has a staff establishment of 85 nurses and 16 nurse-midwives stationed in labor- ward unit. The hospital has 8 incubators and over 200 deliveries are conducted per month. Tambach has a total number of 16 nurses-midwives who conduct over 28 deliveries per month.

Keiyo South comprises of Kaptarakwa which has 8 nurse-midwives conducting over 24 deliveries per month, Kamwosor has 10 nurse-midwives conducting 28 deliveries per month and Kocholwa with 5 nurse-midwives conducting 22 deliveries per month

Marakwet East (TOT) Sub-County hospital has two (2) sub-county hospitals: Tot-7 nurse-midwives conduct an average of 28 deliveries per month and Chesoi-5 nurse-midwives conducting an average of 20 deliveries per month.

Marakwet West is composed of Chebiemit sub-county hospital having 17 nurse-midwives conducting over 50 deliveries per month and the only Faith based private sub-county hospital namely Kapsowar which has 10 nurse-midwives conducting average of 80 deliveries per month.

This makes a total study population of-94 Nurse-midwives.

3.4 Sample population

This was a sampling frame used to select all nurse-midwives as participants. The Stratified sampling per facility was used using Fisher et al (1983); as indicated below:

$$n = \frac{z^2pq}{d^2}$$

Where:

n - Desired sample size which was 94-all nurse-midwives.

z^2 - Standard normal deviate at the required confidence interval

p- The proportion in the target population estimated to have the characteristic being measured

q=1-p

d- Marginal error (degree of confidence)

Hence;

$$n = \frac{(1.96)^2x0.5x0.5}{(0.05)^2}$$

= 384

Since the population was less than 10,000 the following formula was used

$$nf = \frac{n}{1+ \frac{n}{N}}$$

$$N= \frac{384}{1+384/94}$$

= 78 were sampled from the study population in all facilities.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

All nurse-midwives who were working in the Elgeyo-Marakwet County hospital and the eight sub-county hospitals namely: Keiyo North, Keiyo South, Marakwet South, Marakwet-West who were willing to participate were included in the study were included.

3.5.2. Exclusion Criteria

Nurse-midwives on leave during the study were excluded.

3.6 Sampling technique

Consecutive sampling technique was employed whereby all accessible nurse-midwives in the health facilities at the time of data collection period were approached. The nurse-midwives were assessed during their work-shift upon liaising with the hospital in-charges. This involved making at-least three visits in each facility in order to capture them all. The interval of visits between the hospitals varied between 2 weeks and a month. This was greatly influenced by the availability of the participants related to their work schedule.

Consecutive sampling is a non-probability sampling technique which is considered as the best of all non-probability samples because it includes all the subjects that are available making the sample a better representation of the entire population.(Polit & Beck, 2010). The table 1 shows the total number of nurse-midwives in each facility:

Table 1: Nurse midwives who participated in the study.

S.No	NAME OF FACILITY	NUMBER OF NURSE-MIDWIFE
1.	Iten County and Referral Hospital (ICRH)	13
2.	Tambach Sub-County Hospital (TSCH)	12
3.	Chebiyemit Sub-County Hospital	12
4.	Kapsowar Mission Hospital	13
5.	Tot Sub-County Hospital	6
6.	Chesoi Sub-County Hospital	4
7.	Kamwosor Sub-County Hospital	9
8.	Kaptarakwa Sub-County Hospital	7
9.	Kocholwa Sub-County Hospital	4
TOTAL RESPONDENTS		**78**

3.7 Sampling Design

In sampling design, the sample frame was used which consisted of 78 Nurse-Midwife.

3.8. Data Collection Instrument

This was in two phases:

i. Questionnaire: each participant was given a questionnaire on bio data to fill and 18 multiple choice question test. This was adopted from HBB (Appendix IV).(Draiko et al., 2019)

ii. Observation check-list on skills was used: the participants demonstrated the steps of resuscitation using a manikin. Appropriate responses at various stages and scoring of marks was awarded as achieved or not achieved (Appendix VI) (Draiko et al., 2019)

3.8.1 Data quality control and management.

Data collection tools were pretested at the labor ward of Uasin-Gishu County Hospital, which ascertained their reliability and validity. This was the pilot study.

3.8.2 Study period.

The study period was from December 2018 to February 2019.

3.8.3 Data Collection Procedures

After the pilot study, the principal researcher trained two Research Assistants (RA) (2) nurses' intern who were up-grading. Research assistants were the up-grading Kenya registered community health nurses (KRCHN) to Bachelor of Science in Nursing (B.Sc. Nursing) and Bsc.N interns during their rotation in the Elgeyo Marakwet county who assisted in data collection stationed in their various area of work. (RAs were selected since they possess knowledge on Research Methods). A two-day orientation on data collection was facilitated for RAs.

Permission for using the RAs volunteers was obtained from their clinical supervisors. They were trained and supervised for two (2) days by the researcher before the main study to ensure a consistent data collection process and to strengthen the supervision of questionnaire completion. Cross validation with the PI when performing resuscitation prior to carrying out the study was done.

The questionnaire was pilot tested to refine the questions before it is administered in the actual study participants. A pilot test was conducted to detect weakness in design and instrumentation.

3.8.4 Data collection process

Data was collected in two phases:

i. Questionnaire: After the nurse-midwife consented, he/she was assigned a participant study code (to protect the nurse-midwife identity). The nurse-midwife was requested to complete the questionnaire which. (Appendix IV).

ii. Observation check-list was used to assess skills: the nurse-midwife' skills was assessed using two simulation scenarios, that is; baby delivered in meconium-stained liquor and new-born baby delivered without cry through caesarean section. The RAs assessed independently each of the steps carried out. (Appendix VI and VII).

The first step is to demonstrate drying the baby and providing warmth. A score of 0 not achieve and 1 achieved was used. On assessment of air-way, the nurse-midwife was expected to check for secretions in the nose and mouth and if any, sucking using the equipment provided. A score of 0 for not achieved and 1 for achieved was used. For scenario two, appendix VII the first step of drying the newborn, the nurse midwife was expected to say where he/she would place the baby. For scenario one on term baby delivered in meconium-stained liquor, the nurse-midwife was expected to suck first then dry and stimulate the baby. Drying the baby before stimulating was considered marked as not achieved. The nurse-midwife was allowed to proceed to the step that followed.

On assessment of breathing, the nurse-midwife was expected to look, listen and feel for breathing. In both scenarios, the babies were not breathing, therefore, the nursemaid-wife was expected to call for help and initiate ventilation using bag and

mask at arate of 30 breaths per minute. If the nurse-midwife did not position the air-way but achieve ventilation well, this step was considered not achieved. The number of nurse-midwife who did not achieve each step was noted.

A score total of 80% and above were regarded as nurse-midwife as adequate skills and below 80% were considered in-adequate skills. Two Research Assistants observed two assessments done by every nurse-midwife. The process included two simulations, one of the babies delivered in meconium-stained liquor and new-born delivered without immediate cry. The Reassessed independently each step carried out. A mark of 80% and above was considered as competent and below 80% is a not competent as per HBB tool.

3.9. Data Analysis and Presentation

The raw data were edited to detect and remove errors and omissions where possible. After all data had been collected, cleaning and coding preceded entry done in SPSS version 21 software. Descriptive statistics were used as a measure of central tendencies. Frequency and percentage were used to identify the least and most scored dimension. Results were presented in form of tables and flow chart. This was used to assess knowledge. Association of variables was considered to be significant p less than 0.05 via the use of Chi square test. Presentation of data by graphs, tables and texts was used.

3.10. Ethical Consideration Issues

A number of measures were used to ensure that the rights of the participants were not violated. The measures included Approval of research proposal by institutional research and Ethics board. (IREC). Written Permission from Director of Health Elgeyo-Marakwet County Hospital. A verbal consent was further sought from the Chief Nurse and public health nurses from various sub-county hospitals as the study was being conducted. The privacy and confidentiality were ensured during data collection process since the information was kept by the principal.

Written Consent from participant's investigator and anonymity of the participant were assured. The participation of participant was voluntary and verbal informed consent was sought before interviewing them and maintaining anonymity to participants. The nature and purpose of the study was explained to the respondents during data collection.

3.11. Study limitations

Hawthorne effect/ Observation bias.

This study dealt with assessment of skills and not practices. Some of the well performed steps during simulation were explained by the fact that RAs were closely observing and the nurse-midwife therefore were careful to perform the steps right.

To minimize inter-assessors variability, only two (2) RAs were trained excluding the PI and remained constant throughout the period study. Cross validation with the PI when performing resuscitation prior to carrying out the study was done.

Mannequins were used in this study, thus use of other assessment tools like questionnaire catered for the short-comings.

3.12. Dissemination and/Publication of Study Findings

Feedback will be given to the health facility during their monthly meetings and continuous Medical Education (CME) sessions through the County and sub-County in-charges. A copy of the study findings will be given to the director of health Elgeyo-MarakwetCounty, County Executive Officer and their team.

The research will be published in journal papers for reference by other researchers and government for future planning of health services.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter comprises the data analysis and presentation as per the research objectives. A total number of 78 nurse midwives participated in this study. The chapter also has the summary and interpretation of the findings.

4.1 Recruitment Flow Diagram

The Sub-Counties are geographical regions sub-dividing the county and have varied population catchment for the health facilities within. The 2 illustrates the process of enrolment.

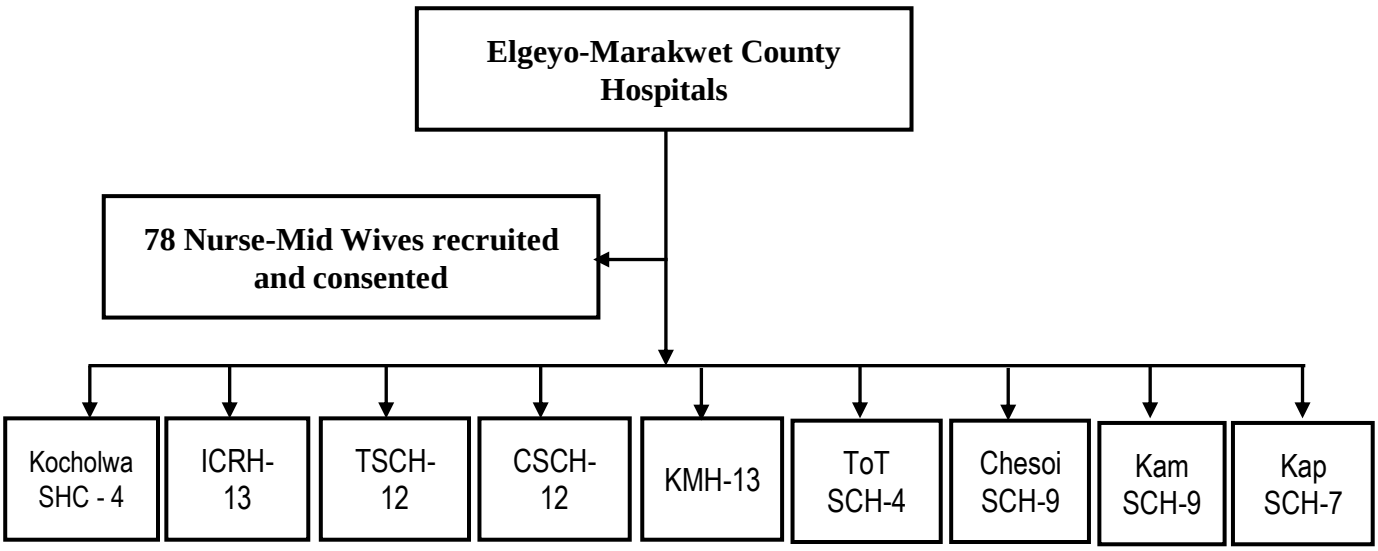

Figure 2: Flow Diagram of the Participants recruitment

Key

1.	**Kocholwa SCH**	Kocholwa Sub-County Hospital
2.	**ICRH**	Iten County and Referral Hospital
3.	**TSCH**	Tambach Sub-County Hospital
4.	**CSCH**	Chebiyemit Sub-County Hospital
5.	**KMH**	Kapsowar Mission Hospital
6.	**Tot SCH**	Tot Sub-County Hospital
7.	**Chesoi SCH**	Chesoi Sub-County Hospital
8.	**Kam SCH**	Kamwosor Sub-County Hospital
9.	**Kap SCH**	*Kaptarakwa Sub-County Hospital*

4.2. Socio- Demographic Data

Seventy-eight participants were recruited into the study. Fifty-six 72% (n=56) were females and 28% (n=22) were males. Most of the nurse-midwives were in the age bracket of 31-40 years at 37 (47%), mean of 2.09, median was 2.00 and a standard deviation of 0.825. the details are shown in table 2 below:

Table 2: Socio-demographic characteristics of the study participants

Characteristic	**Variable**	**Frequency (n=78)**	**Percentage (%)**
Gender	Female	56	72
	Male	22	28
Age (In years)	30 years and below	19	24
(Mean- 2.09)	31-40 years	37	47
(Median -2.00)	41-50 years	18	23
(SD 0.825)	51 years and above	4	5
Highest Level of Education	Certificate	8	10
	Diploma	60	77
	Higher Diploma	8	10
	Degree	2	3
Training on NR	No	34	44
	Yes	44	56
Period at work after	Within 6 months	26	47
Training on N R	7-12 months	25	45
	1 year	2	4
	More than 3 years	1	2
Reasons for not attended in-service training on NR	Time Constraints	16	50
	Lack of awareness	13	41
	Cost/ expenses	3	9
Supervised while conducting NR	Yes	34	45
	No	41	55

4.2 Knowledge of participants on Basic Newborn Resuscitation based on written test.

The nurse-midwives were given a written test which comprised of 18 questions on basic new born resuscitation (see Appendix V). One was considered successful if they scored80% and above as per the NRP guidelines standard. Any mark below 80% was considered as not successful. Majority (86%) of the nurse-midwives failed to answer the questions rightly and the rest (14%) were able to answer it correctly. This is shown in the table 3

Table 3: Knowledge score of performance on newborn resuscitation

Scores out of 100	Frequency n=78	Percentage (%)
<50	31	40
50-80	36	46
>80	11	14

4.3 Skills demonstration on neonatal resuscitation

Scenario 1: A baby is delivered through meconium-stained liquor, the baby is floppy

The skills were assessed using two scenarios; each step was marked as achieved or not achieved. From the 78 respondents, it was noted that most nurses had skills on assessing the airway by Looking in the mouth of a newborn when there is meconium at 74 (95%), followed by the skill of drying/wrapping and removing the wet cloth scored 71 (91%).However, the nurse-midwives' scored poorly on observing the respiratory effort of the newborn at 54 (69%) and Call for help at 39 (50%). This is shown in table 4

Table 4: Demonstration of skills in newborn resuscitation.

Characteristics	Achieved	Not Achieved
Skills	***Frequency (%)***	***Frequency (%)***
Drying/wrapping & removing wet cloth.	71 (91)	7(9)
Observing cry / Respiratory Effort.	54(69)	24(31)
Assessing airway by looking into the newborn's mouth	74(95)	4(5)
Call for Help	39(50)	39(50)

Scenario 2: The baby makes no immediate cry.

The second scenario was meant to assess the nurse midwives' skills regarding resuscitation of a newborn that has been delivered through cesarean section and does not cry immediately. From the 78 surveyed on this sector, majority of the respondents 75 (96%) were able to look into the newborn's mouth during resuscitation, 74 (95%) were able to place the baby on the warm resuscitaire. Their performance in the step of assessing the breathing of the newborn was very poor, only 41 (52%) achieved the skill. This is explained in the table 5 below:

Table 5: Skills performance on newborn resuscitation.

Characteristics	Achieved	Not Achieved
Skills	***Frequency (%)***	***Percentage (%)***
Place the baby on a warm resuscitaire	74 (95)	4 (5)
Look into the mouth	75 (96)	3 (4)
Suction the baby's mouth	74 (95)	4 (5)
Assess breathing by looking listening and feeling	41(53)	37(47)

4.4 Demographic characteristics associated with Knowledge of nurse-midwives in newborn resuscitation.

We also associated differences of knowledge in relation to the nurse-midwives characteristics using Chi-square and there was a statistically significance association between groups as listed below.

The Nurse-midwives who were supervised performed better than those not supervised at a P-value=0.005.

The other characteristics of the participants are indicated in table 6.

Table 6: Factors associated with Knowledge.

Variable	Characteristics	Passed	Failed	P-value
Gender	Male	3	19	0.632
	Female	8	48	*
Age	<30	6	13	0.906
	31-40	7	30	
	41-50	4	14	
	>51	0	4	
Qualification	Certificate	5	3	0.392
	Diploma	6	54	
	H.Diploma	4	4	
	Degree	0	2	
Training	In-Service	8	36	0.465 *
	No in-service	3	23	
Supportive Supervision	Yes	11	26	0.005 *
	No	1	40	

N.B*=fishers Exact.

4.6 Factors Associated with Performance in Skills Scenarios.

From the analysis, there was no statistical significance in the skill scores of the nurse-midwives and demographic characteristics and skills in Scenario One, Drying/wrapping & removing wet cloth, observing cry / Respiratory Effort, assessing airway by looking into the newborn's mouth and Call for Help.

4.7 Scenario Two: Factors associated with performance on newborn resuscitation skills.

The skills were assessed using a mannequin and here, the nurse-midwives either achieved or not achieved. A score total score of <80% was considered successful using HBB tool. Duration of in-service training was significantly associated with assessing airway by looking into the Newborn's mouth at a p-value = 0. 002. The rest is shown in table 7

Table 7: The skills drying a newborn in relation to the demographic characteristics

Variable	Characteristics	Achieved	Not Achieved	P-value
Gender	Male	21	1	0.354*
	Female	50	6	
Age	<30	18	1	0.562
	31-40	34	3	
	41-50	15	3	
	>51	4	0	
Qualification	Certificate	54	6	0.757
	Diploma	7	1	
	H.Diploma	2	0	
	Degree	8	0	
In-Service	Yes	40	4	0.002*
training	No	31	3	
Supportive	Yes	3	34	0.605*
Supervision	No	4	37	

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This chapter presents the discussion of the findings of this study. Emphasis is laid on whether the research objectives of this study have been achieved or not based on research results and the literature review.

5.1 Knowledge Score on New-Born Resuscitation.

From the results, about 67 (86%) of the nurse-midwives had low level of knowledge on newborn resuscitation, only 11 (14%) scored over 80% in six of the eighteen questions who knew that chest compressions and medication are rarely needed during resuscitation, you can provide positive pressure/ventilation when neonate the second stage of secondary apnea, careful identification of risk factors during pregnancy and labor cannot enable early planning for midwives for babies who required resuscitation, early unpacking of resuscitation equipment for depressed newborn, no delay of resuscitation to 1 minute Apgar score for newborn who fail to breathe spontaneously. The finding can be compared to a study done in Tamale, Ghana which reported very low performance on newborn resuscitation skills and knowledge among mid-wives in at 2 % (Alhassan, Fuseini, Osman, & Adam, 2019).

This result contradicts the findings from a study in the 47 Counties of Kenya that assessed knowledge of neonatal resuscitation among health care workers which reported a pass rate of 35 % (Murila et al., 2012). The finding is comparable to a study done in Uasin-Gishu, Kenya that assessed knowledge of neonatal resuscitation among doctors and mid-wives and reported high levels among midwives at 46% (Thairu, 2018). The high scores by Thairu can be attributed to the fact that the study done in Uasin-Gishu is in an urban setting where there is better staffing and

continuous medical education. This study is almost comparable with the findings in a study in a teaching hospital in Northwest Ethiopia where mid-wives scored 66 % in knowledge skills (Kim et al., 2013). The low knowledge on newborn resuscitation of the nurse-midwives could be attributed to lack of specialization of the nurse-midwives after basic level training, lack of regular on-site training and refresher courses. There is a common challenge on knowledge of midwives in newborn resuscitation as seen in studies done in rural Bangladesh, Pakistan, Vietnam and India which specified a common task in developing nations (Kim et al., 2013).

5.2. Performance on Skills on New-born Resuscitation.

On average, the achievement rate for skills on newborn resuscitation was 80% in the two scenarios. The mandatory steps of dry/wrap and removing wet cloth, observe cry/respiratory effort, assess airway by looking into the newborn's mouth and call for help, average score of 76%. The 2nd scenario of newborn delivered through caesarian section and does not cry while the cord is cut, where mandatory steps are place the newborn on a warm resuscitaire, look into the newborn's, suction the newborn's mouth and assess breathing by looking, listening and feeling, average score here was 85%. This contradicts a study done in the 47 Counties of Kenya which demonstrated that there was no difference in the performance of the various skills among the nursing cadres (Murila et al., 2012).

About 49% of the nurse mid-wives did not constantly monitor the heart rate and effort of the new-born to cry. This finding can be compared to a study from Kakamega– Kenya where Failure by nurse-midwives to consistently monitor the heart rate which indicates either lack of formal practical training in new-born care or need for skills up-grading with repeated training with a skilled person (Bang et al., 2016). This can

be attributed to the fact that the nurse-midwife on duty had divided attention between the newborn and the mother.

In as much as 91% achieved the step of keeping the newborn warm, 9% did not keep the baby warm during resuscitation. Finding in a study done at Uasin-Gishu depicted that 81% of the nurses kept the newborn warm. Keeping the baby warm is a key step but was missed out on several occasions during the period of resuscitation: removing the wet towel used after drying the new-born. Lack of drying towels in the delivery packs in the unit could explain why some nurse-midwives failed to wipe the new-born despite the fact that the new-born were on resuscitaire. Evidence has shown that instructions which include keeping the baby warm during resuscitation reduce neonatal mortality (Every new-born Action Plan. ENB An Action Plan to End Preventable Deaths 2014).

Almost half of the nurse mid-wives 50% did not call for help from other colleagues in the unit in the cases of failed resuscitation. This was due to the shortage of clinical personnel during odd times like weekends and/or at night. A study carried out in Uasin-Gishu noted that 90% of the nurses did not call for help (Thairu, 2018). Identifying a helper before the resuscitation starts was lower than expectations indicating that there is a gap among nurse midwives in recognizing that every baby is at risk of birth asphyxia (Shikuku et al., 2017). Calling for help improves outcomes during newborn resuscitation.

5.3 Association between Knowledge verses skills.

Factors associated with knowledge.

Training in neonatal resuscitation was found to be associated with higher knowledge in neonatal resuscitation was found to be statistically significant ($\chi 2$, df-pvalue-0.05). The findings determined by Chi-square where p-value was 0.002. This finding is in agreement with the study carried out in Tamale-Ghana revealed that there was significant association of training in newborn resuscitation and higher knowledge in newborn resuscitation (Alhassan et al., 2019). Contrary to this finding, a study from Uasin-Gishu, Eldoret showed that there was no statistical difference in the scores (Thairu, 2018). This is similar to findings in Kakamega-Kenya that assessed quality of care during NR among nurses, doctors and clinical officers reported no statistically association between the HCPs' previous NR training and quality of NR care at the key resuscitation steps (Shikuku et al., 2017). Furthermore, finding in Nagpur and Belgium, India and Eldoret (Bang et al., 2016) noted that knowledge and skills gap were evident before the initial HBB training recurred months later at refresher training despite on-going supportive supervision. This denotes the need for regular refresher training and practice for nurse-midwives within 12 months.

This indicates that there is need to focus on knowledge and skills retention over and board in service training. The gold standard of WHO in cultivating quality of maternal and new-born care is to have health care staff in every delivery room receiving in-service training or re-fresher courses once in a year. In addition to this, monthly simulation exercise and drills in basic new-born resuscitation are required (WHO.,2016). Retention of skills and knowledge can be done through on-going skills practice, monitoring and more regularly re-testing (Reisman et al., 2016). Nurse-

midwives were willing to attend in-service training but cited lack of permission from the health facility to attend the courses and shortage of staff. On-site training is more sustainable than external workshop and this prevents staff shortages that results when providers travel long distance to attend training courses

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the conclusion and recommendations of the study.

6.1 Conclusion.

This research has highlighted the importance of knowledge and skills in empowering the nurse-midwives to master their work in the way they prepare the delivery room for the birth and help neonates' breath at birth within 'The Golden Minute'. This study demonstrates that 33% of the nurse midwives have adequate knowledge on newborn resuscitation and 50% of them had undergone training on newborn resuscitation.

The nurse-midwives have poor skilled in basic new-born resuscitation; this affirms the lack of supportive supervision which was at 55%. Furthermore, the study shows that there is a positive association between training and newborn resuscitation, knowledge verses qualification. However, the results of this study did not show a great impact between level of knowledge and clinical skills/length of practice.

Finally, it is clear that the study sites are prepared in both nurse-midwives and equipment to provide new-born resuscitation; nonetheless, nurse-midwives do not have adequate knowledge and skills in new-born resuscitation.

6.2 Recommendations

The following suggested recommendations of this study are intended to empower the nurse-midwives to be well prepared for the 2030 Agenda for the Sustainable Developmental Goals and to serve as a promoter for the change and competence in the operations of midwives through acquiring of relevant knowledge and skills.

Mentorship and regular cost-effective Neonatal Resuscitation (NR) training with focus on maintaining the warm chain during newborn resuscitation, airway maintenance in meconium presence is encouraged.

Time should be allocated for nurse mid-wives to attend seminars and trainings to improve their performance on new born resuscitation.

Midwifery training at basic nursing training, first degree level and work experience before midwifery training and training midwives in newborn resuscitation since factors were associated with higher knowledge of new-born resuscitation.

Consequently, it is highly imperative that the County government provides opportunities for all nurse midwives to be trained in such an important lifesaving skill.

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APPENDICES

Appendix1: Work plan -2020-2021.

Activity/Time	2020							2021				
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Proposal Development												
Proposal Presentation to IREC and Approval												
Data Collection And data entry												
Data Analysis												
Thesis Writing												
Thesis Publication and Dissemination												

Appendix II: Budget

No		Unit	Price (KHz)	Total Cost
1.	Typing Expenses	3 drafts	500.00	1,500.00
2.	Printing and final Proposal	4 copies	400.00	1600.00
3.	Field Notebooks	6 pieces	100.00	600.00
4.	Foolscaps	2 realms	250.00	500.00
5.	Photocopying Papers	2 realms	400.00	800.00
6.	Piloting Expenses	5 days	1,000.00	5,000.00
7.	Data Collection Expenses	20 days	500.00	10,000.00
8.	Transport		50,000.00	50,000.00
9.	Data Processing and Analysis	14 days	1,000.00	3,000.00
10.	Draft reports	3 copies	2,000.00	14,000.00
11.	Final research reports	7 copies	2,000.00	14,000.00
12.	Miscellaneous			5,000.00
13.	Contingency			5,600.00
Grand Total:				**100,600.00**

Appendix III: Consent Form

My Names **BILHA ANJAO AMDANY.** I am a student at Moi University undertaking a Masters' degree in Nursing. It is a requirement that students undertake a research project in the field of their specialization. I am carrying out a study entitled **EVALUATION OF KNOWLEDGE AND SKILLS OFNURSE MID-WIVES IN BASIC NEWBORN RESUSCITATION AT ELGEYO-MARAKWET COUNTY HOSPITALS.**

You are being asked to take part in this research study. Before agreeing to participate in the study, it is important that you understand the following explanation of the proposed study procedures. The following information describes the purpose, benefits, risks and confidentiality associated with the study. It further demonstrates your right to refuse to participate or withdraw from the study anytime.

Purpose: This study is designed to provide a better understanding of knowledge and skills of nurse mid-wife in basic newborn resuscitation. Issues related to knowledge and skills in basic newborn resuscitation will be asked. Data collected will be used in designing and implementing interventions to achieve sustainable developmental goals by the County of Elgeyo-Marakwet.

Procedure: You will be requested voluntarily to participate in this study by signing a written consent form. You will be assigned with a participant study code (to protect your identity). You will complete the structured questionnaire. In the questionnaire, you will be asked about yourself and knowledge on newborn resuscitation practices. Importantly, as a nurse mid-wives will be assessed on simulation. (Appendix VI, VII) The research assistants will take turns in reading out scenarios and you will be requested to verbalize the scenarios given to you to ensure that you understand. Thereafter, you will demonstrate the steps of resuscitation on a manikin.

Risks: There will be no risks associated with participation of the study.

Benefits:

To you the participant:

This research will help you through feedback, identify your weak point and work on it.

Information gathered will provide a better understanding of knowledge and skills of nurse mid-wife towards newborn resuscitation and adherence to practice as well as guidance to health-care decision makers wishing to facilitate the development of a successful knowledge and skills application in newborn resuscitation.

To the hospital:

The study has implications for the fight against neonatal mortality as a result of birth asphyxia and meets the sustainable developmental goal 3.

In sharing the data with the hospital, the hospital from its findings can organize for refresher courses of trainings.

Confidentiality: All information will be held in strict confidence. No names of identifying information will be used in any publication of presentations. Participants will not be identified by name and the investigator will not have information about who in the research study.

Participation: Your participation in the study will be voluntary. You can choose to participate or you may choose to withdraw at any time without risk of penalty. I appreciate that I have had the opportunity to discuss this study and my questions have been answered to my satisfaction: I consent to take part in the study with the understanding that I may withdraw at any time without risk of penalty. I have received a signed copy of this consent form. I voluntarily consent to participate in the study.

Participant's Signature: _____ Date_____/_____20_____

Name of Investigator: : _____ Date_____/_____20_____

If you have any questions about the study, please contact BilhaAnjao the investigator on Tel. 0704996566 or E-Mail: *bilhaanjao@gmail.com*

Or if you have any questions about your rights as a research participant, please call Human Subject Administrator, Catherine Okwiri of MOI/MTRHIREC Tel: 0787723677.

Appendix IV: Instrument/ Questionnaire

Questionnaire No: : _____ Date_____/_____20_____

STUDY TITLE: *Determinants of Knowledge and Skills of Midwifes in Basic Newborn Resuscitation in Elgeyo-Marakwet County.*

Your role as a midwife is to shed light on your knowledge in the resuscitation of neonates at the hospital.

Instructions: You are free to participate in this research without any obligations. All information will be treated as confidential and the researcher undertakes not to reveal any individual information that appears in this questionnaire. To complete this 6-page questionnaire, you will take approximately 30 minutes.

All you need to do is to CIRCLE your most appropriate response(s) below:

Section I: Socio-demographic characteristics

Question	Variable	Response
Gender	Female	
	Male	
Age bracket (years)	20-30	
	31-40	
	41-50	
	51-60	
Qualification	Diploma	
	Higher diploma	
	Bachelor degree	
	Other Specify……	
Previous training in Neonatal	No	
	Yes	

Resuscitation		
If yes, which of these training courses	EPLS	
	PALS	
	ETAT+	
	BEmONC	
	Essential new born-care	
	Others Specify: _____	
6. How long have you worked since up-date training on Neonatal	Within 6 months	
	7-12 months	
	Others Specify _____	
If No, Why	Cost of the course is expensive.	
	Have never heard of the course	
	No time off work to attend the course	
Receive support supervision in NR from supervisors?	Yes	
	NO	
If yes, how long ago	Past 6 months	
	7-12 months	
	12months	
	Others specify_____	

Part 2: Knowledge on Basic Newborn Resuscitation

Question	**Response**
About ……% of newborns will require some assistance to begin regular breathing.	
About …….. % of newborns will require extensive resuscitation to survive.	
Careful identification of risk factors during pregnancy and labor can identify all babies who will require resuscitation. True False	
Chest compressions and medications are:	
Rarely	
Frequently needed when resuscitating newborns.	
Before birth, the alveoli in a baby's lungs are	
Collapsed	
Expanded and filled with Fluid/Air	
The air that fills the baby's alveoli during normal transition contains……. % oxygen.	
The air in the baby's lungs causes the pulmonary arterioles to	
Relax	
Constrict so that the oxygen can be absorbed from the alveoli and distributed to all organs.	
If a baby does not begin breathing in response to stimulation, you should assume she is in ……. apnea and you should provide……positive pressure,	
If a baby enters the stage of secondary apnea, her heart rate will	
Rise	
Fall and her blood pressure will	
Rise	
Fall.	
Restoration of adequate ventilation usually will result in a	

Rapid	
Gradual	
Slow improvement in heart rate.	
Resuscitation	
Should	
Should not be delayed until the 1-minute Apgar score is available.	
Every delivery should be attended by at-least…….(number) skilled person (s) whose only responsibility is the management of the newborn.	
If a high-risk delivery is anticipated, at least ……. (number) skilled person (s) whose only responsibility is resuscitation and the management of the baby should be present at the delivery.	
When a depressed newborn is anticipated at a delivery, resuscitation equipment should	
should not be unpacked and ready for use.	
A baby who was meconium-stained and not vigorous at birth had	
meconium suctioned from the trachea and continued to require supplement oxygen to keep oxygen saturation as measure by pulse oximetry (Spo_2) less than 85%. As soon as the heart rate is above 100 bpm, this baby should	
receive routine	
B) post-resuscitation care.	
When twins are expected, there should be…… (number) people present in the delivery room to form the resuscitation team.	
THANK YOU.	

Appendix V:Basic Newborn Resuscitation Equipment Check List.

Hospital Serial Number: _____

Instruction:

1. Mark as appropriate *P* for present, *A* for absent,
2. Condition: *F* for Functional or *NF* for non-functional

Item	Present	Absent	Functional	Non-functional
1. Resuscitation table				
2. Radiant warmer				
3. Towel's minimum two				
4. Mucus extractor				
5. Bulb sucker/ penguin syringe				
6. Face mask 0				
7. Face mask 1				
8. Clock/ Watch				

Appendix VI: Basic-Newborn Resuscitation Scenarios

Participant serial number: _____

Score: 0-Not achieved 1-Achieved

Tick as appropriate.

Scenario One

A term baby is delivered through meconium-stained liquor. The baby is floppy. What will you do?

Action Required	Information	SCORE	
		0	1
1. Place the baby on a warm resuscitaire/keep warm			
2. Look in the mouth of the baby	There is meconium		
3. Suction the baby's mouth	No more meconium visualized		
4. Dry the baby, remove wet cloth and wrap in a dry cloth.	There is no cry to this stimulation. The baby is pale and floppy.		
5. Observe Cry/respiratory effort Tone Colour			
6. Assess air-way by looking in the baby's mouth.	There is nothing in the mouth.		
7. Assess breathing by looking, listening and feeling for breathing.	There is no breathing		
8. Call for help			
9. Give 30 ventilation for 1 minute.			
Total Score			

Appendix VII: Scenario Two.

A term baby is delivered after a caesarean section from a prolonged second stage and low fetal heart rate of below 90 beats per minute. The baby makes no immediate cry as the cord is being cut. There is no meconium. What will you do?

Action Required	Information	SCORE	
		0	1
1. Place the baby on a warm resuscitaire			
2. Dry the baby, remove wet cloth and wrap in a dry cloth.	There is no cry to this stimulation. The baby is floppy and pale.		
3. Observe Cry/respira-tory effort Tone Colour			
4. Assess air-way by looking in the baby's mouth.	There is nothing in the mouth.		
5. Assess breathing by looking, listening and feeling for breathing.	There is no breathing		
6. Call for help			
7. Give 30 ventilation for 1 minute.			
Total Score			

APPENDIX VIII: IREC APPROVAL

MU/MTRH-INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET

Reference: IREC/2018/192
Approval Number: 0003157

27th November, 2018

Bilha Anjao Amdany,
Moi University,
School of Nursing,
P. O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
27 NOV 2018
APPROVED
P.O. BOX 4606-30100 ELDORET

Dear Ms. Amdany,

RE: FORMAL APPROVAL

The MU/MTRH- Institutional Research and Ethics Committee has reviewed your research proposal titled: -

"Evaluation of Knowledge and Skills of Nurse – Midwifes in Basic Newborn Resuscitation at Elgeyo-Marakwet County Hospitals".

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 3157*** on 27th November, 2018. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; hence will expire on 26th November, 2019. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date. You will be required to submit progress report(s) on application for continuation, at the end of the study and any other times as may be recommended by the Committee.

Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. You will also be required to seek further clearance from any other regulatory body/authority that may be appropriate and applicable to the conduct of this study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc CEO - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

APPENDIX IX: HOSPITAL APPROVAL

ELGEYO MARAKWET COUNTY
DEPARTMENT OF HEALTH

Telephone No. 053.42094
Fax No. 053,42240
Email: itenhospital @yahoo.co.uk

MEDICAL SUPERINTENDENT
COUNTY REFERRAL HOSPITAL.
P.O. BOX 332,
ITEN.

DATE: 23rd July, 2019

BILHA ANJAO AMNDANY
P O BOX 3936
ELDORET

RE: AUTHORITY TO CARRY OUT RESEARCH WITHIN THE HOSPITAL

I would like to inform you that your request for permission to carry out research in the facility from the month of December 2018 to February 2019 has been approved. You are expected to adhere to the hospital rules and regulations for the entire period of your research.

Thank you

Yours Sincerely

MEDICAL SUPERINTENDENT
ITEN COUNTY REFERRAL HOSPITAL
JUL 2019
P. O. Box 332-30700,
ITEN

Dr. Benjamin Kimaile
Ag. Medical Superintendent
ITEN COUNTY REFERRAL HOSPITAL