

**ASSESSMENT OF KNOWLEDGE AND PRACTICES ON NEONATAL
RESUSCITATION AMONG MIDWIVES AT KAMPALA**

INTERNATIONAL UNIVERSITY

TEACHING HOSPITAL

**A RESEARCH REPORT SUBMITTED TO UGANDA NURSES AND MIDWIVES
EXAMINATION BOARD IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF DIPLOMA IN
NURSING SCIENCES OF KAMPALA**

INTERNATIONAL

UNIVERSITY

BY

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M15/U011/DNE/017

OCTOBER, 2016

ABSTRACT

A cross sectional descriptive study was carried among midwives at Kampala International University Hospital to assess their knowledge and practices on neonatal resuscitation. A sample size of 30 midwives was used. Midwives were selected by using systematic sampling technique including all midwives who work in the maternity ward and neonatal intensive care unit. More than half 16(53.3%) of the midwives were between 20 – 30 years, only 1(3.3%) was above 50 years of age. All 30(100%) of the respondents were females. A half 15(50%) of the midwives were enrolled with a certificate in midwifery, 9(30%) were registered midwives, while 3(10%) were certificate holders in comprehensive nursing and another 3(10%) were Bachelor holders in nursing sciences. Majority of the midwives 25(83.3%) had last trained in neonatal resuscitation at the nursing school, 3(10%) had last trained in a workshop while only 2(6.7%) had last trained in a CME/CNE. Almost all midwives were knowledgeable on the resuscitation steps of a new born. The respondents had some knowledge on how to place a face mask on the neonate's face. The majority of the midwives 18(60%) evaluated respirations, heart rate and colour of the neonate while 12(40%) were not observed to monitor heart rate. Three quarters 21(70%) of the midwives were observed correctly providing positive pressure ventilation with a resuscitation bag with supplemental oxygen, and a third 9(30%) did not administer epinephrine with continued ventilation and chest compression. The maternity and neonatal intensive care units were equipped with almost all the required resuscitation equipment except the cardiac monitor, carbon dioxide detector (capnograph) and naloxone hydrochloride injection. The researcher concluded that majority of the midwives had substantial good knowledge on neonatal resuscitation and despite the good knowledge, a significant proportion of them 12(40%) lacked skilled practices on resuscitation.

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DECLARATION

I Kembabazi Recheal declare to the best of my knowledge that this research report is my own original work and has never been presented to any institution or examination board for any award. If other people's literature has been used, it is clearly indicated in references.

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APPROVAL FOR SUBMISSION

SUPERVISORS' APPROVAL

This research report has been developed under my guidance and supervision and the study was then carried out and accomplished under my supervision as the University supervisor. I therefore forward it for submission in further consideration.

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DEDICATION

I dedicate this research project to Mr Tukundane Arthur for his endless support and advice throughout the hard times of my carrier training.

Also wish to thank my guardians Mr.Ndyareba.B and Mrs.Ndyareba Jovia for their endless love and support.

ACKNOWLEDGMENT

I extend my heartfelt appreciation to my dear guardians Mr & Mrs Ndyareba for their selfless support and guidance throughout the course of the study. Without you, this course would not have been possible.

Equally I appreciate Hon Mawanda for his endless support and guidance throughout the course of my study.

I am also very grateful to the management of Kampala International University Teaching hospital for granting permission for the study to be carried out in the hospital

Special appreciation is extended to all the midwives and nurses who participated in the study by providing the required data for the study.

Lastly I'm grateful to my supervisor Ms Okereafor Rosemary Uzoamaka for her guidance throughout the process of research.

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ACRONYMS

WHO	World health organization
APGAR	Appearance Pulse Grimace Activity Respiration
USA	United States of America
UK	United Kingdom
MOH	Ministry of Health
NHS	National Health Survey
NRP	National Resuscitation Program
CME	Continuous Medical Education
KIU-TH	Kampala International University Teaching Hospital
UNMEB	Uganda Nurses and Midwives Examination Board
Obs-Gyn	Obstetrics-Gynecology
KIU-WC-SONS	Kampala International University Western Campus School of Nursing sciences

OPERATIONAL DEFINITIONS

Knowledge: Refers to an understanding of the procedures, processes and rationale on assessment, diagnosis and management.

Practice: Refers to the actual manual performance of a specific task in relation to the standard conventional guidelines.

Resuscitation: A procedure in which a new born who fails to initiate spontaneous respiratory and cardiovascular function is assisted to initiate spontaneous respiratory and cardiac activity accompanied by treatment and prevention of complications of failure to initiate respiratory function.

A neonate: Is a new born from 0 days up to 28 days of life.

Neonatal morality rate: is the number of neonates dying before reaching 28 days of age per 1,000 live births in a given year.

A Midwife: Is a health worker specifically trained and qualified to offer reproductive health services, pregnancy, labour, and post natal care as well as young child health care.

CHAPTER ONE

1.1 Introduction

This chapter presents the background information, statement of the problem, study objectives, research questions and justification for the study.

The research aimed to find how related the deaths of neonates after birth from a variety of illness like birth asphyxias have correlation with the Midwives' interventions at the time of birth and the availability of the necessary up-date equipment for timely appropriate intervention and the probable solutions .

1.2 Background information

Birth asphyxia is defined as the failure to initiate and sustain breathing at birth (WHO, 2012). Globally, about one quarter of all neonatal deaths are caused by birth asphyxia. About 40% of deaths in the under five occurred in the neonatal period in 2008 of which asphyxia caused 9% (WHO, 2011).

Birth asphyxia continues to be a global health problem with at least 10% of the babies requiring resuscitation to establish breathing patterns (Ceriani, 2012). WHO 2012 have put guidelines in place for healthcare workers to use to resuscitate neonates and reduce mortality rate. Despite this strategy, the mortality rates are still high and it is not known whether the midwives are directly involved. In the UK, the average rate of birth asphyxia is 3%. Asphyxia contribute to 14.4% death per 100000 live births in USA (NHS, 2008).representing the 10th leading cause of infant mortality, and world-

wide more than 1 million babies die annually from complications of birth asphyxia (Baenziger, 2007).

The African region ranks highest globally with neonatal mortality rate of 45 deaths per 100 live births contributing to 50% of the infant mortality rate in sub-Saharan Africa (Dzadeyson 2007). In his study, Deadeyson (2007) found out that neonatal asphyxia was among the most common causes of neonatal deaths up to 25%. About 10% of the new born require some assistance to begin breathing (Ceriani, 2012) and Studies show that effective resuscitation at birth can prevent a large proportion of these deaths

In Uganda neonatal death resulting from asphyxia is no different from other regions. For example in the first 28 days of life, 30 per 1,000 babies die due to asphyxia related complications (WHO, 2010) and of the 35,000 babies born each year at Mulago Hospital, in Kampala, about 2,500 are admitted to the special baby unit for neonatal resuscitation of whom 12% suffer from birth asphyxia, or difficulty in breathing (MOH, 2008). In Fort Portal, Of the 2,775 babies who were born between April to December 2013, 48 (1.7%) were severely asphyxiated and 9 (19%) out of 48 died within the first 72 hours of birth. (Nsubuga A. G. 2013). Therefore this study assessed the knowledge and practices of Midwives and nurses as it applies to neonatal resuscitation at Kampala International University Teaching Hospital in Western Uganda.

1.3 Statement of the Problem

The Regional Resuscitation Councils (WHO, 2012) devised universally recognized clinical guidelines on basic resuscitation of the newborn, suitable for settings with limited resources. Examples of the guidelines include; Newly-born babies who do not breathe spontaneously after thorough drying should be stimulated by rubbing the back 2-3 times before clamping the cord and initiating positive-pressure ventilation.

In Uganda (MOH, 2010) universally recognized clinical guidelines on basic resuscitation of the newborn adopted these guidelines and emphasizes their implementation by training health workers including 500 midwives and provides equipment needed to resuscitate the neonates born with birth asphyxia.

WHO, (2010) also recommended guidelines for healthcare workers to follow while resuscitating neonates who are born asphyxiated in order to reduce neonatal mortality rate. These guidelines include the initial steps such as providing warmth by receiving the baby and placing him or her under a radiant heat source, positioning the head in a ‘sniffing’ position to open the airway, clearing the airway with a bulb syringe, drying the baby and stimulating breathing. Additionally, the neonate is ventilated by performing positive pressure ventilation using an ambu bag and inflating it at a rate of 40-60 breaths per minute if the baby remains apnoeic or gasping or if the heart rate remains less than 100 b/m after administering the initial steps. The midwife performs chest compressions if the heart rate remains below 60 b/m despite adequate ventilation with supplementary oxygen for 30 seconds. Administer epinephrine either by I.V route (0.01-0.03mg/kg) or through the endotracheal tube (0.05-0.1mg/kg) of a

concentration of 1:10,000(0.1mg) for either routes if the heart rate remains below 60b/m despite effective ventilation and chest compressions and lastly consider volume expanders 10ml/kg) when blood loss is known or suspected.

These initial steps are expected to be completed in the first 60 seconds of birth and are followed by re-evaluating the APGAR score and initiating positive-pressure ventilation if spontaneous respiration is not established. Despite this strategy, the mortality rates are still high.

According to the maternity register at KIU-TH, a total of 50 babies died of poor neonatal resuscitation related complications between the years 2013-2015. Therefore this study assessed their knowledge, practices and availability of up-date appropriate equipment regarding neonatal resuscitation and in order for them to revisit the guidelines formulated to help reduce the neonatal morbidity and mortality rates resulting from poor neonatal resuscitation related complications.

1.4 Purpose of the study

To identify the knowledge and practices of midwives on neonatal resuscitation in the effort to improve neonatal survival rates at KIU-TH

1.4.1 Study Objectives

1.4.2 General objective

To assess the knowledge, practices and availability of up-date appropriate equipment of midwives on neonatal resuscitation at Kampala International University Teaching Hospital

1.4.3 Specific objectives

To assess the knowledge of Midwives towards neonatal resuscitation at Kampala International University Teaching Hospital

To assess the practices of midwives at Kampala International University Teaching Hospital regarding neonatal resuscitation

To assess the availability of up-date appropriate equipment do midwives use on neonatal resuscitation at Kampala International University Teaching Hospital

1.5 Research questions

- i. What knowledge do midwives have regarding resuscitation of the neonate born with asphyxia?
- ii. What practices do midwives carry out at birth to resuscitate neonates born with birth asphyxia?
- iii. What is the available and level of modern equipments used in neonatal resuscitation?

1.6 Justification for the study

Low knowledge and practices of midwives on neonatal resuscitation poses a big threat to new born babies who develop asphyxia. This study will therefore help improve their knowledge and practices regarding neonatal resuscitation and be able save many neonates who develop asphyxia there by reducing neonatal morbidity and mortality rates related to birth asphyxia.

The findings of this study may be used to improve the knowledge and practices of midwives on neonatal resuscitation and help to reduce on morbidity and mortality rates of neonates born with asphyxia. The results may also help the management at Kampala International University Teaching Hospital to re-design strategies and procure modern equipment suiting the local situation that may be used to improve the health of children born with complications arising from poor resuscitation.

The findings will also contribute to the existing body of knowledge for Midwives that will be used as basis for further research, improvement in teaching curriculum for nursing and midwifery education, and a source of reference for other researchers.

The findings of the study will be used by the nursing council to realign strategies for improved quality of nursing training various nursing institutions and better the quality of services provided by nurses at the national level.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter summarizes the literature related to knowledge and practices of midwives on neonatal resuscitation. Sources for this literature included published and unpublished data like research journals, dissertations, and published textbooks. The review was guided by the objectives of the study.

2.2 Knowledge of neonatal resuscitation

Knowledge refers to an understanding of the procedures, processes and rationale on assessment, diagnosis and management of birth asphyxia. Knowledge on neonatal resuscitation is crucial for the survival of neonates who develop birth asphyxia for it helps guide the midwife to know when the neonate is asphyxiated and follow the steps required to resuscitate and revive the neonate. When a midwife lacks that knowledge, it may result in the death of many neonates who develop asphyxia under the supervision of such a midwife (Lena, 2010). In order to reduce on the neonatal and mortality rates of the neonates, MOH recommended that all deliveries be conducted in healthcare units under the supervision of a qualified midwife who is knowledgeable in neonatal resuscitation. However, studies show that some of the midwives have inadequate knowledge regarding diagnosis of birth asphyxia for example, in a study to assess causes of early neonatal death in health facilities in western Uganda, Ssempebwa, (2006) found that of the 150 midwives who took part in the study, 42% did not know how to diagnose birth asphyxia which was

determined by the shortage of knowledge on using the APGAR score which is the fundamental tool used to diagnose birth asphyxia. Those who were not able to diagnose asphyxia were likely to miss the signs, increasing the chances of morbidity and mortality in the early neonatal period.

Additionally, due to inadequate knowledge of health workers on the initial steps of neonatal resuscitation and inadequate training programmes in their schools can pose a terrible threat to new born babies who develop asphyxia at birth. This was revealed in a study conducted to assess the knowledge of health workers on neonatal resuscitation in Kenya, from all the 47 counties each with a county hospital or level IV facility that represent administrative units, on 192 respondents (109 females and 83 males) 71% did not have an experience with neonatal resuscitation. One hundred and sixty three health care personnel (85%) had received some information on neonatal resuscitation. Out of this number only 23 (12%) had formal training. Of those who received formal training, the total course duration averaged 3 hours with almost 50% missing out on practical exposure. When asked on initial steps in resuscitation, ventilation, chest compression, end tracheal intubation and administration of medications and fluids only 68 participants (35.4%) obtained a score of 85% and above, the rest getting them wrong. More than 70% of the participants considered their knowledge about neonatal resuscitation less than average. Not only did they declare that their actual ability to resuscitate was low but they also declared inadequacy in their medical training programmes this implies that

gaps in knowledge and practice of midwives on neonatal resuscitation originate from inadequate practice in training schools. (Murila, 2012).

Lack of knowledge on assessing a new born baby at birth can inhibit effective neonatal resuscitation. This was reported in a survey carried out on 105 midwives in health centre IIIs in Bundibugyo district, to assess their knowledge on assessing and management of birth asphyxia.

Less than 50% had assessed the new born babies and scored them using the APGAR score. It was further reported that, of the babies who had been assessed using this scale, all had only been scored immediately after birth and reassessment had not been done after 5 minutes. In such cases some babies would not be identified in case birth asphyxia develops minutes after the initial assessment. 90% of the midwives indicated that there was no need of carrying out a second assessment if the initial score is good. This indicated that there was shortage in knowledge on the possibility of birth asphyxia occurring after 5 minutes of child birth. (Bundibugyo District Annual Health report 2010).

Laurel et al (2009), in his study on midwives' baseline cognitive knowledge of evidence-based neonatal resuscitation practices and the impact of training programmes on midwife knowledge and retention which involved midwives on the labor ward at Ridge Hospital found a substantial improvement in both written and practical evaluation of neonatal resuscitation skills after training. In view of the above results, if midwives are trained and receive knowledge on basic neonatal

resuscitation, they can retain it for some period and a self sustaining neonatal resuscitation programme can be successfully created in a resource poor environment.

In an educational impact of the neonatal resuscitation programme in low-risk delivery centers in a developing country conducted to evaluate the effectiveness of the American Academy of Pediatric Neonatal Resuscitation Program(NRP) in improving knowledge, skills, and self-efficacy of nurse midwives involving 127 working in low risk clinics in Zambia showed that pre training knowledge and skills scores were relatively low despite their advanced formal training and experience where as the self efficacy scores were high. After training, written scores (knowledge evaluation) improved from 43%-68%; performance scores (skills evaluation) improved the most from 22%-79%. But after 6 months, written and performance scores decreased significantly. Waldemar A. et al (2009). Therefore since there was a decline in knowledge 6 months after the training, the participants had a gap which can affect effective neonatal resuscitation.

2.3 Practices during neonatal resuscitation

Practice refers to the actual performance of the tasks involved in providing skilled resuscitation. Lack of skill on the performing the procedure of resuscitation like sucking the secretions from the baby's air way, chest compression with artificial ventilation and extending the baby's neck may result in midwives wrongly performing resuscitation which might result in death of the new born. These practices

are in form of care given immediately after birth and those after 5 minutes. (Dr. Lenah 2010).

In the study, the mean skill score of midwives was poor (59.2%). This finding was not consistent with a study conducted in Afghanistan. (Kim MY et al 2013) This discrepancy might be due to the availability of simulation-based training, updating training, and certification process before graduation in Afghanistan which is not existed in our case.

The mean skill score of nurses was poor (55.8%). Our finding was similar to that in a study conducted in Western Nigeria (59.8%). (Ogunlesi AT et al, 2008) This might be due to the absence of standardized training during the undergraduate and postgraduate courses.

The mean skill score of pediatric residents was insufficient (47.5%). This finding was consistent with the result in a study from Iran (52%) (Jabir & Doglioni et al, 2009). The low skill level of the residents might be due to lack of training during their undergraduate and postgraduate study. In our study, the percentage of their responses to skill questions was >80% for two questions, 50%–79% for three questions, and <50% for seven questions. Only 4(36.4%) residents attended CPR sessions in their curriculum, 3(27.3%) attended 1–5 real CPR sessions, and 7(63.6%) attended greater than 5 real CPR sessions during the undergraduate course. Four (36.4%) residents got technical training in intubation and no resident defibrillated on a collapsed neonate or intubated neonate.

The mean skill score of obstetric-gynecology (Obs-Gyn) residents was substandardized (55%). This finding was in agreement with a study from Iran (52%) (Jabir & Doglioni et al, 2009). This could be due to inadequate training of Obs-Gyn residents about neonatal resuscitation during their undergraduate and postgraduate courses. In our study, the percentage of their response to skill questions was >80% for three questions, 50%–79% for three questions and <50% for six questions. Only 8 (40%) residents attended CPR sessions in their curriculum, 7 (35%) attended 1–5 real CPR sessions and 12 (60%) attended greater than 5 real CPR sessions during their undergraduate courses. Three (15%) residents got technical training in intubation none of the residents defibrillated on a collapsed neonate and 7 (35%) intubated neonates.

In conclusion, the knowledge and skill levels of midwives, nurses, pediatrics residents and Obs-Gyn residents about neonatal resuscitation were substandardized. There was no significant difference in the knowledge and skill scores of the participants in terms of sex (except knowledge), age, type of profession, qualification, year of services and previous place of work, which may be due to a small sample size. Training in neonatal resuscitation for midwives, nurses, pediatric residents, and Obs-Gyn residents should be emphasized.

2.3.1 Practices immediately after birth of the baby.

An estimated 5 percent to 10 percent of newborns (~10 million) need the initial steps of resuscitation such as tactile stimulation, airway clearing, or positioning. About 3

percent to 6 percent of all newborns (~6 million) need these initial steps as well as assisted ventilation with bag and mask (Wall, Lee, Niermeyer et al, 2009).

In a case-control interventional semi-experimental study, 89 nurses and midwives in Kerman Province Hospitals to assess their practices on neonatal resuscitation, demographic factors and factors that might affect the skills were asked by a questionnaire. Mean scores of the skills assessment increased significantly in the 12 participants who passed both pre-and post test, but theoretical knowledge was not significantly different. The post test scores varied among the hospitals where the participants got the highest scores in tactile stimulation and lowest in non vigorous meconium stained neonate. This study showed that teaching alone may not increase resuscitation skills and knowledge; but other factors like age of the mid wife working experience, exercise and study may have influence too (Niknafs, Nikko (2007).

2.3.2 Practices after five minutes of birth.

Almost half of all newborn deaths are in the first 24 hours after birth, the majority resulting from intrapartum hypoxia, also known as birth asphyxia. This condition, manifesting as the failure of the newborn to establish breathing after birth, kills 814,000 newborns every year, accounting for almost a quarter of newborn death (Black,Counsens, Johnson et al 2010). Less than 1 percent of births (~1.4 million) need advanced resuscitation with endotracheal intubation, chest compression, and drugs (Wall, Lee, Niermeyer et al 2009).

2.4. Availability of equipments

In general, a minimum of equipment is needed for newborn resuscitation. Availability and proper use of a dry towel, bag and mask resuscitator, and a suction device, should be promoted for all births, even at the lower health facility levels and in the community (Newton & English 2006). With this basic equipment and effective pre- and in-service training, successful newborn resuscitation can be accomplished in approximately 95 percent of newborns requiring intervention.

The key equipment for neonatal resuscitation is a self-inflating bag-and-mask, first invented by Ruben in 1954 using bicycle parts (WHO, 2009). Endotracheal intubation may be more effective than bag-and-mask ventilation for severely depressed babies, but this is often not an option in low-resource settings because of a lack of available equipment (working laryngoscope, supply of endotracheal tubes in a variety of sizes) and skills. In addition, these babies may require ongoing ventilation, which is usually not an option.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter presents the method that was used to study the knowledge, and practices of midwives on neonatal resuscitation at Kampala International University Teaching Hospital. It included the study design, study setting, study population, sampling procedure, sample size determination, data collection procedure, data analysis, ethical consideration, anticipated study limitations and dissemination of study findings.

3.2 Study design and rationale

The study design was a cross- sectional design using a systematic sampling technique to select the respondents. The systematic method was mainly focused on the trained Midwives working in the Maternity or Pediatric wards of KIU-TH.

3.3 Study setting and rationale

The study was conducted in Kampala International University Teaching Hospital located in Western Uganda in Bushenyi-Ishaka Municipality. The hospital is situated along Mbarara-Kasese highway. The hospital has a bed capacity of 450 with existing professional Nurses and Midwives totaling to 100 and out of this 30 are midwives. .On average there is 80 deliveries per month. Kampala International University Teaching Hospital was objectively selected for this study due to the high number of deliveries conducted in the facility and the observed common occurrences of deaths arising from birth asphyxia.

3.4: Study Population

The target population of the study was qualified midwives. The accessible population were midwives at Kampala International University Teaching Hospital. The study was carried out on midwives working between (8 am to 5 pm) in the labor and postnatal wards, maternity theater and special care unit, antenatal and family planning clinics. These midwives rotate in all the maternity units and at one time or the other they require to resuscitate a neonate.

3.4.1: Sample Size Determination

Records from the Hospital showed that the total number of midwives working directly with patients and clients (on wards and clinics) are 30. This figure was used to calculate the sample size. The sample size was calculated using the standard formula by Kish and Leslie (1965) for descriptive studies where a fraction of the accessible population was considered.

$$N = \frac{Z^2 pq}{d^2}$$

$Z = 1.96$ (the standard normal deviation at 95% confidence interval)

p = percentage of midwives as compared to the total number of health workers in the Hospital ($30/192 \times 100 = 16\%$)

$q = 1-p, = 1 - 0.1 = 0.84$

d = maximum error the investigator is willing to allow between the estimated prevalence of the problem and the true prevalence in the population (5%).

$$N = \frac{1.96 \times 1.96 \times 0.16 \times 0.84}{0.05 \times 0.05} = 207$$

Since the sample size (207) is more than the total number of Midwives in the Hospital, a modified Kish and Leslie formula (1965) will be used to calculate a new sample size.

$$N = \frac{NZ^2pq}{d^2(N-1) + Z^2pq}$$

Where N= 30 (Total number of midwives in the hospital)

z = 1.96 (the standard normal deviation at 95% confidence interval)

p = percentage of midwives as compared to the total number of health workers in the hospital (30/100 x 100 =16%)

$$q = 1-p = 1 - 0.16 = 0.84$$

d = maximum error the investigator is willing to allow between the estimated prevalence of the problem in the people = 5%.

$$N = \frac{30 \times 1.96 \times 1.96 \times 0.16 \times 0.84}{0.05 \times 0.05(30 - 1) + 1.96 \times 1.96 \times 0.16 \times 0.84}$$

$$N = 26 \text{ respondents.}$$

Since the total number of midwives are 30 and they periodically rotate in various departments, they were all involved in the study in order to bring equal representation of findings as at one time or the other, one was required to resuscitate a new born

baby .This avoided bias as the difference between the total number of midwives (30) and the sample size (26) is 4.

3.4.2: Sampling procedure

At KIU-TH, there are a total of 30 midwives who work in various departments on rotational basis and since the sample size is 26 with a difference of only 4, they were therefore all involved in the study as at any one time or the other, one may be required to resuscitate a neonate.

A systematic sampling technique was used to select the respondents working in labor and postnatal wards, special care unit and maternity theatre, antenatal and family planning clinics between 8:00a.m and 5:00p.m. This sampling technique was utilized to include all the Midwives in the study.

3.4.3: Inclusion Criteria

The study was carried out on Midwives working day shift (8:00 am to 5:00 pm) in the labour and postnatal wards, maternity theater and special care unit, antenatal and family planning clinics.

3.4.4: Exclusion criteria.

The study excluded all midwives who work in administration like the Senior Principal Nursing Officer.

3.5 Definitions of variables

A variable is either a result of force or is itself a force that causes a change in another variable which are called dependant and independent variables respectively. In this research, poor neonatal resuscitation was the independent variable and birth asphyxia was the dependant.

3.6 Research instruments

A structured Questionnaire was used to assess the knowledge and practices of Midwives regarding neonatal resuscitation. Knowledge was measured using statements where the respondents were required to identify whether it is correct or incorrect. Each correct statement earned a respondent a point while the incorrect was not. Practices were measured by asking the respondent to identify the practices they engage that are ideal to the practice. A check list was used to observe actual practices as midwives resuscitate neonates and each correct procedure was awarded a point.

3.7 Data collection procedure

The purpose of the research was explained to each respondent and then requested to volunteer into the study. They were then be given the questionnaires that took about 20-25 minutes to fill. Pre- set questionnaires were administered to the respondents who were requested to write down their responses in the spaces provided in the questionnaire on the same day at any given free time during working hours after which the questionnaires were collected from respondents. This was done to avoid respondents sharing information and duplicating responses. An observation check list

was used to observe the preparation for resuscitation equipment and ticking in the spaces provided if present or not present. Additionally, the participants were observed on the initial steps of neonatal resuscitation during the procedure and whatever step done or not done, a tick shall be indicated in the spaces provided.

This process was repeated on each day of data collection until all the 30 Midwives have been reached

3.7.1 Data management

The questionnaire was first checked for completeness before collecting them from the respondents. The data was then coded and tallied manually according to similarity of responses from the study subjects. A computer program SSPP version 20 software package was used to analyze data.

3.7.2 Data analysis

Data analysis was done manually where by the findings were described and illustrated using frequency distribution tables, pie charts and graphs

3.8 Ethical consideration

An introductory letter was obtained from Kampala International University School of Nursing to the study area. The purpose of the study was explained to the Hospital director Kampala International University Teaching Hospital who later granted permission to carry out the study. Before proceeding with data collection, respondents were briefed on the importance and purpose of the study. Respondents were explained clearly that there were no incentives after data collection. Respondents

were also assured of utmost confidentiality of their responses and that they are free to quit the study at any point if they so wish. Respondents were assured that there are no risks that are exposed to through their participation in the study. The respondents were explained that the only benefit from their participation in the study will participate in reducing the neonatal deaths in the hospital and request respondents to sign consent form before data collection.

3.9 Study Limitations

A problem might be encountered with the Midwives in assessing their knowledge and practices since they may find it revealing their gaps in knowledge and practices and thus biasly refuse to provide the necessary information to make the study successful. This was overcome by thoroughly explaining the purpose and significance of the study.

Research is expensive almost in all its aspects thus it may be hard to meet the research budget. However, this was addressed by soliciting funds from parents, relatives and friends to carry out the study.

This study required ample time in order to get accurate results however there was limited time provided for the study process. Therefore I endeavored to start data collection early.

3.10: Dissemination of findings

When the study was completed, copies of the research report were given to Uganda Nurses and Midwives Examination Board, Kampala International University School of Nursing and KIU-TH.

CHAPTER FOUR: PRESENTATION OF STUDY FINDINGS

4.1 Introduction

This chapter presents findings obtained in the study on assessment of knowledge and practices of midwives on neonatal resuscitation at Kampala International University Teaching Hospital. The findings are described and illustrated using frequency distribution tables, pie-charts and graphs.

4.2 General information

Table i: shows age of respondents

Age range in years	Frequency	Percentage
20 – 30	16	53.3
31 – 40	10	33.3
41 – 50	03	6.7
Above 50	01	6.7
Total	30	100

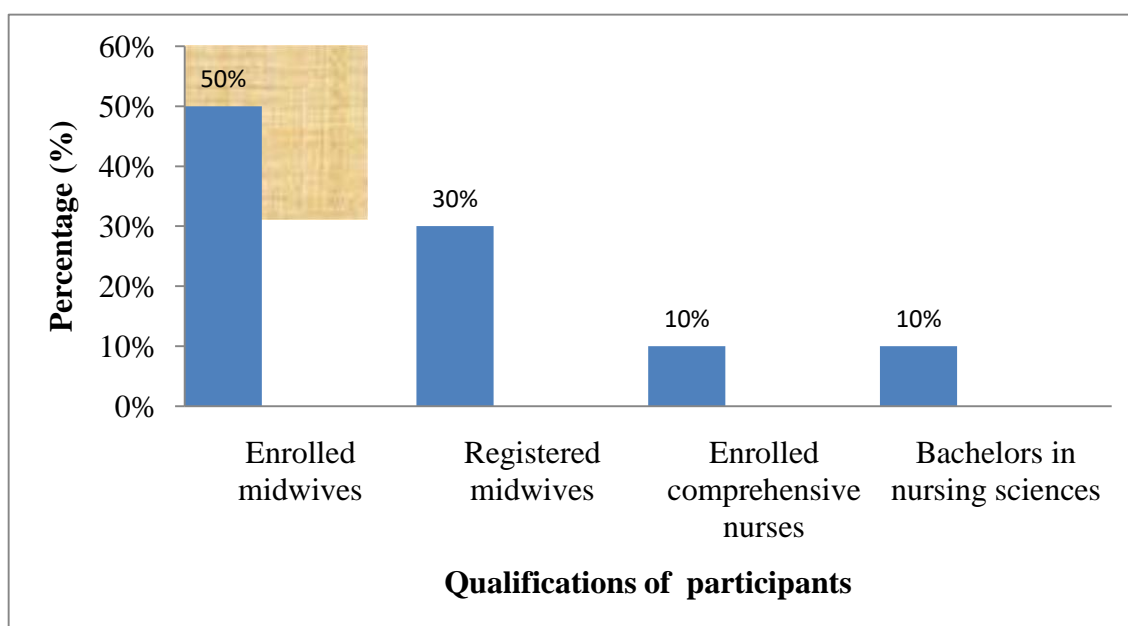
Slightly more than half 16(53.3%) of the midwives were between 20 – 30 years, 10(33.3%) were between 31 – 40 years, only 1(3.3%) was above 50 years of age.

Table ii: shows sex of respondents

Sex	Frequency	Percentage
Female	30	100%
Male	0	0%

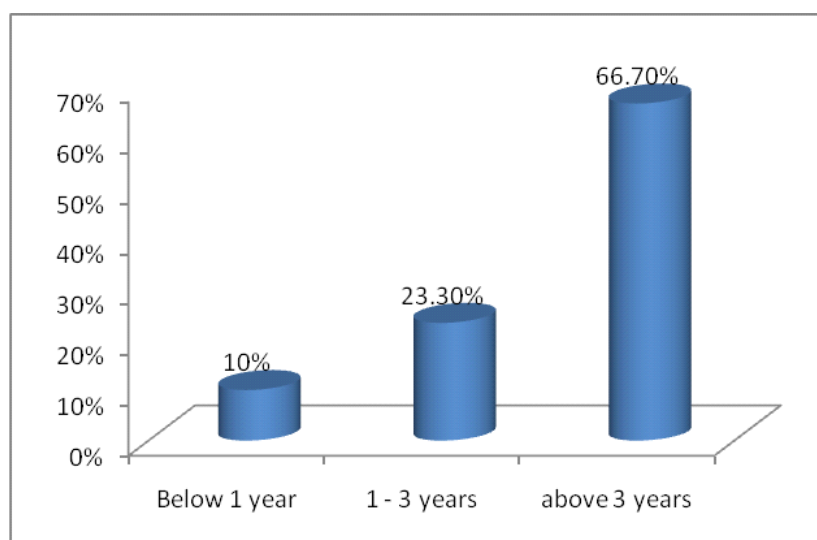
All 30(100%) of the respondents were females, there was no male respondent

Figure i: Shows level of qualification of the midwives



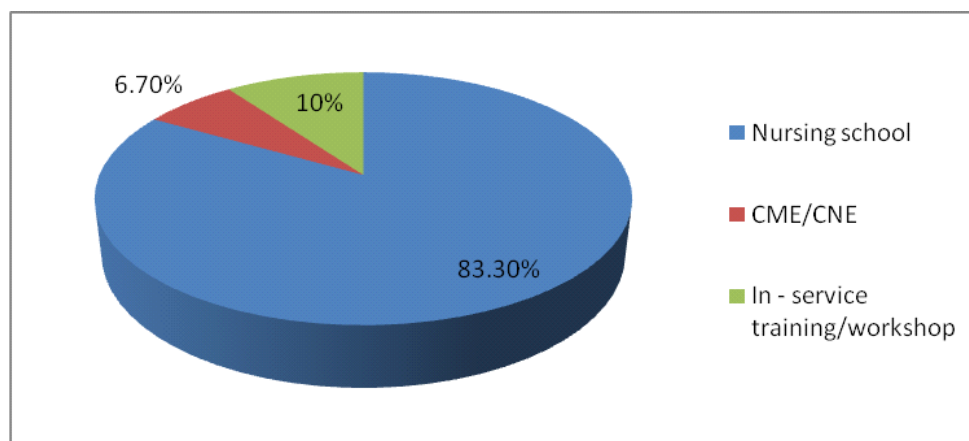
A half 15(50%) of the midwives were enrolled with a certificate in midwifery, a third 9(30%) were registered midwives, 3(10%) were certificate holders in comprehensive nursing and another 3(10%) were Bachelor holders in nursing sciences.

Figure ii: Shows participant's duration in service



Majority of respondents 20(66.7%) had been in service for more than 3 years, while only 3(10%) had been in service for less than a year.

Figure iii: shows place of last training in neonatal resuscitation



Majority of the midwives 25(83.3%) had last trained in neonatal resuscitation at the nursing school, 3(10%) had last trained in a workshop while only 2(6.7%) had last trained in a CME.

4.3 Knowledge on Neonatal Resuscitation.

Table iii: Shows Midwives' knowledge on Neonatal Resuscitation.

Items on knowledge	Correct		Incorrect	
	Frequency	Percentage	Frequency	Percentage
Knowledge on neonates who need resuscitation:				
A newborn that is born at term, has no meconium in the amniotic fluid or on the skin, is breathing well, and has good muscle tone, does or does not need resuscitation.	30	100	00	00
A newborn with meconium in the amniotic fluid and who is not vigorous will need to have a laryngoscope inserted and be suctioned with endotracheal tube	30	100	00	00

A newborn is covered with meconium, is breathing well, has normal muscle tone, has a heart rate of 120 bpm, and is pink; insert a laryngoscope and suction his trachea with an endotracheal tube (correct answer is suction the mouth and nose with a bulb syringe or suction catheter)	21	70	9	30
If baby is in secondary apnea and is not responding to stimulation, the next step is to administer positive-pressure ventilation	30	100	00	00

Almost all midwives were knowledgeable on the resuscitation steps of a new born except knowledge gap was identified on a new born who is covered with meconium but breathing normally with good muscle tone and is pink where

9(30%) of the midwives indicated that the new born should have an endotracheal tube inserted to suction the trachea of mucus while the correct answer was indicated by 21(70%).

Table IV: Shows knowledge of respondents on how to place face mask

Mask is placed on the face so that it covers the nose and mouth, and tip of the chin rests within the rim of the mask.	30	100	00	00
When placing a mask on the newborn's face it is helpful to first cover the nose then cup in the chin (correct answer is the opposite).	3	10	27	90

While holding the mask on the face with the thumb, index and or middle finger encircling the rim of the mask, the ring finger and the thumb lift the chin forward to maintain a patent airway.	30	100	00	00
Anatomically shaped masks should be positioned with the pointed end over the chin in order to form an air tight seal.	6	20	24	80

The respondents had some knowledge on how to place a face mask on the neonate's face. However all the midwives had no knowledge on where to start applying the mask where by almost all 27(90%) were wrong to indicate that it is not helpful to first cover the nose then cup in the chin, while only 6(20%) of the respondents indicated the correct practice of positioning the pointed end of the mask over the chin while the majority 24(80%) indicated an opposite wrong practice.

4.4 ASSESSMENT ON PRACTICES ON NEONATAL RESUSCITATION

Table v: Shows steps in neonatal resuscitation

Steps of neonatal resuscitation				
Initial steps	Done		Not done	
Provide warmth by placing baby under radiant warmer or heat source.	30	100%		
Positioning head by slightly extending the neck in order to clear the airway.	15	50%	15	50%
Drying and stimulating baby to breath.	30	100%		
Evaluating respirations, heart rate and colour.	18	60%	12	40%
Providing positive-pressure ventilation with a resuscitation bag and supplemental oxygen.	21	70%	9	30%
Providing chest compressions as they continue assisted ventilation.	21	70%	9	30%
Administering epinephrine as they continue assisted ventilation and chest compression.	03	10%	27	90%

The majority of the midwives 18(60%) evaluated respirations, heart rate and colour while 12(40%) were not observed to monitor heart rate. Three quarters 21(70%) of the midwives were observed correctly providing positive pressure

ventilation with a resuscitation bag with supplemental oxygen, and a third 9(30%) did not administer epinephrine with continued ventilation and chest compression.

Table VI: Shows preparation of delivery place for neonatal resuscitation

Items	Present	Not present
Staff (responsible for receiving baby).	✓	
Preparation of labor ward.		
Room temperature.	✓	
Radiant warmer or any other heat source.	✓	
Firm, padded resuscitation surface.	✓	
Clock or timer.	✓	
Warmed linen (warn baby clothing and blanket).	✓	
Stethoscope.	✓	
Measuring tape, ½ or ¾ inch.	✓	
Cardiac monitor and electrodes or pulse oximeter and probe.		✓
Oropharyngeal airway tubes.		

Equipment		
Suction equipment		
Bulb syringe.	✓	
Mechanical suction and tubing.	✓	
Suction catheters.	✓	
Feeding tube and 20 mL syringe.	✓	
Meconium aspirator.	✓	
Bag-and –mask equipment.		
Device for delivering positive pressure ventilation.	✓	
Face mask with cushioned rim (newborn and premature sizes).	✓	
Oxygen source with flow meter and tubing.	✓	
Intubation equipment.		
Laryngoscope with straight blades No. 0 (preterm) No. 1 (term).	✓	
Extra bulbs and batteries for laryngoscope.	✓	
Endotracheal tubes.	✓	

Scissors.	✓	
Tape for securing device for Endotracheal tube.	✓	
Alcohol sponges.	✓	
CO ₂ detector or capnograph.		✓
Laryngeal mask.	✓	
Medications.		
Epinephrine, normal saline, or ringer's lactate for volume expansion.	✓	
Naloxone hydrochloride.		✓
Dextrose 10%.	✓	
Umbilical vessel catheterization supplies		
Sterile gloves.	✓	
Scalpel or scissors.	✓	
Antiseptic preparation solution.	✓	
Umbilical tape.	✓	
Umbilical catheters.	✓	

Three-way stopcock.	✓	
Syringes 1, 3, 5, 10, 20, 50 ml.	✓	
Needles, 25, 21, 18 gauge or puncture device for needleless systems.	✓	

The maternity and neonatal intensive care units are equipped with almost all the required resuscitation equipment except the cardiac monitor, carbondioxide detector (capnograph) and naloxone hydrochloride injection.

CHAPTER FIVE: DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion of the study findings obtained from responses of midwives to assess their knowledge and practices on neonatal resuscitations. The researcher attempted to relate the findings of the study with findings of other authors on neonatal resuscitation. At the end of the discussion the researcher made conclusions and recommendations.

5.2 DISCUSSION OF FINDINGS

Slightly more than half 16 (53.3%) of the midwives were between 20 – 30 years, only 1(3.3%) was above 50 years of age. This indicates that most of the obstetric and neonatal care is provided by the young professional midwives. This implies that they could have completed their professional training a few years ago and could be in their early years of professional practice. Young practitioners may be characterized by a narrow spectrum of experience in neonatal resuscitation and still in the process of perfecting their professional skills.

All 30(100%) of the midwives were females, there was no male respondent. This may be due to the fact that training schools have traditionally recruited females to study midwifery and consequently the only ones available for recruitment in midwifery practice. Sex orientation may not have a significant impact on knowledge and practice of a midwife on neonatal resuscitation.

A half 15(50%) of the midwives were enrolled with a certificate in midwifery, a third 9(30%) were registered midwives, while an equal number of them 3(10%) were diploma holders in comprehensive nursing and double trained midwives respectively. This indicates that a significant proportion of practicing midwives are low cadre midwives who may still be in the process of perfecting their professional neonatal care skills. However earlier findings by Waldemar E, et al (2009) in an educational impact of the neonatal resuscitation program in low-risk delivery centres in a developing country conducted to improve knowledge, skills, and self-efficacy of nurse midwives involving 127 working in low risk clinics in Zambia showed that pre training knowledge and skills scores were relatively low despite their advanced formal training.

Majority of respondents 20(66.7%) had been in service for more than 3 years, while only 3(10%) had been in service for less than a year. This implies that almost three quarters of the midwives should have attained the level of professional proficiency for the obstetric and neonatal care.

Majority of the midwives 25(83.3%) had last trained in neonatal resuscitation at the nursing school, 3(10%) had last trained in a workshop while only 2(6.7%) had last trained in a CME/CNE. This implies that there are limited chances at the hospital of strengthening knowledge and skills attained during pre service training. This may result in less chances of adopting new improved methods of performing certain tasks since health care guidelines keep changing as more information and facts are discovered through research and experimentation.

Almost all midwives had good basic cognitive knowledge on the resuscitation steps of a new born. The knowledge gap was only identified on a new born who is covered with meconium but breathing normally with good muscle tone and is pink where 9(30%) of the midwives indicated that the new born should have an endotracheal tube inserted to suction the trachea of mucus while the correct answer was indicated by 21(70%) who indicated that the newborn should be suctioned in the mouth and nose with a bulb syringe or suction catheter. This finding is similar to what was earlier reported by Laurel et al (2009), in his study on midwives' baseline cognitive knowledge of evidence-based neonatal resuscitation practices and the impact of training programs on midwife's knowledge and retention which involved midwives on the labor ward at Ridge Hospital in written evaluation of neonatal resuscitation skills after training. In his study, he noted that if midwives are trained, they receive knowledge on basic neonatal resuscitation, retain it for some period and a self-sustaining neonatal resuscitation programs can be successfully created in a resource poor environment.

All the respondents indicated the correct actions on how to place a mask on the face of the neonate. In addition, the majority of the midwives 18(60%) correctly evaluated respirations heart rate and colour while 12(40%) were not observed to monitor heart rate. Only a third 9(30%) of the midwives were observed correctly providing positive pressure ventilation with a resuscitation bag with supplemental oxygen, and the majority 27(90%) did not administer epinephrine with continued ventilation and chest compression. This indicates that the significant good

knowledge observed among the midwives does not translate into an equivalent good practice. This may be due to the fact that most of the midwives are still young in the profession and are still in the process of perfecting their resuscitation skills. The study findings are similar to the findings of a case-control interventional semi-experimental study by Niknafs, Nikko (2007) on 89 nurses and midwives in Kerman Province Hospitals to assess their practices on neonatal resuscitation in which it was revealed that teaching alone may not increase resuscitation skills and knowledge; but other factors like age of the mid wife working experience, exercise and study may have influence too.

The maternity and neonatal intensive care units are equipped with almost all the required resuscitation equipment except the cardiac monitor, carbondioxide detector (capnograph) and naloxone hydrochloride injection. This was a good observation which indicates that most of the basic equipment necessary for neonatal resuscitation is readily available in both the maternity and neonatal intensive care unit. Therefore if the midwife is knowledgeable enough and skilled in performing the resuscitation on the new born, she would have all what it takes to resuscitate a new born with birth asphyxia and save its life.

5.3 CONCLUSIONS

- i. The majority of the midwives had substantial knowledge on neonatal resuscitation

- ii. Despite the good knowledge, a significant proportion of them 12(40%) were observed to miss some crucial steps on neonatal resuscitation like monitoring heart rate, while the majority 27(90%) did not administer epinephrine with continued ventilation and chest compression.

5.4 RECOMMENDATIONS

- i. Since the hospital already has an established CME/CNE program, it is necessary to include neonatal resuscitation sessions regularly.
- ii. The in charge of maternity in collaboration with the ward doctor in charge should organize regular CMEs on neonatal resuscitation to keep the midwives practically able to offer neonatal resuscitation.
- iii. The maternity ward in charge should put in place a system of inducting new midwives in the maternity on how to offer neonatal resuscitation.
- iv. The Ministry of Health should print and disseminate job aides summarizing the key steps on neonatal resuscitation which must be displayed in all maternity centers especially in resuscitation rooms.
- v. The maternity ward in charge and the other senior midwives in the hospital should regularly provide support supervision on junior staff especially on neonatal resuscitation.
- vi. A neonatal resuscitation team should be formed to ensure sustainable support of midwives on neonatal resuscitation.

- vii. Audit the files of neonates who die shortly after birth to establish the possible cause of death and identify the steps that could have been missed and consequently led to death.
- viii. The hospital medicines procurement unit should regularly order for Naloxone injection.

5.5 Implications to Nursing Practice.

The Nursing council, Uganda Nurses and Midwives Examination Board (UNMEB) and Midwifery training institutions should ensure that before midwives are qualified they should be well knowledgeable and able to practically resuscitate a new born

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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

Dear participant,

I am Kembabazi Recheal a Diploma nursing student of Kampala international university school of Nursing Western Campus. I am conducting a study to assess knowledge and practice on neonatal resuscitation among Midwives at KIU-TH.

You have been chosen to take part in this study. The information generated will be used for academic purposes and by relevant authorities in nursing training.

The questions will take a bit of your time and will require patience. These questions might also require you to give some confidential information however fill free as this will be kept anonymous.

It is important that you try to appropriately answer all questions applicable in your case, your participation in the study is absolutely voluntary but very vital and desirable, you can opt out any time if you so wish without being disadvantaged in any way. The information generated will be strictly confidential and used only for the purpose of the study. In case of any queries, you can call me on 0750635894.

Signature/Thumb prints of participant.....date...../...../2016

Signature of witness/interviewer.....date...../...../2016

APPENDIX II: QUESTIONNAIRE FOR MIDWIVES

KNOWLEDGE AND PRACTICES OF MIDWIVES ON NEONATAL RESUSCITATION AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL

Date:

Questionnaire Number:

Dear respondents, this study is mainly for academic purposes and is seeking to assess knowledge and practices of Midwives regarding neonatal resuscitation.

Please read the questions carefully and answer appropriately and genuinely.

Section A: Demographic characteristics

1. Age in years

2. Sex: Male ☐ Female ☐

3. Qualification

Enrolled Midwife (EM) ☐ Enrolled Comprehensive Nurse (ECN) ☐

Registered Midwife (RM) ☐ Bachelors in Nursing Sciences (BNS) ☐

4. Duration in service in years

5 Unit where working

Labour ward ☐ Postnatal ward ☐ Maternity ward ☐

Antenatal clinic ☐ Special care unit ☐

6. Where were you trained in neonatal resuscitation?

Training school ☐ CME ☐ In-service training ☐
Workshop ☐

7. Number of neonates you have resuscitated in the last two years

.....

8. Section B: Knowledge on Neonatal Resuscitation. Please tick in the box that corresponds to what you know.

Items on knowledge	Correct	Incorrect
i. Knowledge on neonates who need resuscitation:		
ii. A newborn that is born at term, has no meconium in the amniotic fluid or on the skin, is breathing well, and has good muscle tone does or does not need resuscitation.		
iii. A newborn with meconium in the amniotic fluid and who is not vigorous		

	will or will not need to have a laryngoscope inserted and be suctioned with Endotracheal tube		
iv.	A newborn with meconium in the amniotic fluid and who is vigorous will or will not need to have a laryngoscope inserted and be suctioned with an Endotracheal tube		
v.	A newborn is covered with meconium, is breathing well, has normal muscle tone, has a heart rate of 120 bpm, and is pink insert a laryngoscope and suction his trachea with an Endotracheal tube (correct answer is suction the mouth and nose with a bulb syringe or suction catheter)		
vi.	If baby is in secondary apnea and is not responding to stimulation, the next step is to administer positive-pressure ventilation		
vii.	Assessing knowledge on how to place mask on the newborns face		

viii.	Mask is placed on the face so that it covers the nose and mouth, and tip of the chin rests within the rim of the mask		
ix.	When placing a mask on the newborn's face it is helpful to first cover the nose then cup in the chin (correct answer is the opposite).		
x.	While holding the mask on the face with the thumb, index and or middle finger encircling the rim of the mask, the ring figure and the lifts the chin forward to maintain a patent airway		
xi.	Anatomically shaped masks should be positioned with the pointed end over the chin in order to form an air tight seal		

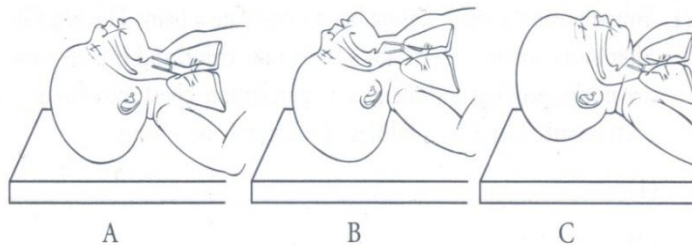
Section C: Assessing knowledge on initial steps

9. A newborn is breathing and cyanotic. The initial steps are; (circle all that applies).

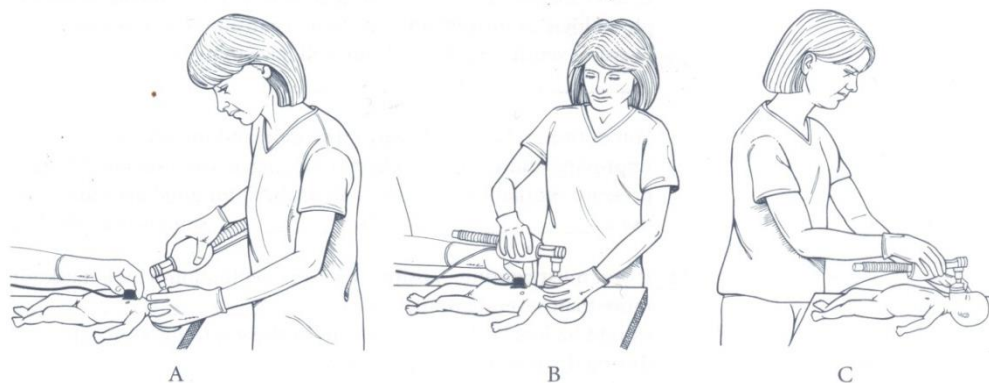
- a. Place the newborn on a radiant heater
- b. Remove all wet linen
- c. Suction his mouth and nose
- d. Give free flow oxygen
- e. Dry and stimulate

Section D: Assessing knowledge on how to carry out positive-pressure ventilation

10. In the illustration below, which baby is positioned properly for positive pressure ventilation?



11. In the illustrations below which one shows the correct positioning for positive pressure ventilation? Please tick all that applies.



CHECK LIST FOR PREPARATION OF DELIVERY PLACE FOR NEONATAL RESUSCITATION

Items	Present	Not present
Staff (responsible for receiving baby)		
Preparation of labor ward		
Room temperature		
Radiant warmer or any other heat source		
Firm, padded resuscitation surface		
Clock or timer		
Warmed linen (warn baby clothing and blanket)		
Stethoscope		
Tape, ½ or ¾ inch		
Cardiac monitor and electrodes or pulse oximeter		

and probe		
Oropharyngeal airways		
Equipment		
Suction equipment		
Bulb syringe		
Mechanical suction and tubing		
Suction catheters		
Feeding tube and 20 ml syringe,		
Meconium aspirator		
Bag-and –mask equipment		
Device for delivering positive pressure ventilation		
Face mask with cushioned rim (newborn and premature sizes)		
Oxygen source with flow meter and tubing		
Intubation equipment		
Laryngoscope with straight blades No. 0 (preterm) No. 1 (term)		
Extra bulbs and batteries for laryngoscope		
Endotracheal tubes		
Scissors		
Tape for securing device for Endotracheal tube		

Alcohol sponges		
CO ₂ detector or capnograph		
Laryngeal mask		
Medications		
Epinephrine normal saline or ringer's lactate for volume expansion		
Naloxone hydrochloride		
Dextrose 10%		
Umbilical vessel catheterization supplies		
Sterile gloves		
Scalpel or scissors		
Antiseptic prep solution		
Umbilical tape		
Umbilical catheters		
Three-way stopcock		
Syringes 1, 3, 5, 10, 20, 60 ml		
Needles, 25, 21, 18 gauge or puncture device for needleless systems		

Check List for Initial Steps for Neonatal Resuscitation

Check list number: Date:

Steps of neonatal resuscitation		
Initial steps	Done	Not done
Provide warmth by placing baby under radiant warmer or heat source		
Positioning head by slightly extending the neck in order to clear the airway		
Dry and stimulating baby to breath		
Evaluating respirations, heart rate and color		
Provide positive-pressure ventilation with a resuscitation bag and supplemental oxygen		
Provide chest compressions as they continue assisted ventilation		
Administer epinephrine as they continue assisted ventilation and chest compression		

APPENDIX III: LETTER OF APPROVAL



KAMPALA INTERNATIONAL
UNIVERSITY
WESTERN CAMPUS

School of Nursing Sciences,
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Tel: +256 (0) 704113921
E-mail: elibethy2002@gmail.com
Website: <http://www.kiu.ac.ug>

OFFICE OF THE DEAN SCHOOL OF NURSING SCIENCES

TO WHOM IT MAY CONCERN

Dear Sir /Madam

Re: KEMBABAZI RECHEAL DNS/E/0035/152/DU


The above mentioned is a student of Kampala International University undertaking Diploma in Nursing Sciences Extension program and she is in her final academic year.

She is recommended to carry out data collection as a partial fulfillment for the award of the Diploma in Nursing.

Her topic is; **ASSESSMENT OF KNOWLEDGE AND PRACTICES ON NEONATAL RESUSCITATION AMONG MIDWIVES AT KAMPALA INTERNATIONAL UNIVERSITY-TEACHING HOSPITAL.**

Any assistance rendered to her will be highly appreciated

Thank you in advance for the positive response


Apondi Winfred
Administrator school of Nursing Sciences



"Exploring the Heights"

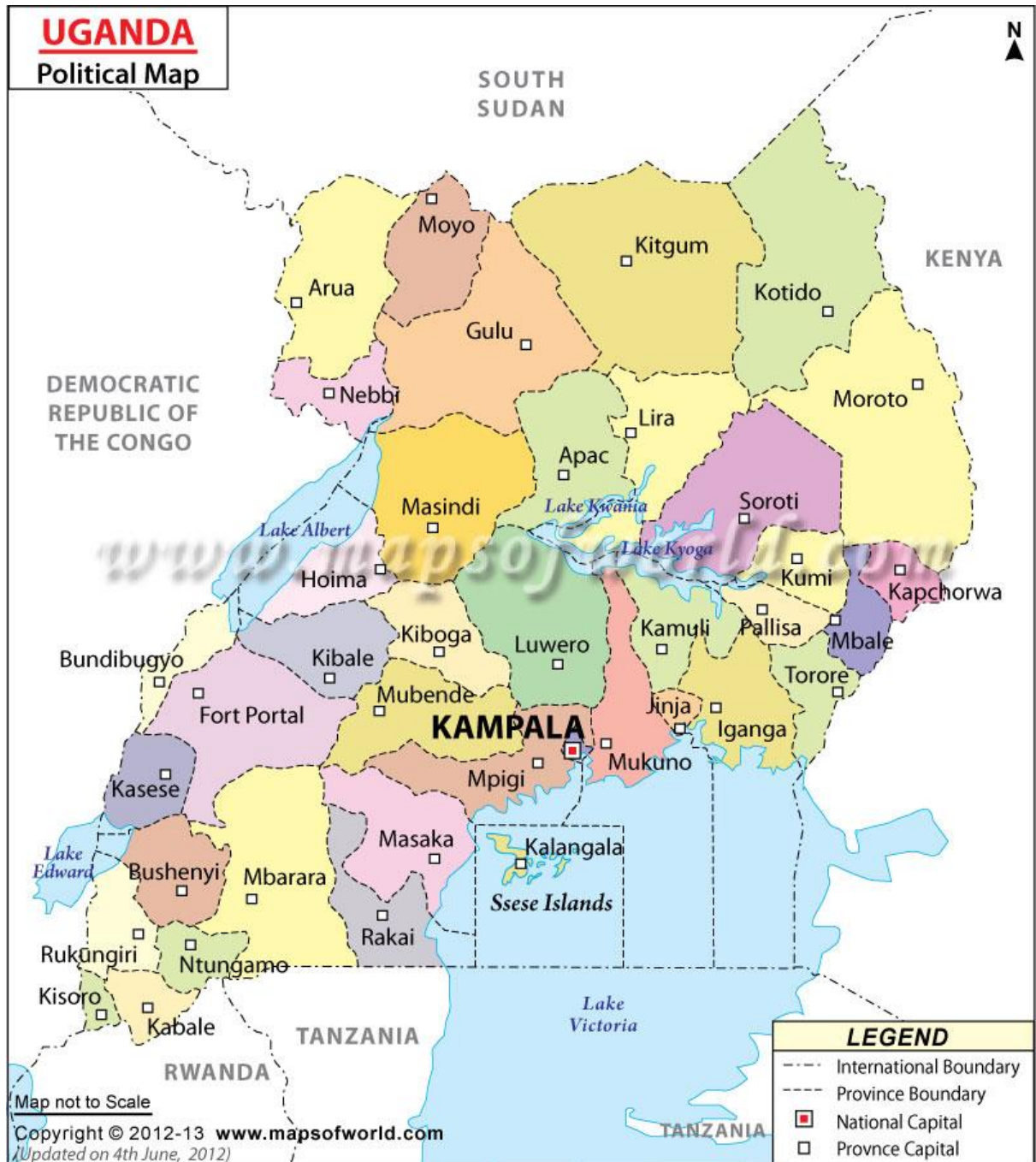
APPENDIX IV: RESEARCH WORKPLAN

ACTIVITY	STUDY PERIOD 2016						
	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT
Topic Formulation & approval							
Proposal Writing							
Proposal Approval							
Data Collection							
Data analysis							
Report development							
Submission of Report							

APPENDIX V: RESEARCH BUDGET

	Activity(s)	Description / Justification	Responsible person	Unit cost	No .	Total Cost (Ugshs)
1	Pre Proposal development					
	Laptop	Hiring laptop will ease literature review and research	Principle researcher	100,000/=	1	100,000/=
2	Proposal development					
	Internet bundles	Will be required during Literature review	Principle researcher	20,000/=		20,000/=
	Editing and printing	Review by other research assistants and supervisors for development of the research	Principle researcher	15,000/=	2	30,000/=
3	Data collection					
	Transport	Transport to and fro the district	Principle researcher	30,000/=	4	120,000/=
4	Data analysis					
	Statistical analysis			100,000/=	1	100,000/=
5	Report writing					
	Typing and printing	Three copies of the report made	Principle researcher	20,000/=	3	60,000/=
	Total					430,000/=

APPENDIX VI: MAP OF UGANDA



APPENDIX VII: MAP OF BUSHENYI-ISHAKA MUNICIPALITY



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