ADDIS ABABA UNIVERSITY

COLLAGE OF HEALTH SCIENCE

DEPARTMENT OF NURSING AND MIDWIFERY

ASSESSMENT OF KNOWLEDGE AND PRACTICE OF MIDWIVES TOWARDS CARE OF NEW BORN WITH ASPHYXIA IN ADDIS ABABA HEALTH SERVICES, ETHIOPIA.

BY

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A Thesis Submitted To School Of Graduate Study Of Addis Ababa University Collage Of Health Science Department Of Nursing And Midwifery For The Partial Fulfillment Of The Requirements For The Degree Of Masters of Science In Maternal And Reproductive Health Nursing.

JUNE, 2012

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This thesis by **Tsedale Sentayehu Lemeneh** is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters of Science in Maternal and Reproductive Health Nursing.

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LIST OF ACRONYM

WHO World Health Organization

NR New born Resuscitation

NRP Neonatal Resuscitation Program

PNA Perinatal Asphyxia

HIE Hypoxic-Ischemic Encephalopathy

SPSS Statistical Package For Social Sciences

OR Odds Ratio

Epi Info Epidemiological Information

CI Confidence Interval

EFM Electronic Fetal Monitoring

CTG Cardiotocography

RD Respiratory Distress

RDS Respiratory Distress Syndrome

CPR Cardio Pulmonary Resuscitation

FHR Fetal Heart Rate

CP Cerebral Palsy

AAU Addis Ababa University

EMA Ethiopian Midwife Association

MOH Ministry Of Health

ENC Essential New Born Care

ABSTRACT

Background: In resource-rich countries, the incidence of severe perinatal asphyxia (causing death or severe neurological impairment) is about 1/1000 live births. In resource-poor countries, perinatal asphyxia is probably much more common. Data from hospital-based studies in such settings suggest an incidence of 5–10/1000 live births. Knowledge and skill of midwives has a great impact in prevention and management of perinatal asphyxia and decrease neonatal mortality rate. Yet there is no studies were conducted in Ethiopia to assess the knowledge and practice of midwives towards care of new born with asphyxia .Therefore this study was designed to investigate the level of knowledge and identify the resuscitation skill on new born with asphyxia. **Objective:** Assessment of knowledge and practice of midwives towards care of new born with asphyxia in Addis Ababa health services. **Methods:** Institutional based cross sectional study was conducted in Addis Ababa health service. There are 265 midwives who work in Addis Ababa health services since the attributes being measured are not distributed normally the entire population was surveyed. Among776 the health services in Addis Ababa 58 have midwives; 6 public, one army, one police and 22 private hospitals, 23 health center and 5 private clinics. All midwives from all institutions was included in the study. Data was collected from 253 midwives at the health service using self administered structured questionnaire. Data collectors were trained on how to use the data collection instrument, approach study participant. **Result:** On this study 253 midwives were participated .The result of the study showed that the level of knowledge of asphyxia was low. Only 37.5% of midwives attained high overall knowledge score. Statically significant association was found between high knowledge score and service year>21 year (OR=3.17895% CI=1.068, 9.466) p-value 0.038 compared to service year<21 years. Overall practice of midwives scoring favorable practice was 53.4% .the finding revealed Statically significant association between high score practice and age of midwives45-54years of age (OR=8.308 ,95%CI 1.557,44.32)P=.013 and place of work health center (OR=1.895 95%CI 1.o72,3.349)p=.028 when compared to other place work. **Conclusion and Recommendation** Generally overall knowledge and new born resuscitation practice of midwives were low in Addis Ababa health services. So incorporating and new born resuscitation in continuing education and professional training programs is recommended. Strength and integrate new born resuscitation with routine service through providing training for all midwives.

1. INTRODUCTION

1.1 BACKGROUND

Asphyxia is an insult to the fetus / Newborn due to Lack of oxygen (Hypoxia) or Lack of perfusion(Ischemia)to various organ .It is also defined as failure to establish effective breathing at one minute of age (APGAR score0-6)(1).

Birth asphyxia is a serious clinical problem worldwide. Each year approximately 4 million babies are born asphyxiated, which results in 1 million deaths and an equal number of serious neurological sequels, such as cerebral palsy, mental retardation and epilepsy (2).

Ninety percent of perinatal asphyxia is caused by placental insufficiency that is inability of placenta to provide adequate oxygen and remove co_2 from the fetus. Remaining 10% is secondary to cardiovascular, neurological and pulmonary abnormality. Complications of perinatal asphyxia are neuromuscular dysfunction, persistent pulmonary hypertension renal tubule infarction nephrons and cortico medullary necrosis, stress gastric ulcer necrotizing entrocolitis, intestinal perforation and diffused intravascular coagulation. Worldwide, more than 1 million babies die annually from complications of perinatal asphyxia (2).

The prognosis of perinatal asphyxia is depends on the severity of the asphyxia. Only a minority of infants with severe encephalopathy after perinatal asphyxia survive without handicap. However, there are limited population-based data on long-term outcomes after perinatal asphyxia, such as cerebral palsy, developmental delay, visual and hearing impairment, and learning and behavioral problems. After an asphyxia event, there may be an opportunity to intervene to minimize brain damage. The first phase of brain damage early cell death results from primary exhaustion of the cellular energy stores. Early cell death can occur within minutes. Immediate resuscitation to restore oxygen supply and blood circulation aims to limit the extent of this damage. A secondary phase of neuronal injury may occur several hours after the initial insult. The mechanisms believed to be important in this process include oxygen free radical production, intracellular calcium

entry, and apoptosis. Treatments during the post resuscitation phase aim to block these processes, thereby limiting secondary cell damage and minimizing the extent of any brain damage (2).

In developing countries 4 to 9 million infants per year experience birth asphyxia, and only about 1 to 2 million are resuscitated successfully. There are 1 million neonatal deaths resulting from birth asphyxia each year which contribute to 20-40% of all neonatal death. Many factors contribute to the high incidence of birth asphyxia in developing countries poor health of pregnant women, higher prevalence of pregnancy and labor complication inadequate care during labor and delivery and high rate of prematurity. The lack of proper resuscitation is another major factor contributing to asphyxia related death .In addition there is severe shortage of skilled personnel and equipment .Ninety percent of perinatal asphyxia is due to placental insufficiency that is inability of placenta to provide adequate oxygen and remove co_2 from the fetus. Remaining 10%is secondary to cardiovascular and neurological abnormality (2).

Perinatal asphyxia can frequently be avoided by good obstetric and neonatal care. Needless to say that, the main preventive measure during perinatal period is much better than a sophisticate care provided to an asphyxiated new born. Primary prevention like perinatal assessment of changing fetus and placental condition by clinical assessment and ultrasonography to pick up any potential problem and acting promptly are the hall marks of preventing perinatal asphyxia and secondary prevention is most important preventive measure of asphyxia is effective new born resuscitation (1).

In recent years great strides have been made to decrease the number of death from birth asphyxia. A number of countries initiated training program to improve resuscitation skill at the grass root level .In addition to the earlier efforts of WHO and UNICEF the neonatal resuscitation program (NRP), developed by the American academy of pediatrics and American heart association, has been adopted in its full or modified form by over 72 countries worldwide including India and china. In India the NRP has become a standard skill training module for the last 15 years .A significant reduction in deaths related to birth asphyxia after NRP training was reported in a study in India. China recently declares NRP to be a national priority. It is expected that NRP will have a major impact in reducing

asphyxia related deaths globally in years to come. The bag and mask is the most useful device for resuscitation providing long term ventilator .the use of bag and mask or mouth to mask devices in NR is an example of low cost technology that has a major impact on new born resuscitation outcome (2).

1.2 STATEMENT OF THE PROBLEM

Globally four million newborns die before they reach one month of age and another four million are stillborn each year .Most of death occur in developing countries . Death during the neonatal period account for almost 2/3 of all death in the first year of life and most of this death could be prevented through proven cost effective intervention (1).

Asphyxia is one of the three major killers of infants less than one month of age and it is responsible for around 23% of perinatal death. Incidence of perinatal asphyxia in developed countries1-1.5%. Nine percent of infants <36 weeks of gestation are prone to develop perinatal asphyxia. In western scenario perinatal asphyxia cause 20% still birth and postnatal mortality 50 % .The incidence in India is 10% perinatal death 26% stillbirth and postnatal mortality 59 % (1).

Perinatal asphyxia is the usual cause of cerebral palsy in term babies. However, the epidemiological study indicate that only 10% caused by intra partum asphyxia .These studies show that a large proportion of cerebral palsy causes are associated with maternal and antenatal factor. Cerebral palsy in term babies is thought to be caused exclusively by asphyxia at birth and is preventable if detected early (2).

In Africa perinatal asphyxia is one of the three leading cause of neonatal death: infection 39 %, preterm 25% and asphyxia 24% (3).

Perinatal asphyxia may cause developmental delays that may affect quality of life, ability to work or even the capacity to live independently. If the perinatal asphyxia is severe, an infant may die, or survive with life-long neurological disabilities, most often cerebral palsy (3).

Descriptive, prospective study was conducted in the Department of Pediatrics, Isra University Hospital, Hyderabad Pakistan,125 newborn admitted to the neonatal care unit,

who were delivered with delayed cry or low APGAR score (<7) were included. Risk of neonatal encephalopathy increased with increasing or decreasing maternal age. Lack of antenatal care, poor nutritional status, ante partum hemorrhage and maternal toxemia were associated with higher incidence of asphyxia. Improvements in the public health of women with associated gains in female growth and nutrition must remain a longer-term goal. Early identification of high-risk cases with improved antenatal and perinatal care can decrease such high mortality. Safe motherhood policy is recommended (4).

A recent community based study in Zimbabwe which audited perinatal mortality showed the commonest single cause was perinatal asphyxia and an avoidable factor was detected in 76% of cases (4).

Birth asphyxia is a serious clinical problem worldwide. Each year approximately 4 million babies are born asphyxiated, which results in 1 million deaths and an equal number of serious neurological squeal, such as seizures, cerebral palsy, mental retardation, and epilepsy (4).

Most of the neonatal deaths can be prevented through low-cost, evidence-based effective procedures that do not need highly technical training or sophisticated equipment and it can be fitted within the framework of existing maternal and child health programs (4).

In Ethiopia newborn death is caused by infections (32%), birth asphyxia (29%) and complications of prematurity (24%) (5).

A study done in Developing Country, Zambia, on Newborn Care Training of Midwives and Neonatal and Perinatal Mortality Rates. A total of 71 689 neonates were enrolled in the 3 study periods. All-cases, 7-day neonatal mortality rates decreased from 11.5 to 6.8 deaths per 1000 live births after ENC training, because of decrease in rate of deaths due to birth asphyxia and infection, but stillbirth rates not decreased. The 7-day neonatal mortality rate was decreased further after Neonatal Resuscitation Program training. Additional in-depth basic training in neonatal resuscitation may reduce mortality rates further (6).

The midwife may recognize the potential for neonatal compromise according to the known maternal or fetal risk factor however; the need for neonatal resuscitation can occur without

any warning, predisposing factor or obvious cause thus emphasizing the importance for all midwives to be trained in practice the skill of neonatal resuscitation. The midwife must know how to do this weather in hospital or in community .Training the midwives in neonatal care reduces early neonatal mortality rates for infants born in low risk, first-level facilities (7).

Even though, knowledge and skill of midwives has a great impact in prevention and management of asphyxia and decrease neonatal mortality rate through skillful neonatal resuscitation, many studies in Brazil and Zambia(19,21), show that pre service training in school is insufficient during graduation.

In Ethiopia there is no published data on assessment of knowledge and practice of midwives towards care of new born with asphyxia. The purpose of this study is to fill the research gap on the assessment of knowledge and practice of midwifes towards care of newborn with asphyxia.

1.3 SIGNIFICANCE OF THE STUDY

This study will be important for different stakeholders addressing the issues related to neonatal morbidity and mortality, for participants as well increase awareness towards asphyxia. It gives dependable input to arrange different types of trainings which will change new born resuscitation practice. Any researchers or professionals working with similar topics of related discovery can use this work as baseline data. It will give good background to adjust their service based on the actual data to arrange different training programs to fulfill the gap. Finally this will help to revise Curricular content for nursing and midwifery department particularly maternal and reproductive health nursing regarding knowledge and practice of midwives towards care of new born with asphyxia by integrating into baccalaureate and masters level in their courses.

2. LITERATURE REVIEW

World health organization (WHO) defines asphyxia as “failure to initiate and sustain breathing at birth”. Asphyxia occurs when an inadequate amount of oxygen is delivered to the fetus .It is the third major cause of neonatal death in developing countries and accounts for an estimated 23% of the annual 4 million neonatal death(8).

WHO estimates that 3% of the approximately 120 million infants born every year in developing countries develop birth asphyxia and require resuscitation .Of these an estimated 9,00,000 die each year. Babies in high neonatal mortality rate countries have an estimated eight times higher risk than babies in low neonatal mortality rate settings. According to published studies from 20 developing countries from 1989-2004, it is estimated that 24%-61% of perinatal mortality is attributable to asphyxia (9).

In less developed countries perinatal asphyxia remains a major cause of death and disability. The pattern of risk factors, the nature of sequel, and the options and priorities for intervention both preventive and therapeutic are significantly different than in the industrialized world. From a public health perspective perinatal asphyxia presents a difficult range of problems to health Professionals and policymakers. Seven million perinatal deaths occur each year, mostly in developing countries.' Nearly 4 million newborns suffer moderate to severe birth asphyxia, with 'at least 800, 000 dying and at least an equal number developing sequel such as epilepsy, mental retardation cerebral palsy and learning disabilities (10).

To summarize above studies shows that asphyxia is the major cause of death worldwide and also leading cause of neonatal death in developing countries and caused by different factors maternal, placental and fetal early identification of those factors decrease neonatal mortality rate Vaginal bleeding was strongly associated with birth asphyxia.

A common assumption is that perinatal asphyxia is the usual cause of cerebral palsy (CP) in term babies. However, the epidemiological studies indicate that only about 10 per cent of cases were caused by intra partum asphyxia .These studies show that a large proportion of cerebral palsy cases are associated with maternal and antenatal factors such as

prematurity (limited essential fatty acids for brain growth in preterm intents), intrauterine growth restriction, intrauterine infection, fetal coagulation disorders, multiple pregnancy, ante partum hemorrhage, breech presentation, and chromosomal congenital anomalies(11).

To sum up the above studies have two opposing idea on cerebral palsy some says perinatal asphyxia is the usual cause of perinatal asphyxia American collage of obstetric and gynecologist in collaboration of American Academy of pediatrics, confirm that intrapartum hypoxia is uncommonly the sole cause of neonatal CP.

A cross sectional survey was conducted to assess the knowledge and practices on birth asphyxia among matrons and nurse chief in Mali. The result of the study showed that the staff had adequate knowledge on the main signs of birth asphyxia, such as bluish discoloration (69.7%), irregular or lack of breath (69.7%) & lack of cry (63.6%) and prolonged labor (63,7%), the infection/malaria of mother (60,7%) and the Dystocic delivery (45,5%) were the mostly reported causes of birth asphyxia. They had (70%) of good practices of resuscitation. The study concluded that the improvement of neonatal mortality requires the training of the staff and equipment of the centers (12).

A study done in Ghana using Matched Case-Control study to evaluation the Knowledge and Skills of Midwives two years after graduation. As with the knowledge score analyses, because there were some imbalances between the groups in terms of age, number of years on the job, and level of training before midwifery school. Analyses on each of the skill subscales were re-run with these variables as covariates were included. The performance of midwives in both the intervention and control groups indicated that even if they are more competent and knowledgeable as a result of improvements in pre service education, their performance ultimately also depends upon the environmental factors that they encounter when they work at the health facilities to which they are employed. For example, some sites lacked adequate resources (not enough Ambu bags for infant resuscitation). Clearly, these constraints create challenges for midwives who are trying to perform their jobs and maintain their resuscitation skills. Finally, intervention group midwives performed better resuscitation skills overall, doing 61% of the skills correctly, compared to 58% for control

group midwives. No one performed all of the 36 critical steps correctly, and the majority of midwives missed one-third of the critical steps. A closer look at the missed critical steps revealed that only about half of the midwives from both groups performed newborn resuscitation critical steps correctly (13).

A cross-sectional study involving qualitative observation done in Cambodia: using International Guidelines Checklist for Neonatal Resuscitation Standard Performance. The research respondents were the 355 trainees composed of 328 midwives, 9medical doctors, 10 medical assistants, and 8 nurses. The pre-test mean score of 43.85 is indicative that all participants low competence in terms of neonatal resuscitation knowledge before NRP training. The neonatal resuscitation theoretical knowledge of the trainees before the training was very low, (mean= 43.85). Immediately after the training it has significantly improved (mean= 85.16).The post-test mean score of 85.16 decline to 69.9% during the post-course follow-up assessment of the trainees. Average in practical skills assessment the mean score of 70.45 implies that majority of the health care professionals in Cambodia have below average competence in practical skills as time passes. The practical skills of medical doctors 77.55 were higher than that of the midwives 70.36. There was only a slight correlation between theoretical knowledge and practical skills of the respondents .The below average competence was attributed to the lack of post-training support and supervision, unavailability of resuscitation manikins and equipment at health facilities, educational level of the midwives, some NRP trained health workers not assigned in delivery related services, and the preference of pregnant women to be assisted by traditional birth attendants (TBAs) over midwives during delivery(14).

To conclude Neonatal Resuscitation Program training has significantly improved the NR theoretical knowledge of the trainees and has tremendous impact on the knowledge improvement of the healthcare professional. However, both theoretical knowledge and practical skills of the trainees deteriorate over time. Their theoretical knowledge was found to decline faster than their practical skills, which means, the retention of psychomotor skills was higher than the retention of theoretical knowledge, educational level of the midwives is one factor for decline in knowledge retention. Other variables like age,

number of years on the job, and level of training before midwifery school, have impact on knowledge score. Performance of midwives ultimately also depends upon the environmental factors that they encounter when they work at the health facilities to which they are deployed.

A study was conducted in the Cirebon district of Indonesia, community midwives were trained to resuscitate newborns delivered at home using a basic, locally produced tube- and mask resuscitation device. The study evaluated the impact on asphyxia- specific newborn mortality, the knowledge and skills retained by trained midwives and the health system features that affected the management of birth asphyxia. The results of the study are before and after comparison found a significant 47% decrease in neonatal mortality due to birth asphyxia and by including resuscitation review and refresher training into routine supervision, community midwives maintained knowledge and resuscitation skills three, six and nine months after training(15)

An interventional study in West Africa Ghana on to evaluate the effectiveness of a strategy for teaching neonatal resuscitation on the cognitive knowledge of health professionals among(18 nurse anaesthetists,55 nurses, 68 physicians, and 130 midwives) who attend deliveries . The highest improvement occurred in nurses and midwives, but the performance of midwives at primary health facilities was significantly lower than those at secondary and tertiary facilities. The median pre-training and post-training scores were the median pre-training and post-training scores were 38% and 71% for midwives ,43% and 81% for nurses ,52% and 90% for nurse anesthetists, and 62% and 98% for physicians. Nurses and midwives demonstrated the least cognitive knowledge before training, but also the highest improvement in cognitive knowledge following training. All groups of the 271 professionals the course showed significant improvement ($p < 0.001$) in median post-training test scores. Midwives at primary health care facilities were less likely to achieve passing post-test scores than midwives at secondary and tertiary facilities [35/53 vs. 24/26 vs. 45/51 ($p = 0.004$)] respectively (16).

A cross sectional study done in Pakistan on Evaluation of health workforce competence in maternal and neonatal issues in public health sector of Pakistan. Assessments of their training need the mean percentage scores of health care provider for knowledge towards neonatal resuscitation 52.7 (S.D ± 19.1). Mean scores of health care provider in knowledge at the district level varied. Health professionals working one district had the least mean score of 33.7 (S.D ± 9.6) and in other district score highest of 61.0 (SD ± 10.5) .The health facility assessment reflected disparity among districts in provision of health care facilities (including trained personnel, medicine, equipment and ancillary services). Insufficient and inconsistent resource allocation is one of the major factors among many, contributing to the disparity. All health care providers performed poorly in the resuscitation skill and only 50% were able to demonstrate steps of immediate newborn care. Only 50 per cent of leady health workers (LHWs) could secure competency scale in this critical component of skills assessment (17).

To sum up the above findings health care providers working in district score below competency levels for knowledge and skills. The health facility assessment reflected disparity among districts in provision of health care facilities (including trained personnel, medicine, equipment and ancillary services). Standardized training modified to the needs and resources at district level need to be developed and implemented. This evaluation highlighted the need for periodic assessment of health worker training and skills to address gaps and develop targeted continuing education modules. The performance of midwives at primary health facilities may have resulted from the extensive information presented in a relatively short period of time. Many of these midwives were not familiar with current newborn resuscitation principles and some had never used a resuscitation bag.

A randomize true experimental study design study done in Canada on undergraduate medical students .The result shows Knowledge retention does not decline at the same rate that practical skill retention declines and in many cases remains high, while retention of skills decreases substantially. There was no significant difference at the <.05 probability level between the mean scores on Knowledge for the study groups. This result suggests that there was no significant difference in the level of neonatal resuscitation knowledge

between the two study groups prior to being exposed to the booster strategies .There was also a significant deterioration in the level of neonatal skill retention for both study groups over the 8 month period. Exposure to the booster Strategies did not appear to maintain the skill level of the students from either study group to the level they had achieved immediately following the initial NRP course (18).

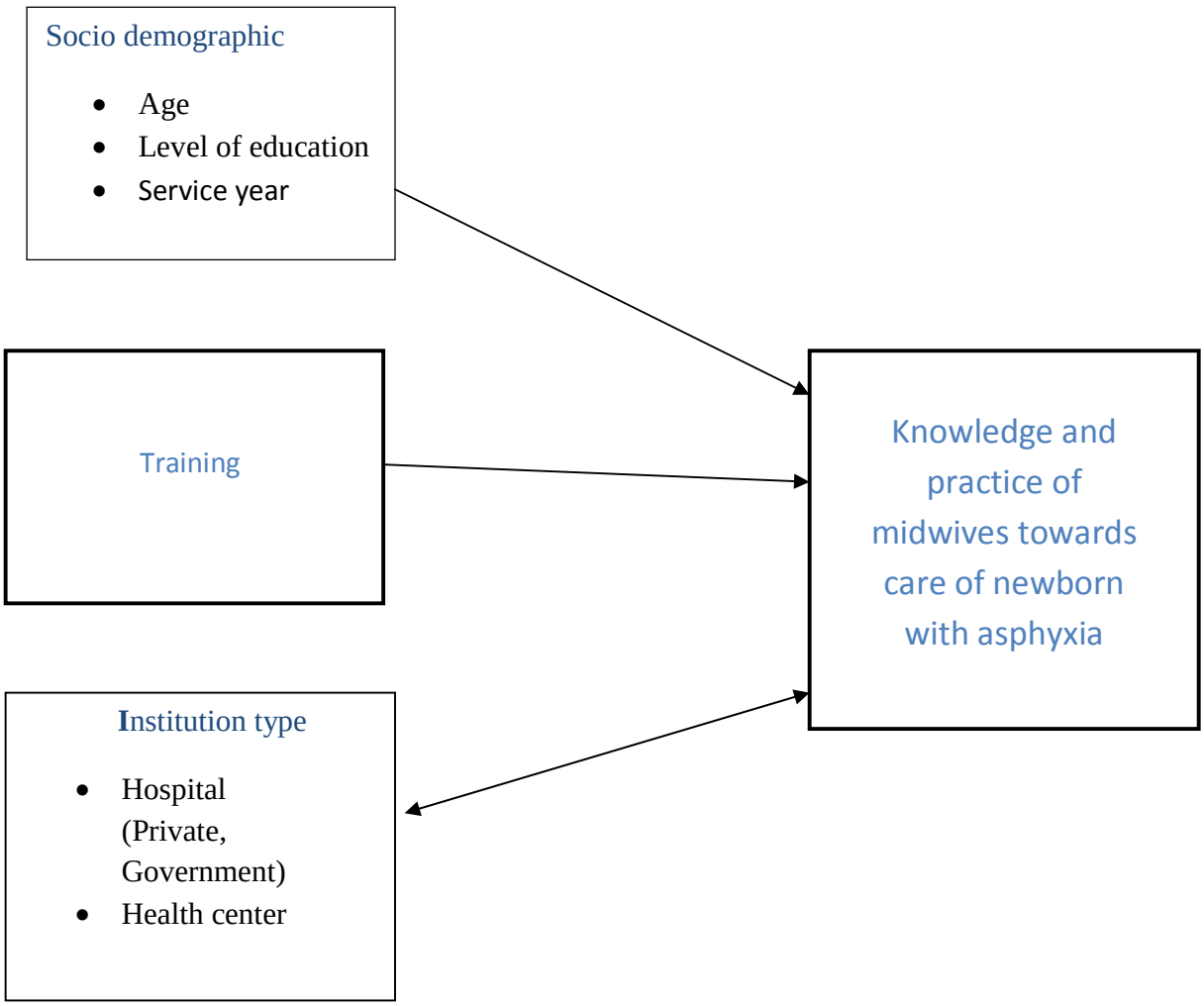
A cross-sectional multicenter study in 36 hospitals Brazilian state capitals to analyze the teaching of neonatal resuscitation offered to undergraduate nurses. Local coordinators collected data regarding what the institutions offer to undergraduate doctors and nurses, pediatric residents and neonatal fellows in terms of neonatal resuscitation training and practical activities in neonatal delivery room care. Descriptive analysis was performed and demonstrated that 23 of the nurses were undergraduates and at 8 hospitals students had clinical activities in the delivery room without specific training. The study expressed that formal neonatal resuscitation training is insufficient during medical and nursing education (19).

A study done in west Africa to assess midwives baseline cognitive knowledge of evidence-based neonatal resuscitation practices, and short-and long-term educational effects of teaching a neonatal resuscitation program in a hospital setting. Fourteen midwives received NRP training on the labor ward. Both written and practical evaluation of neonatal resuscitation skills increased after training. The percentage of items answered correctly on the written examination increased from 56% pre-training to 71% post-training ($p < 0.01$). The percentage of items performed correctly on the practical evaluation of skills increased from 58% pre-training to 81% ($p < 0.01$). These results were sustained 9–12 months after the initial training session (20).

A study done in Zambia to evaluate the effectiveness of the American Academy of Pediatrics Neonatal Resuscitation Program (NRP) in improving knowledge, skills, and self-efficacy of nurse midwives in low-risk delivery clinics in a developing country. Evaluations were administered to 127 nurse midwives before and after NRP training and 6-months later. After training, written scores (knowledge evaluation) improved from 57% to 80%, performance scores (skills evaluation) improved the most from 43% to 88% and self-

efficacy scores improved from 74% to 90%. Written and performance scores decreased significantly 6 months after training, but self-efficacy scores remained high. In conclusions the NRP training improved educational outcomes in college-educated practicing nurse midwives. Pre-training knowledge and skills scores were relatively low despite the advanced formal education and experience of the participants, whereas the self-efficacy scores were high (21).

In conclusion NRP training has the potential to substantially improve knowledge and skills of neonatal resuscitation among midwives and were sustained over a 9-month period other study confirmed that a significant deterioration in the level of neonatal skill over 8 month period formal education and experience doesn't have effect on knowledge and skill of midwives.



Conceptual frame work of knowledge and practice of midwives towards care of new born with asphyxia developed by principal investigator.

3. OBJECTIVE

3.1 GENERAL OBJECTIVE

Assessment of knowledge and practice of midwives towards care of newborn with asphyxia in Addis Ababa health services.

3.2 SPECIFIC OBJECTIVE

1. To identify the level of knowledge regarding among midwifes in health services .
2. To determine the scope of new born resuscitation practice among midwives in health services.
3. To identify association between dependent and independent variables

4. METHOD AND MATERIAL

4.1 STUDY AREA AND PERIOD

The study was conducted in Addis Ababa which is the capital city of Ethiopia and seat of African Union & Economic Commission for Africa. Addis Ababa has a population size of over 3 million (3038096) with annual growth rate of 2.1. The city is divided into ten sub cities and 99 Kebeles (Lowest level administrative unit in the city). Addis Ababa is located between 8055' and 9005' North Latitude and between 38040' and 38050' East Longitude and the total Land area is 54,000 hectares. It is established on November, 1887 by Emperor Menelik II and Empress Taitu. Its average elevation is 2,500 meters above sea level, and hence has a fairly favorable climate and moderate weather conditions. Availability of health and educational services i.e. public and private clinics, health centers and hospitals; and private kindergartens, primary and secondary schools; and colleges and universities of adequate standard made the city very attractive.

The city has 10 public hospitals. Of which, 5 are under Addis Ababa Regional Health Bureau (AARHB) and 5 are specialized referral (central) Hospitals. Two defense forces (military) referral hospitals and one hospital under army force. Furthermore the city has 27 old health centers ruled by the Addis Ababa health bureau and 6 new health centers are opened this year.

There are 2 hospitals, three health centers and 31 different level clinics establish by non-government organizations (NGOs). The city also has 30 private hospitals and more than 700 different level private clinics.

This study was conducted in health services which have midwives from September to May 2012.

4.2 STUDY DESIGN

Institutional based cross sectional study was conducted in Addis Ababa health service.

4.2.1 SOURCE POPULATION

All midwives found in Addis Ababa city.

4.2.2 STUDY POPULATION

All midwives who work in Addis Ababa health service.

4.2.3 INCLUSION AND EXCLUSION CRITERIA

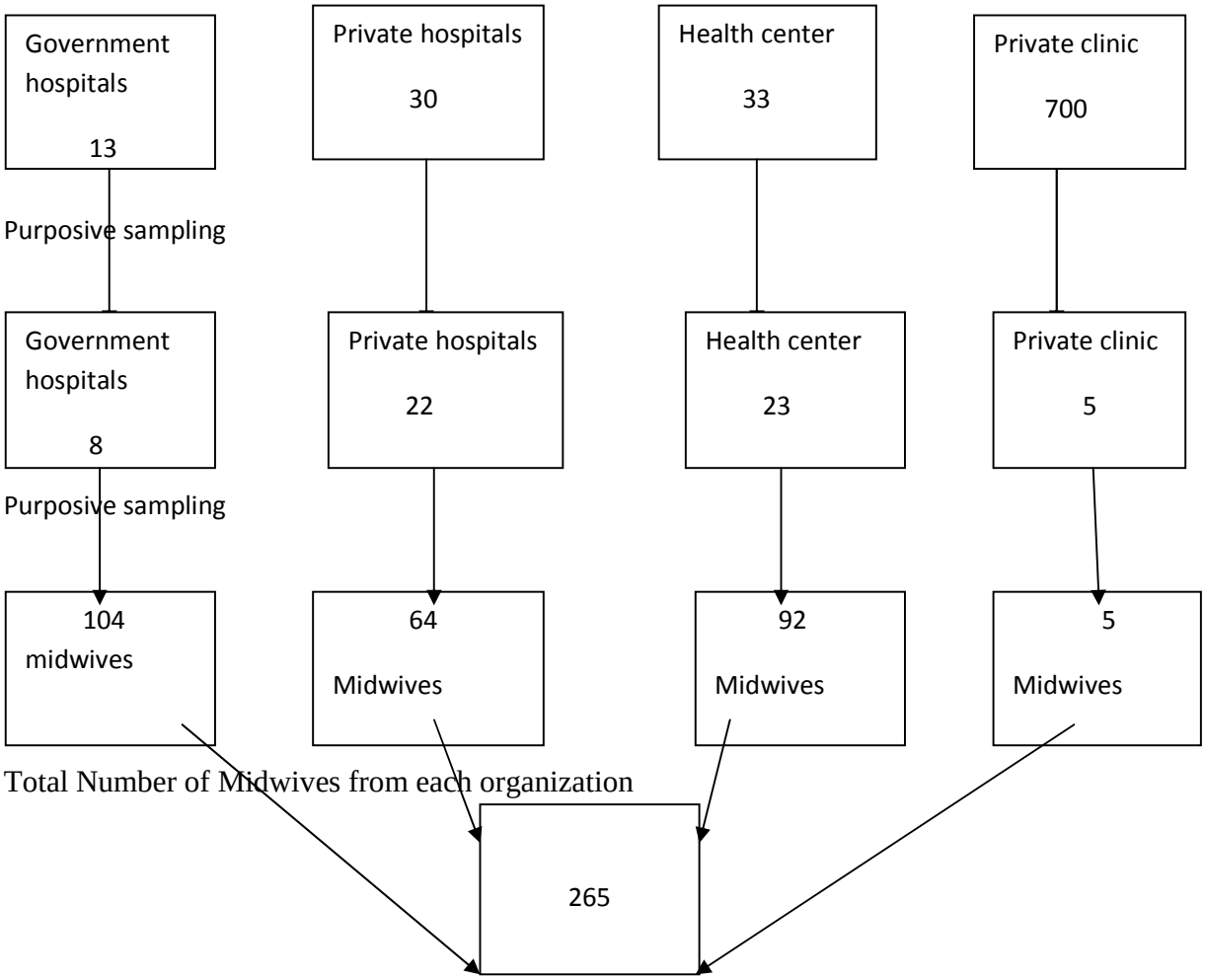
Inclusion criteria: All midwives who are willing to participate and working in health service at the time of survey.

Exclusion criteria: Midwives who work part time and unwilling

4.3. SAMPLEING AND SAMPLING TECHNIQUE

There are 265 midwives who work in Addis Ababa health services since the attributes being measured are not distributed normally the entire population was surveyed.

In Addis Ababa among 776 health services, 58 have midwives; 6 public, one army, one police and 22 private hospitals, 23 health center and 5 private clinics. All midwives from all institutions were involved in the study.



Total Number of Midwives from each organization

Schematic presentation of sampling technique

4.4 DATA COLLECTION METHOD

4.4.1 DATA COLLECTION TOOL

Data was collected using a self administered structured questionnaire, Which have three parts the first part is socio demographic character include age, sex, service year, educational status and service year.

The second part is knowledge which is partially adopted for from similar study from Mali. The knowledge part includes questions about definition (1 question), cause (1 question), risk factor(3questions), sign(1 question), body parts assessed for cyanosis (1question), indication for resuscitation (1 question), body parts affected (1 question) ,management(1 question) ,complication (1 question),normal heart rate pattern(1 question) and amplitude of heart variability in pathological pattern (1question) Each correct answer has one point.

The third part is about new born resuscitation practice which is totally adopted from similar study in Ghana. the practice part includes Percent of new born require initial assessment (1question), important and effective action during resuscitation(1question), character of primary apnea(1question), “ABC” of resuscitation(1 question),signs evaluated during resuscitation(1 question),four question while assessing the need for resuscitation(1 question),initial step of new born resuscitation (1question),three character of the term” vigorous” in meconium stained new born(1question) question),management of thin meconium stained new born(1 question) ,acceptable method of stimulating a new born to breath (1 question),heart beat calculation (1 question),appropriate action when no perceptible chest expansion (1 question), the position of the head during resuscitation (1question),effective method of chest compression (1 question),(1question), correct position what to attach to self inflating bag to deliver 1oo% oxygen(1 question) indication for positive ventilation pressure (1 question),coordinating positive ventilation pressure with chest compression per minute (1question),indication for chest compression(2 question),phrase for proper rate and co-ordination of compression and ventilation(1question), indication of orogastric tube(1question).Each had one point if

correctly answered. The base for answer favorable and unfavorable was the mean of each score.

4.4.2 DATA COLLECTION PROCEDURE

Data was collected from 265 midwives at the health service using self administered structured questionnaire. Data collectors was trained on how to use the data collection instrument and approach study participant. Data collectors was eight Nursing students and the supervisors was two BSC nurses. Training was given for supervisors and interviewers for one day. Orientation was given to the supervisors separately on how to supervise the data collectors and how to check for the completed questionnaire. The supervisors are responsible for supervising the data collectors, check for completed questionnaire and correct any mistake or problem encountered at the spot.

4.4.3 DATA QUALITY MANAGEMENT

The validity of the questionnaire was checked by pre-testing questionnaire on selected population which has similar characteristics with sample to be studied. Pretest was done in Debrezeit hospital which outside of study site on 5% of sample size (13 midwives) based on finding questioner was modified. The validity will also checked by the accurateness of the data collected by research method or instrument.

4.5 VARIABLES

Dependent variable:

- Knowledge and Practices of midwifes towards care of new born with asphyxia

Independent variable

- Level of education of midwives(diploma ,degree)
- Institution type (health center vs. hospital)(governmental vs. private)
- Age
- Service year
- Training

4.6 OPERATIONAL DEFINATION

Knowledge: it is the information that a midwife is aware of asphyxia and their ability to correctly identify and respond to the definition, cause, risk factor, sign, body parts assessed for cyanosis, indication of resuscitation, body parts affected, management, complication, normal heart rate pattern and amplitude of heart variability in pathological pattern.

Over all knowledge: is the summery of all the above question the mean was considered to classify high and low knowledge.

High knowledge: knowledge score that fall above the mean

Low knowledge: knowledge score that fall below the mean

Practices: the overt behavior, habit or custom that a person does, follow up or carry out in his /her daily work. Measured by the ability to correctly respond for Percent of new born require initial assessment , important and effective action during resuscitation, character of primary apnea, "ABC" of resuscitation ,signs evaluated during resuscitation, four question while assessing the need for resuscitation, initial step of neonatal resuscitation ,three character of the term" vigorous" in meconium stained new born, management of thin meconium stained new born, acceptable method of stimulating a new born to breath ,heart beat calculation ,appropriate action when no perceptible chest expansion, the position of the head during resuscitation ,effective method of chest compression, correct position what to attach to self inflating bag to deliver 1oo% oxygen indication for positive ventilation pressure ,coordinating positive ventilation pressure with chest compression per minute ,indication for chest compression, phrase for proper rate and co-ordination of compression and ventilation, indication of orogastric tube.

Over all practice: is the summery of all the above question the mean will be considered to classify favorable and unfavorable practice.

Favorable practice: practice score that fall above the mean

Unfavorable practice: practice score that fall below the mean

4.7 DATA ANALYSIS TECHNIQUE

Epi Info-3.5.1 and SPSS-16 was used for data entry, editing and analysis. Frequencies and percentage of different variables was computed for description as appropriate. Odds ratio with 95% confidence interval was compute to assess the presence and degree of association between the dependent versus socio demographic and other factor; multiple logistic regression was used to reduce bias due to confounders.

4.8 ETHICAL CLEARANCE

Approval was obtained from the IRB of AAU, collage of health science department of nursing and midwifery .Official letter of cooperation was written to concerned bodies by the department of nursing and midwifery. Written consent was obtained from study participants. No personal identification was used on the data collection form. The recorded data was not be assessed by a third person except the principal investigator and was kept confidentiality.

4.9 DISSEMINATION OF STUDY RESULTS

The findings of this study will be submitted to department of nursing and midwifery and IRB, School of Health science, Addis Ababa University. And also disseminated to Addis Ababa city government health Bureau, Ethiopian Midwives Association, and to Federal Ministry Of Health through hard copy and presentation in order to use the obtained information for future plan. The findings will also finally be published on scientific journals to be used as base line information for further study and for decision makers.

5. RESULTS

5.1. Characteristics of the study population

A total of 253 midwives were respond for questioner, the response rate of this study was 95.5%. Of the study subject, 209(82.6%) and 44(17.4%) were female and male respectively. Among all ,147 (58%) of midwives were 24-34 years of age .The mean age was 31.37±7.17SD years with median age of 30 years ,minimum 20 and maximum of 55 years.(Table 1)

Hundred (39.5%) of midwives are working in health center, 99 (39.1%) government hospital ,45 (17.8%) private hospital and 9(3.6%) private clinic and Result of educational status of midwives indicate 179(70.8 %) were diploma and 74 (29.2%)degree.

Among all, 82 (32.4%) of midwives had <5, 90(35.6 %) 5-10, 47(18.6%) 10-15, 17 (6.7%) 15-20 and 17(6.7%) >20 service year. (Table 1)

Table 1: Characteristic of midwives in Addis Ababa health services May, 2012

Characteristics	Number (%) (n=253)	Total (%)
Place of work of respondents'		
Government hospital	99	39.1%
Private hospital	45	17.8%
Health center	100	39.5%
private clinic	9	3.6%
Age in group		
<24	37	14.6%
24-34	147	58.1%
34-44	58	22.9%
44-55	11	4.3%
(median ,Mean ,SD) 30,31.37±7.17		
Sex of respondents		
Male	44	17.4%
Female	209	82.6%
Educational status		
Diploma	179	70.8%
Degree	74	29.2%
Service **year tenured**		
< 5	82	32.4%
5-10	90	35.6%
10-15	47	18.6%
15-20	17	6.7%
>20	17	6.7%

5.2 .Training attended by participant

Regarding training, participant in this study reported that more than half, 128(50.6 %) of midwives had training on new born resuscitation while 125(49.4%)of respondents have no training .(Table 2)

Table 2: Training attended by midwives in Addis Ababa health service, May 2012

Characteristics	Number (%) (n=253)	Total (%)
Training on asphyxia Or new born resuscitation		
Yes	128	50.6%
No	125	49.4%

5.3. Knowledge of midwives about asphyxia; Definition, cause and risk factor

Regarding knowledge of midwives related to asphyxia was examined. Accordingly it shows that of the total 124(49%) respondents knew its correct definition while 129 (51%) of them did not.

Majority 177(70%) of midwives reported that the cause of asphyxia is placental insufficiency. Other causes are 73(28.9%) cardiovascular and 32(12.6%) neurological problem.

Prematurity, Fetomaternal hemorrhage, Known malpresentation, Fetal abnormality, Sever isoimmune hemolytic disease, Cardiac arrhythemia and Twin to twin transfusion syndrome were mentioned as fetal risk factor of asphyxia. The mean score knowledge about fetal risk factor was 2.24±1.7SD with minimum of zero and maximum of seven (out of seven questions). Eight midwives score seven out of seven. Fourteen midwives did not mention at least one risk factor. Most, 158 (62.5)of midwives mentioned that prematurity as the common fetal risk factor of asphyxia .Among all midwives ,174 (68.8%) midwives score below the mean whereas 79(31.2%) scored above the mean(Table 3).

Most 164(64.8%) of midwives were mentioned that prolonged rapture of membrane as the common maternal risk factor of asphyxia followed by cardiac arrest 78(30.8%) and Asphyxiation 63(24.9%), sever anaphylactic reaction51(20.2%) and status epileptics33(13%) were also mentioned. Among all midwives 165(065.2%) mentioned that placenta abruption is most common placental risk factor followed by hyper stimulation with cord prolaps and compression 140(55.3%) and placental infarction 78(30.8) (Table 3)

Table 3: knowledge of midwives about asphyxia; Definition, cause and risk factor, in Addis Ababa health service, May2012

Characteristics	Number (n=253)	Percent
Definition of asphyxia		
Correct	124	49%
Incorrect	129	51%
Cause of asphyxia*		
Placental insufficiency	177	70%
Cardiovascular problem	73	28.9%
Neurological problem	32	12.6%
Fetal risk factor of asphyxia*		
Fetomaternal hemorrhage	118	46.6%
Twin to twin transfusion syndrome	45	17.8%
Sever isoimmune hemolytic disease	59	23.3%
Cardiac arrhythemia	58	22.9%
Known malpresentation	69	27.3%
Fetal abnormality	59	23.3%
Prematurity	158	62.5%
Mean, SD(2.24±1.7SD)		
Maternal risk factor for asphyxia*		
prolonged rapture of membrane	164	64.8%
Cardiac arrest	78	30.8%
Asphyxiation	63	24.9%
sever anaphylactic reaction	51	20.2%
status epileptics	33	13%
Uroplacental risk factor*		
Placenta abruption,	165	65.2%
hyper stimulation with cord prolaps and compression	140	55.3%
placental infarction	78	30.8%

*multiple response

5.4. Knowledge about sign, type which need resuscitation, body parts that affect, complication, normal heart rate pattern and pathological variability.

Majority of 178 (70.4%) of midwives reported that the sign of asphyxia where cyanosis, grunting 111(43.9%), no cry 111(43.9). Other sign of asphyxia mentioned by midwives include intercostal and subcostal retraction (table4).

Kidney, Central nervous system, lung and Gastrointestinal system were mentioned as the body parts affected by asphyxia. Among those body parts Central nervous system was mentioned by 148(58.8 %), Lung was mentioned by 139(54.9 %).other body parts such as kidney 47(18.6%) and Gastro intestinal system 19(7.5%) also mentioned. No one mentioned cardio vascular system (table 4).

Among all midwives (201)79.4% mentioned that the possible complication of asphyxia is death, followed by cerebral palsy 94(37.2%) and developmental delay 75(29.6%), epilepsy 70(27.7%) and spasticity 30(11.9%) also mentioned.

In line with this 196 (77.5%) of midwives mention the normal heart rate pattern and98 (38.7%) mention amplitude of heart rate variability in pathological pattern correctly.

Table 4: knowledge of midwives about asphyxia; body parts that affect , complication ,normal heart rate pattern and pathological variability , in Addis Ababa health service,May2012

Characteristics	Number (N=253)	percent
Sign of asphyxia*		
	73	28.9%
Intercostal and subcostal retraction	178	70.4%
cyanosis	111	43.9%
grunting	111	43.9%
no cry		
Which type of asphyxia need resuscitation		
	203	80.2%
Mild	129	51.0%
Moderate	182	71.9%
Severe		
Body part affected by asphyxia*		
kidney	47	18.6%
CNS	148	58.8%
Lung	139	54.9%
Cardiovascular system	0	0%
Gastrointestinal system	19	7.5%
Possible complication of asphyxia		
Death	201	79.4%
Spasticity	30	11.9%
Epilepsy	70	27.7%
Cerebral palsy	94	37.2%
Developmental delay	75	29.6%
Normal heart Rate pattern		
Correct	196	77.5%
Incorrect	57	22.8%
Amplitude of heart rate variability in pathological pattern		
Correct	98	38.7%
Incorrect	155	61.3%

*multiple responses

5.5. Midwives over all knowledge on asphyxia

Accordingly midwives over all knowledge evaluated by summarizing the thirteen questions. The study showed that the mean knowledge score was 5.1±2.1SD with median 4.4 .Based on this over all knowledge of midwives categorized in to high knowledge that fall above the mean and low knowledge below the mean .158 (62.5%) of midwives scored below the mean while 95(37.5%) of midwives scored above the mean.

Statically significant association was found between scoring high over all knowledge and service year>21 year (OR=3.17895% CI=1.068, 9.466) p-value 0.038 compared to service year<5 years.

Multivariate analysis confirm significant association between scoring high overall knowledge and service year >21 years (OR=5.840,95%CI 1.136-30.022) p-value .035.

Table 5: Factor associated with midwives overall knowledge about asphyxia, May 2012

Characteristics	Overall knowledge		COR (95%CI)	AOR (95%CI)
	High	Low		
Sex				
Male	18(40.9%)	26(59.1%)	1	1
Female	132(63.2%)	77(36.8%)	.84(.43,1.64)	1.11(.53,2.33)
Age(years)				
<24	17(45.9%)	209(54.1%)	1	1
25-34	54(36.7%)	93(63.3%)	0.69(.33,1.42)	0.64(.24,1.65)
35-44	18(31.0%)	40(69.0%)	0.53(.23,1.24)	0.35(.10,1.22)
45-55	6(54.5%)	5(45.5%)	1.41(.37,5.45)	0.35(.05,2.58)
>55	0	0		
Educational status				
Diploma	61(34.1%)	118(65.9%)	1	1
Degree	34(45.9%)	40(54.1%)	1.64(.95,2.86)	1.41(.74,2.7)
Place of work				
Government hospital	45(45.5%)	54(54.5%)	1	1
Private hospital	12(26.7%)	33(73.3%)	0.44(.20,.94)	0.49(.21,1.13)
Private clinic	2(22.2%)	7(77.8%)	0.34(.07,1.73)	0.36(.07,1.94)
Health center	36(36.0%)	64(64.0%)	0.68(.38,1.19)	0.663(.35,1.24)
Service year				
<5	30(36.6%)	52(63.4%)	1	1
6-10	34(37.8%)	56(62.2%)	1.052(.57,1.96)	1.55(.67,3.58)
11-15	16(34.0%)	31(66.0%)	.90(.42,1.89)	1.36(.50,3.66)
16-20	4(23.5%)	13(76.5%)	.53(.16,1.78)	1.05(.23,4.89)
>21	11(64.7%)	6(35.3%)	3.178(1.07,9.47)*	5.84(1.14,30.02)*
Training				
No	49(40.5%)	72(59.6%)	1	1
Yes	45(35.4%)	82(64.6%)	.81(.48,1.35)	.74(.43,1.27)

*statistical significance

5.6 New born resuscitation practice of midwives percentage of correct response to overview, principle and initial step in resuscitation.

Twenty two questions used to assess practical skill of midwives those questions grouped in to four (overview and principle, initial step, ventilation and chest compression) based on related individual items. Regarding to new born resuscitation practice only 75(26.6%) of mention that correct percentage of newborn require initial assessment, 117(46.2%)of midwives identify character of primary apnea, 233(92.1%) correctly identify “ABC” of resuscitation, 202(79.8%) of midwives identify signs used to evaluation and decision making, 132 (52.2%) midwives correctly mention the four question asked while assessing the need for resuscitation , only 39(15.5%) mention the correct position of head during resuscitation.

The mean score practice about overview and principle of resuscitation was 3.15±1.26SD with minimum of zero and maximum of six (out of six questions). Five midwives score six out of six. Five midwives did not give at list one correct response.

One hundred thirteen (44.7%) of midwives correctly respond for most important and effective action in resuscitation. 109(43.1%) of midwives identify the correct initial step of new born resuscitation, 90(35.5) of midwives identify the three character of the term vigorous in meconium stained new born,166(65.5%) midwives correctly identify what should be done for meconium stained new born. 219(86.6%) of midwives practice the acceptable method of stimulation for breathing.

The mean score practice about initial step of resuscitation was 2.76±1.08SD with minimum of zero and maximum of five (out of five questions). Eleven midwives score five out of five. Seven midwives did not give at list one correct response.

Table 6: New born resuscitation practice of midwives percentage of correct response to overview, principle and initial step in resuscitation, Addis Ababa, May, 2012.

Item	Number N=253	Percent
A. overview and principle of resuscitation		
1. What percent of newborns require initial assessment to determine whether resuscitation is required?	75	26.6%
2. Which of the following is a characteristic of primary apnea but not secondary apnea?	117	46.2%
3. What are the "ABC's of resuscitation"	233	92.1%
4. Evaluation and decision making during resuscitation are primarily based on which combination of signs?	202	79.8%
5. At the time of birth, which four questions should you ask about the newborn while you are assessing the need for resuscitation?	132	52.2%
6. What should be the position of the head during resuscitation? **(median ,Mean ,SD) 3,3.15 ±1.26**	39	15.5%
B. Initial steps in resuscitation		
1. Which is the most important and effective action in a neonate requiring resuscitation?	113	44.7%
2. Which of the following describes the initial steps of New born resuscitation?	109	43.1%
3. The resuscitation team decides a meconium stained newborn is "vigorous." The term "vigorous" is defined by what 3 characteristics?	90	35.6%
4. Thin consistency meconium –stained amniotic fluid noted in a newborn. Following birth, you observe the newborn to be pale and limp (low tone) without respiratory effort. What should be done next?	166	65.5%
5. Which of the following are acceptable methods of stimulating a newborn to breathe? **(median ,Mean ,SD) 3,2.76±1.08**	219	86.6%

5.7. New born resuscitation practice of midwives percentage of correct response to ventilation and chest compression in resuscitation.

In this study midwives resuscitation practice regarding to ventilation and compression also assessed. Seventy nine (31.2%) midwives correctly respond for inappropriate action when no physiologic improvement and no perceptible chest expansion, among all 202(79.8) of midwives mentioned that signs of effective positive-pressure ventilation were improvement in color and tone followed by Spontaneous breathing 198(78.3%) and Increase heart rate 167(66%). Ninety four (37.2%) midwives correctly mentioned that what attached to a self-inflating bag to deliver 100% oxygen. Among all midwives 203(80.2) of midwives mentioned that indications to initiate positive pressure ventilation, Even if the baby is breathing ;apnea or gasping followed by heart rate remain <100/min76(30%) and Persistent cyanosis despite 100% free flow oxygen 69(27.3%).Only35(13.8%) of midwives correctly identify indication for a orogastric tube during resuscitation . The mean score practice about ventilation during resuscitation was 3.22±1.34SD with minimum of zero and maximum of six (out of six questions). Ten midwives score six out of six. Ten midwives did not give at list one correct response.

Regarding to chest compression 129(51.1%) midwives correctly identify the most effective method of chest compression, 88 (34.6%) of midwives correctly describes the indications for chest compressions and 113(44.7%) of midwives correctly practice how many of positive-pressure ventilation with chest compressions performed each minute.

The mean score practice about chest compression during resuscitation was 2.19±1.20SD with minimum of zero and maximum of five (out of five questions). Ten midwives score five out of five. Twenty one midwives did not give at list one correct response.

Table 7: New born resuscitation practice of midwives percentage of correct response to ventilation and chest compression in resuscitation, Addis Ababa, May, 2012.

Item	Number (N=253)	Percent
A. Ventilation		
1. You are attempting to ventilate a term newborn with a bag and mask. There is no physiologic improvement and no perceptible chest expansion. Which of the following would NOT be an appropriate action?	79	31.2%
2. A newborn is being ventilated with a bag and mask. Which are the signs of effective positive-pressure ventilation?	202	79.8%
Improvement in color and tone	198	78.3%
Spontaneous breathing	167	66%
Increase heart rate	94	37.2%
3. What needs to be attached to a self-inflating bag to deliver 100% oxygen?		
4. Which are indications to initiate positive pressure ventilation?	69	27.3%
	76	30%
Persistent cyanosis despite 100% free flow oxygen	203	80.2%
Heart rate remain <100/min		
Even if the baby is breathing apnea or gasping	100	39.5%
5. To insure the proper rate and coordination of compressions and ventilation, what phrase should the team member providing compressions audibly repeat?	35	13.8%
6. The indication for a orogastric tube during resuscitation is **(median ,Mean ,SD) 3,3.22±1.34**		
B. Chest Compression		
1. During the resuscitation of a newborn, you palpate the umbilical cord and note 10 beats over a 6 second period. What is the estimated heart rate in this newborn?	93	36.8%
2. Most effective method of chest compression	129	51.1%
3. Which of the following correctly describes the indications for chest compressions?	88	34.6%
4. When coordinating positive-pressure ventilation with chest compressions, approximately how many of each are performed each minute?	113	44.7%
5. You have been providing chest compressions and effective ventilation for 30 seconds. You check the heart rate and find a rate of 40 beats per minute. What should your next action(s) be?	132	52.2%
(median ,Mean ,SD) 2,2.19±1.20		

5.8. Midwives overall new born resuscitation practice

Midwives overall practice evaluated by summarizing twenty two questions. The findings revealed that the mean practiced score was 12.93±3.72SD with median 1,based on this overall practice categorized in to favorable that fall above the mean and unfavorable practice that fall below mean.135(53.4)of midwives scored above the mean 118(46.6)of midwives score below the mean.

Statically significant association was found between high score overall practice and age of midwives45-54years of age (OR=8.308, 95%CI 1.557, 44.32) P=.013 when compared to age group<24 and place of work health center (OR=1.895 95%CI 1.o72, 3.349) p=.028 when compared to government hospital.

Multivariate analysis showed significant association between age 45-54years of age (OR =14 95%CI1.527, 140.232) P=.020 and place of work health center (OR=2.6 95%CI 1.342, 5.35) P=.005

Table 8: Factor associated with over all new born resuscitation practice Addis Ababa, May 2012

Characteristics	Overall Practice		COR (95%CI)	AOR (95%CI)
	Favorable	Unfavorable		
Sex				
Male	24(54.5%)	20(45.5%)	1	1
Female	111(53.1%)	98(46.9%)	0.94(.49,1.81)	1.27(.60,2.68)
Age(years)				
<24	13(35.1%)	24(64.9%)	1	1
25-34	85(57.8%)	62(42.2%)	2.53(1.2 ,5.4)	2.31(.89 ,6.03)
35-44	28(48.3%)	30(51.7%)	1.72(.74 ,4.03)	1.80(.54,02)
45-55	9(81.8%)	2(18.2%)	8.31(1.56,44.3)*	14.63(1.53,140.2)*
>55	0	0		
Educational status				
Diploma	93(52.8%)	86(48.0%)	1	1
Degree	42(56.8%)	32(43.2%)	1.21(.70,2.09)	1.40(.72,2.72)
Place of work				
Government H.	49(49.5%)	50(50.5%)	1	1
Private hospital	17(37.8%)	28(62.2%)	.62(.30,1.27)	.55(.25,1.21)
Private clinic	4(44.4%)	5(55.6%)	.82(.21,3.22)	.75(.17,3.23)
Health center	65(65.0%)	35(35.0%)	1.9(1.07,3.35)*	2.6(1.34,5.04)*
Service year				
<5	36(43.9%)	46(56.1%)	1	1
6-10	53(58.9%)	37(41.1%)	1.83(1.0,3.35)	2.06(.91,4.68)
11-15	26(55.3%)	21(44.7%)	1.58(.77,3.26)	1.74(.67,4.54)
16-20	10(58.8%)	7(41.2%)	1.83(.63,5.27)	2.19(.53,9.13)
>21	10(58.8%)	7(41.2%)	1.83(.63,5.27)	.74(.15,3.76)
Training				
Yes	72(56.7%)	55(43.3%)	1	1
No	60(49.6%)	61(50.4%)	1.33(.81,2.19)	1.44(.83,2.49)

*Statistical significance

6. DISCUSSION

This study provided information regarding midwives' knowledge of asphyxia and new born resuscitation practice.

Knowledge the result of this study has shown that overall knowledge of midwives about asphyxia was unsatisfactory which is lower than the study conducted in Mali and Zambia. In this study the mean score was 42.5% which is lower than Zambia (57%) this may be attributed to formal asphyxia training is insufficient during midwifery education(12, 21).

In this study the odd of high score of overall knowledge in midwives service year>21 years is 5.8 times higher than the odd of scoring high overall knowledge in midwives<5 year service this result had similar result with the study done in Gana. It is also significant when adjusted (13).

In this study, the result shows that the percentage of items answered correctly on the knowledge examination by midwives who have training were 41.5%, bivariate and multivariate analysis does not show association between training and knowledge .A recent study in Zambia shows that written scores (knowledge evaluation) improved from 57% to 80% and a study in Cambodia shows that the knowledge of the trainees before the training was very low, (mean= 43.85). Immediately after the training it has significantly improved (mean= 85.16), this may be attributed to duration of training, type of training, sustainability or retention of knowledge after initial training session, using different module or may be due to different study design (14, 21).

In this study placenta abruption (62.5%), prolonged rapture of membrane (64.8%)and hyper stimulation with cord prolaps and stimulation(55.3%) where the most reported cause of asphyxia but the study in Mali the prolonged labor (63,7%), the infection/malaria of mother (60,7%) and Dystocic delivery (45,5%) were the mostly reported causes of asphyxia. The result of the study showed that midwives knowledge on the main sign of asphyxia cyanosis178(70.4%) where similar with the study in Mali(69.7%) ,but lack of cry 111(43.9%) less reported than in Mali (63.6%) (12).

Practice the result of this study revealed that mean practice score is 58.8±16.9SDwhich is higher than a study done in Gana 56%, West Africa41%±21 and 43.85%in Cambodia. This may revealed that new born resuscitation practiced here better than other countries but it is unsatisfactory 135(53.4%) of midwives scored above the mean 118(46.6%) of midwives score below the mean this may revealed that formal neonatal resuscitation training is insufficient during midwives education(14, 20).

Midwives who work in health center 2.6 times more good in practical skill than in midwives government hospital, which have contradictory result from similar studies in Cambodia and Gana midwives in primary health care facilities were less likely to achieve passing score .This may indicate that midwives in health center may have enough equipment and be familiar with current new born resuscitation principle (14, 20).

Midwives between ages 44-54 years have fourteen times favorable practice on new born resuscitation than age below 24 Older midwives bring positive qualities like experience to the work. Whereas studies in Zambia and Cambodia showed opposite result that practices not related with experience of midwives (14, 21).

Among degree holder midwives 45.9% have high knowledge than diploma 34.1% holders , which have the same result with a study in Cambodia one of the reason for the below average competence was attributed to the educational level of the midwives (14).

In this study, the result shows that the percentage of items answered correctly on the written practical examination by midwives who have training were 52.6%, bivariate and multivariate analysis does not show association between training and practice. Recent publication from different countries shows a significant association, a study in Gana the percentage of items answered correctly on the written practical examination increased from 56% pre-training to 71% post-training ($p < 0.01$) and a study in Zambia after training, performance scores (skills evaluation) improved the most from 43% to 88% one of the following factor may contribute to effectiveness of training, duration of training, not using up to date instructional material and lack of refresher (20,21).

7. STRENGTH AND LIMITATION OF THE STUDY

Strength of the study

- It addresses midwives from different health services in the city
- Use standard tool tested on African countries

Limitation of the study

- This study evaluated cognitive knowledge and practice it would have been preferable if evaluated observationally the practical skills while they are performing resuscitation.
- Other health professionals who work in labour ward knowledge and practice is not addressed.
- Since the design is cross sectional temporal relationship is addressed.

8. CONCLUSION

This study assessed knowledge and practice of midwives towards care of new born with asphyxia who work in Addis Ababa health services .The study finding identified that there was knowledge gap in area of cause, risk factor and complication of asphyxia. Overall knowledge scores were relatively low despite the advanced formal education.

Even though, more than half of midwives have favorable new born resuscitation practice, they were not sufficient and safe enough. The low competence was attributed to the lack of support and supervision.

In general the overall result of the study indicated that low level of knowledge and considerable number of midwives had unfavorable practice towards new born resuscitation..

These indicate that pre service training in colleges and universities were insufficient during midwifery training. A little bit more than half of midwives had training on perinatal asphyxia but there is no significant association with knowledge and practice.

9. RECOMMENDATION

Based on the findings the following recommendation is given

- Incorporating asphyxia and new born resuscitation in formal education and curriculum revision professional training programs is recommended.
- In service training by skilled professionals with adequate duration and optimal preparation to improve the knowledge on asphyxia and new born resuscitation practice.
- Introduce scaling up and close supportive supervision, monitoring and evaluation by MOH.
- The Neonatal Resuscitation Program has tremendous impact on the knowledge improvement of the health care professionals many countries adopting this program will also brings improvement in our setup.
- Provide support from interdisciplinary team approach and in collaboration with professional organizations in supervising and assessing the performance of the midwives in their respective areas.
- Formulate national guidelines empowering the midwives to perform new born resuscitation at their level.

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ANNEXES

ANNEX –I INFORMATION AND VERBAL CONSENT FORM (ENGLISH VERSION)

Addis Ababa University, school of medicine and college of health sciences, Department of nursing and midwifery consent form for a study on Assessment of knowledge and practice midwives towards care of newborn with asphyxia in Addis Ababa health services

Greeting!

Hello! My name is _____ I am working in the research team of Addis Ababa University, college of health sciences, Department of nursing and midwifery. This is a study to be conducted with the objective of on Assessment of knowledge and practice midwives towards new born care with asphyxia in health services, Addis Ababa.

We believe this study would help to increase your awareness towards asphyxia and newborn resuscitation. Therefore, you are kindly requested to participate in this study and provide information required from you.

You are going to respond to some questioners about asphyxia and new born resuscitation. Your participation in this study is completely on voluntary bases and you have the right to refuse, to take part or to interrupt at any time. But the information that you will give us is quite useful to take preventive intervention of the disease.

We would like to assure you, your name will not be mentioned in anywhere. The information that you will give us was kept confidential and only be used for the research purpose.

Are you willing to participate in this study?

1. Yes Signature _____
2. No Signature _____

If the answer is yes, Thanks! Conduct

If the answer is no, Thanks! Transfer to other respondent. Don't force them to participate in the study.

Name of the data collector _____ Signature _____

Date _____month _____ 2012

Time , Started at _____

Finished at _____

Name of the supervisor _____ Signature _____

Date of checking _____Month _____ 2012

Remark1. Complete _____

2. Incomplete _____

ANNEX –II INFORMATION AND VERBAL CONSENT FORM (AMHARIC VERSION

በአዲስ አበባ ዩኒቨርስቲ በህክምናና ጤና ሳይንስ ኮለጅ የነርስና የሚድዊፈሪ ድፓርትመንት የሚደረግ የህፃናትን በወሊድ ጊዜ መታፈንን አስመልክቶ ያላቸውን እዉቀት፣ዝንባሌ እና ልምምድ ለመገምገም በአዲስ አበባ ከተማ በሚገኙ የጤና ተቐማት ላይ ለአዋላጅ ነርሶች የተዘጋጀ የፈቃድ መጠየቂያ ፎርም

***ሠላምታ* !!**

እኔ ስሜ ----------የምሰራውም በአዲስ አበባ ዩኒቨርሰቲ በህክምና ፋኩልቲ አጠቃላይ ነርስ ትምህርት ቤት ጥናት አድራጊ ቡድን ውስጥ ነው፡፡

የዚህ ጥናት ዓላማ የህፃናትን በወሊድ ጊዜ የህፃናትን መታፈንን አስመልክቶ ያላቸውን እዉቀት፣ዝንባሌ እና ልምምድ ለመገምገም በአዲስ አበባ ከተማ በሚገኙ የጤና ተቐማት ስር ባሉ ለአዋላጅ ነርሶች ላይ ለማጥናት ነው፡፡ ይህ ጥናት የእዉቀት ደረጃዎትን ለመጨመር ይረዳል ብለን እናምናለን ስለሆነም የዚህ ጥናት ተሳታፊ እንዲሆኑና አስፈላጊውን መረጃ እንዲሰጡን በትህትና እንጠይቃለን፡፡

በመሆኑም አንዳንድ ጥያቄዎችን አቀርብልዎታለሁ፡፡ በዚህ ጥናት ውስጥ መካፈልዎ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ ሲሆን ላለመሳተፍም ሆነ መረጃ መስጠትዎን በማንኛውም ሰአት ለማቋረጥ መብትዎ የተጠበቀ ነው፡፡ ነገር ግን የሚሰጡን ማንኛውም አይነት መረጃ የህፃናትን በወሊድ ጊዜ መታፈንን ለመከላከል ምን መደረግ እንዳለበት እቅድ ለመንደፍ ያስችለናል፡፡

በዚህ ጥናት ሲሳተፉ ስምዎ በማንኛውም ቦታ እንደማይጠቀስ የሚሰጡንም መረጃዎች በሚሰጥር እንደሚያዙና ለጥናቱ ስራ ብቻ እንደሚውል ልናረጋግጥልዎ እንወዳለን፡፡

በዚህ ጥናት ላይ ለመሳተፍ ፍቃደኛ ነዎት?

1.አዎ ----------ፈርማ

2.አይደለሁም -------ፈርማ

ፍቃደኛ ከሆኑ አመሰግናለሁ፡ ፡ መረጃ መሰብሰብ ይቀጥላል

ፍቃደኛ ካልሆኑ አመሰግናለሁ፡ ፡ ወደ ሚቀጥለው ሰውመሄድ ፡ ፡

በጥናቱ እንዲሳተፉ ማስገደድ አይቻልም፡ ፡

የመረጃ ሰብሳቢውስም ----------ፊርማ ----------

መረጃውየተሰበሰበበት ቀን ----------ወር ----------ዓ.ም ----------

መረጃውየተሰበሰበበት ሰዓት የተጀመረበት ----------

የተጠናቀቀበት ----------

የጥናቱ ተቆጣጣሪ ስም ----------ፊርማ ----------

መረጃውየተረጋገጠበት ቀን ----------ወር ----------ዓ.ም

ውጤት

1.የተሟላ ----------

2.ያልተሟላ ----------

ANNEX- III QUESTIONNAIRE

Addis Ababa University, school of medicine and college of health

Sciences, Department of nursing and midwifery

Structured Assessment of knowledge and practice of midwives towards care of new born with asphyxia

Questionnaire

Thank you for being our respondent. Our goal is to assess your knowledge and practice of midwives towards care of new born with asphyxia and increases your awareness towards asphyxia and new born resuscitation. In order to do these please take a few minutes to give us your evaluation of your experience. You are kindly requested to give your honest opinion whether they are positive or negative.

Instruction

Read the questions carefully. Mark/write the response on the space provided. According to the question you can select one option, select more than one option, or give word/words. Age should be completed in complete years.

Questionnaire code ----------

Date of data collection ----------

Part One : Demographic variable of midwives

No	Questions	response	code	skip
1	Age of respondent	( ) years		
2	sex	1. Male 2. female		
3	Place of work	1. Government hospital 2. Private hospital 3. Private clinic 4. Health center		
4	Educational status	1. Diploma 2. degree		
5	Service year	1. <5 2. 6-10 3. 11-15 4. 16-20 5. >21		

Part Two: knowledge of midwives towards asphyxia

No	Questions	response	code	skip
6	Have you ever participate in any training program about asphyxia or new born resuscitation program	1.yes 2.no		
7	Define asphyxia			
8	Have you ever seen a child with asphyxia?	1.yes 2.no		
9	What is the cause of asphyxia	1.placental insufficiency 2.cardio vascular problem 3.neurological problem		
10	What fetal risk factor of asphyxia you know?	1.Feto maternal hemorrhage 2.twin to twin transfusion syndrome 3.sever is immune hemolytic Disease 4. Cardiac arrhythemia. 5.Known malpresentation 6.Fetal abnormality 7.prematurity		

11	What maternal risk factor of asphyxia you know?	1.prolonged rapture of membrane: 2.Cardiac arrest 3.Asphyxiation, 4. Sever anaphylactic reaction , 5.Statusepileptics,		
12	What placental risk factor of asphyxia you know?	1.Placenta abruption , 2.hyperstimulation with cord prolaps and compression, 3.placental infarction		
13	What sign do you know about asphyxia?	1..intercostal and subcostal retraction 2.cyanosis 3.grunting 4.no cry		
14	Which body parts do you asses for cyanosis?	A. Upper part of the body B. lower part of the body C. Central part of body		
15	Do you use scoring system to classify the severity?	1.yes 2.no		
16	If yes what are the scoring method?			
17	Which type of asphyxia need resuscitation	1. Mild 2. Moderate 3. Severe		

18	Which body part affected by asphyxia	1.kidney 2.CNS 3.lung 4.cardiovascular 5.Gastro intestinal system		
19	What is the management of asphyxia?			
20	What possible complication of asphyxia do you know?	1.Death 2.Spasticity 3.Epilepsy 4.Cerebral Palsy 5. Developmental Delay		
21	Is there electronic fetal monitoring in your institution at present time	1.yes 2.no		21
22	If yes do you use for every mother	1.yes 2.no		
23	What is the definition of electronic fetal monitoring?			
24	What is the benefit of electronic fetal monitoring?			
25	What is the normal heart rate pattern	1.Between 110 and 150 beats/ min. 2.Between150 and170 beat/ min 3.Below100 or above170		

26	Which amplitude of heart rate variability is pathological pattern	1. Between 5 and 25 beats/min. 2 .Between 5 and 10 beats/min for more than 40 min. 3.less than 5 beats/min for more than 40 min		

Part three: new born resuscitation practice of midwife

27	What percent of newborns require initial assessment to determine whether resuscitation is required?	A.1% B.10% C.50% D.100%		
28	Which is the most important and effective action in a neonate requiring resuscitation?	A. Provide oxygen B. Perform chest compressions C. Ventilate the lungs D. Give epinephrine		
29	Which of the following is a characteristic of primary apnea but not secondary apnea?	A. Falling blood pressure B. Decreasing heart rate responsive only to epinephrine administration C. Gasping respiratory effort only reversible with positive-pressure ventilation D. Responsive to tactile stimulation		

30	What are the “ABC’s of resuscitation”?	A. Apgar, bicarbonate, and chest compressions B. Assess, blame, and criticize C. Apnea, blood volume, and care coordination D. Airway, breathing, and circulation		
31	Evaluation and decision making during resuscitation are primarily based on which combination of signs?	A. Respiration rate, blood pressure, color B. Blood pressure, color, heart rate C .Respiration rate, heart rate, color D. Respiration rate, blood pressure, heart rate		
32	At the time of birth, which four questions should you ask about the newborn while you are assessing the need for resuscitation?	A.Is the baby of singleton gestation? B. Is the amniotic fluid clear? C. Is the baby breathing or crying? D. Is the baby a term gestation? E. Does the baby have good muscle tone? F. Is the baby breastfeeding?		
33	Which of the following describes the initial steps of new born resuscitation? 1 . Position the head and clear airway	A. 1,3,2 B. 3,2,1 C. 1,2,3		

	2. Dry and stimulate 3. Provide warmth	D. 3,1,2		
34	The resuscitation team decides a meconium stained newborn is “vigorous.” The term “vigorous” is defined by what 3 characteristics?	A. Heart rate >100 beats per minute, B. Good muscle tone C. Strong respiratory effort, D. Blood pressure		
35	Thin consistency meconium –stained amniotic fluid noted in a newborn. Following birth, you observe the newborn to be pale and limp (low tone) without respiratory effort. What should be done next?	A. Stimulate the baby B . Administer oxygen C. Suction the newborn’s trachea D. Initiate positive pressure ventilation		
36	Which of the following are acceptable methods of stimulating a newborn to breathe? 1. Shake the newborn vigorously 2.Dry with warm towel 3.Rub the newborn’s back gently 4.Flick the soles of the feet	A.1,2,3 B.2,3,4 C.1,3,4 D.1,2,4		
37	During the resuscitation of a newborn, you palpate the umbilical cord and note 10 beats over a 6 second period. What is the estimated heart rate in this newborn?	A. 60 beats per minute B. 36 beats per minute C. 100 beats per minute D. 120 beats per minute		
38	You are attempting to ventilate a term	A. Reapply the mask to the		

	newborn with a bag and mask. There is no physiologic improvement and no perceptible chest expansion. Which of the following would **NOT** be an appropriate action?	baby's face and the jaw forward B. Apply continuous positive airway pressure (CPAP) C. Check for secretions, suction the mouth and nose D. Reposition the head		
39	What should be the position of the head during resuscitation?	A. Flexion B. Extension C. Neutral (sniffing)		
40	Most effective method of chest compression	A. One handed chest compression B. Two handed chest compression		
41	A newborn is being ventilated with a bag and mask. Which are the signs of effective positive-pressure ventilation?	A. Improvement in color and tone; B.Spontaneous breathing; C.Increased heart rate		
42	What needs to be attached to a self-inflating bag to deliver 100% oxygen?	A. A pop-off valve B. A pressure gauge C. An oxygen reservoir D. feeding tube		
43	Which are indications to initiate positive pressure ventilation?	A. Persistent cyanosis despite 100% free-flow oxygen; B. Heart rate remains less than		

		100 ; C.Even if the baby is breathing apnea or gasping		
44	When coordinating positive-pressure ventilation with chest compressions, approximately how many of each are performed each minute?	A. 30 breaths, 90 compressions B. 40 breaths, 80 compressions C.60 breaths, 60compressions D.60 breaths, 120 compressions		
45	Which of the following correctly describes the indications for chest compressions?	A. Whenever the heart is found to be less than 60 beats per minute. B. If the heart rate remains less than 60 beats per minute after 30 seconds of effective positive pressure ventilation C. When the heart rate is found to be less than 100 beats per minute		
46	To insure the proper rate and coordination of compressions and ventilation, what phrase should the team member providing compressions audibly repeat?	A. “One-and-two-and-breathe-and…..” B. “One-and-two-and-three-and-four-and-breathe-and…..” C. “One-and-two-and-three-and-breathe-and…..” D. “One-and-breathe-and…..”		

47	You have been providing chest compressions and effective ventilation for 30 seconds. You check the heart rate and find a rate of 40 beats per minute. What should your next action(s) be?	A. Continue chest compressions for an additional 30 seconds and recheck the heart rate. B. Insert an umbilical catheter, administer epinephrine, and consider intubation C. Discontinue chest compressions because they are ineffective		
48	The indication for a orogastric tube during resuscitation is:	A. To provide positive pressure ventilation B. To suction the baby C. To feed the baby D. To decompress the stomach		

ANNEX IV. DECLARATION

This thesis proposal is my original work and has not been presented for a degree in any other university and that all source of material used have been dully acknowledged.

Name of principal investigator: Tsedale Sentayehu

Date _____Sign _____

Name of advisor: Sr.Emebet Berhane (Bsc. Rn.Msc)

Date _____Sign _____