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ADDIS ABABA UNIVERSITY

ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCE
DEPARTMENT OF NURSING AND MIDWIFERY

KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS MANAGEMENT OF BIRTH ASPHYXIA AMONG NURSES AND MIDWIVES WORKING IN LABOUR WARD AND NICU IN GOVERNMENTAL HOSPITALS, ADDIS ABABA, ETHIOPIA, 2017.

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A thesis submitted to the school of Graduate Studies of Addis Ababa University, in partial fulfillment of the requirements for the Degree of Masters of Science in Pediatrics and Child Health Nursing in Department of Nursing and Midwifery.

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I alsogivehonor to God, for every protection and support he did to meand my families.

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LIST OF ABBREVIATION AND ACRONYMS

ASMR: Asphyxia Specific Mortality Rate

CF: Case Fatality

HIE: Hypoxic ischemic Encephalopathy

KAP: Knowledge, attitude and practice

MDG: Millennium development goal

NICU: Neonatal intensive care unit

NMR: Neonatal mortality Rate

NR: Neonatal resuscitation

RDS: Respiratory distress syndrome

TBA: Traditional birth attendant

VHW: Village health workers

WHO: World health organization

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ABSTRACT

Introduction: Birth asphyxia is failure to initiate and sustain breathing immediately after birth. According to world health organization (WHO), it is the third major cause of neonatal death after infections and Preterm births in developing countries, accounts for an estimated 23% of the annual 4 million neonatal deaths. The nurses require a high level of knowledge in managing birth asphyxia that occurs in newborn and assessment skills to practice it in NICU and labour ward to prevent further complications in the newborn. This will enable quality care which increase likelihood of newborns survival and promote optimal quality care.

Objective: To assess knowledge, attitude and practice of nurses working in NICU and labour ward toward management of birth asphyxia in governmental hospitals Addis Ababa, Ethiopia.

Methodology: Institutional based Cross sectional study was conducted to assess the knowledge, attitude and practice of staff nurses working in NICU and labour ward toward management of birth asphyxia at governmental hospital in Addis Ababa from February-March, 2017. Systematic random sampling technique wasutilized to select study subjects and to determine sample size a single proportion formula was used. According to this formula the sample size of the study was 168. Pretest was done and data entered into Epi-info version (3.5.1) statistical software package then exported to SPSS software package version 21 for further analysis.Result was presented by text, table, pie chart and histogram.

Result: Of the total 163, 108 (66.3%)of the respondents have knowledge of birth asphyxia management.Nurses and midwives whogot training were 2.6 times **{AOR=2.6; 95% CI (1.02-6.63)}** more likely to have knowledge of birth asphyxia compared to those didn't get training. In relation to practice profession was significantly associated with practice for birth asphyxia management, nurses were 4.7 times **{(AOR=4.71; CI (1.306, 16.988)}** more likely to practice compared to those midwives.

Conclusion and Recommendation: The study revealed about sixty six percent of nurses and midwives have knowledge of birth asphyxia management. More than half of them have good practice and positive attitude towards the management of birth asphyxia. Training should be considered to increase knowledge of nurses and midwives on management of birth asphyxia.

Keywords: Birth asphyxia, knowledge, attitude, practice, NICU, labour ward, nurses, midwives

INTRODUCTION

1.1 BACKGROUND

Birth asphyxia is failure to initiate and sustain breathing immediately after birth. In developing countries it is considerably higher because of negligible antenatal care and poor perinatal services. According to world health organization (WHO), it is the third major cause of neonatal death after infections and Preterm births in developing countries accounts for an estimated 23% of the annual 4 million neonatal deaths. It estimates that 120 million infants born in every year develop birth asphyxia in developing countries and require resuscitation, an estimated 900,000 die each year. The risk of dying due to birth asphyxia varies countries to countries. High neonatal mortality rate have an estimated eight times higher risk than babies in low NMR settings. Based on a literature it is estimated that 24% - 61% of prenatal mortality is attributed to asphyxia. The cause of specific prenatal mortality rate associated with asphyxia is generally between 10 and 20 per 1000 births [1].

Study was conducted in 3 neonatal ICU of northeastern United States to describe the knowledge attitude and practices of neonatal intensive care unit nurses. This study included 66 neonatal intensive care unit nurses. Nurses with increased year of experience were less supportive of initiating certain care modalities for do not resuscitate patients. Responses did not appear to be influenced by the educational background of nurses. NICU and nurses need further education regarding the legal definition [2].

According to 2011 DHS Ethiopia is experiencing high neonatal mortality rate at 37 per 1000 live births comparable to the average rate of 35.9 per1000 live births for the African region overall [3]. The causes of neonatal mortality are not well documented but previous study report causes such as sepsis, asphyxia, birth injury, and tetanus [4].

Although birth asphyxia can be predicted for certain conditions such as fetal distress and preterm child birth, most cases of birth asphyxia cannot be predicted. Therefore all the attendants must be competent in newborn resuscitation and must have the necessary equipment ready for the resuscitation of the newborn baby [5].

1.2 Statement of the problem

Globally, birth asphyxia has continued to pose a major clinical problem with approximately one million babies affected annually. In developing countries, it is a major cause of death and acquired brain damage with rates ranging from 4.6 per 1,000 in Cape Town to 26 per 1,000 in Nigeria with case fatality rates of about 40% or higher [6].

Birth asphyxia is the largest cause of neonatal death. Birth asphyxia accounts for an estimated 0.92 million neonatal deaths annually and is associated with an unknown burden of long- term neurological disability. Birth asphyxia is a dangerous situation and if it is not managed correctly and promptly can be responsible for brain death, cardiac, lungs and kidneys failure and even death can occur [7]. Neonatal intensive care unit is a highly technical specialized unit in a hospital that provide medical/nursing care and technologies support to sick and high risk infants and premature in emergency like birth asphyxia [8].

Despite the fact Ethiopia reached its child mortality reduction goal (MDG4), neonatal mortality remains high. The major and direct causes of newborn deaths are; infection 36%, intra partum related complications (birth asphyxia) 25% and prematurity 17% [9]. Guidelines are also well established in Ethiopia even for Health center level to assess by classifying to treat asphyxiated neonates at birth [10].

In birth asphyxia, the infant needs immediate professional care in the neonatal intensive care unit NICU. Children who survive birth asphyxia are at a higher risk of functional impairments, cerebral palsy (CP) or impaired vision and hearing [11]. To improve today's neonatal care delivery, health-care providers need to better understand the experiences of becoming a parent to a child with birth asphyxia. Knowledge and practice of high quality management of birth asphyxia can reduce neonatal mortality.

Since midwives and neonatal ICU nurses have contacts with the asphyxiated babies at health institutions, ignoring them may amount to inadequate or low level of care, poor out comes, increased death rates and persistent high rates of infant mortality as we have it today in Ethiopia. The management of birth asphyxia consists of supportive care to maintain temperature, perfusion, ventilation and a normal metabolic state including glucose, calcium and acid-base

balance. Early detection by clinical and biochemical monitoring and prompt management of complications must be done to prevent extension of cerebral injury [12].

This study therefore intends to assess the knowledge, attitude and practices of staff nurses and midwives working in labour ward and in NICU on the management of birth asphyxia in order to discovergaps that impede successful reduction in the neonatal death in Ethiopia and no clear information regarding the knowledge, attitude and practice of nurses towards management of birth asphyxia**.** In view of the above reasons the investigator is interested to take up this problem to assess the knowledge, attitude & practice regarding management of birth asphyxia among the staff nurses working in NICU and labour ward in selected governmental hospital at Addis Ababa.

1.3 Significance of the study

Knowledge and practice of high quality management of birth asphyxia can reduce neonatal mortality. Since the study focuses on knowledge, attitude and practice of nurses and midwives in labour ward and NICU toward management of birth asphyxia, the result will help to provide information for:

- The Hospitals concerning knowledge, attitude and practice of nurses toward management of birth asphyxia.
- The nurses will be able to know their K A P status and to put their effort on it in future
- Ministry of health also will able to use the result to plan appropriate interventions
- Other policy maker also can use it to generate a new policy on it
- Researchers will use the data while they want to do further studies on it

CHAPTER TWO

LITRATURE REVIEW

A review of literature on the research topic makes the researcher familiar with the existing studies and provides information which helps to focus on a particular problem, lays a foundation up on which to base new knowledge. It creates accurate picture of the information found on the subjects [13].

2. 1 Studies related to incidence of birth asphyxia.

A retrospective study conducted on "incidence, clinical course and outcome of Birth asphyxia" in a Swedish population. A total 227 infants were included in the birth asphyxia group. And the Clinical signs were of mild, moderate or severe hypoxic was present in 65 infants, and in another 10 infants. The incidences of Apgar scores < 7 at 5 min, birth asphyxia and birth asphyxia with hypoxic-ischemic encephalopathy were 6.9, 5.4 and 1.8 per 1,000 live born infants: 95% of infants resuscitated with bag and mask ventilation ,compared with 1 of 11 in whom resuscitation included adrenaline [14].

A cross sectional study was conducted in in university of Zambia, in USA among 182 infants to determine the base line incidence of birth asphyxia in neonatal intensive care unit. Among these infants 42 (23%) had a clinical diagnosis of birth asphyxia. Of 42 infants with birth asphyxia, 13 (31%) had an abnormal neurologic examination during the clinic visit: in contrast, 13 of 141 infants without birth asphyxia (9%) had an abnormal examination. The study concludes that birth asphyxia survivors account for almost a quarter of NICU survivors in developing countries [15].

2.2 Studies related to risk factors of birth asphyxia.

A study was conducted to determine the risk factors for birth asphyxia in neonates with help formulate effective management protocol in the development of pediatrics, Hyderabad, from April 2005-2006 April. Study reveals that among 125 newborns (75 males, 15 females) admitted to the neonatal care unit, who are delivered with delayed cry or low Apgar score (<7) were included. Out of 125 newborns 28% were diagnosed as suffering with moderate or severe encephalopathy. Ante partum risk factors include, non-attendants for antenatal care (64%), multiple births (4.8%), vaginal bleeding was strongly associated with asphyxia in 34.44%

neonates. Lack of neonatal care, poor nutritional status, ante partum hemorrhage, was associated with higher incidence of asphyxia. Study suggests the nurse should have enough knowledge to identify the risk factors [16].

2.3 Studies related to causes, diagnosis and complication of birth asphyxia.

A study was conducted on "Causes of birth asphyxia and trauma" were determined in the 208 most severely affected infants of 10,995 consecutive live births; study revealed that among these infants 159 infants had cerebral disturbances, 39 had fractures and palsies, and 10 had fractures or palsies in addition to cerebral disturbances. Most frequent causes of birth asphyxia and trauma were prolonged labour, mid forceps or breech delivery in full-term infants, abruption of placentae, difficult breech delivery, and maternal sedation in premature babies and unattended precipitate deliveries in immature infants. Asphyxia occurred in infants with fetal malnutrition. Study on suggests that improved obstetrical management with more frequent use of Cesarean section delivery might have of value in preventing fetal complications. [17]

A study was conducted in South Africa to determine diagnoses and avoidable factors associated with death from asphyxia-hypoxia. Data collected from a computerized database from 142 hospitals using the Perinatal Problem Identification Program from October 1999 to September 2003 were analyzed. Among 4502 neonatal deaths weighing >999 g, 1459 (32.4%) were identified as being related to asphyxia-hypoxia. Intra partum asphyxia was the most common diagnosis (72% of deaths). Hypoxic-ischemic encephalopathy was identified as the main neonatal diagnosis in these deaths. The most common category of probable avoidable factors was health worker-related. Inadequate fetal monitoring was the most common health worker-related probable avoidable factor. Substandard care related to resuscitation was recorded infrequently, most likely because of inability to assess neonatal resuscitation [18].

A study conducted to determine the complications of birth asphyxia in Mulago Teaching and referral Hospital, Uganda. The complications such as HIE, RDS, aspiration pneumonia, hypoglycemia, hypothermia, hypotension and hypoxemia. Adverse outcome was seen in 57.3% of cases: death in 12.1% and clinical complications in 45.2%. HIE occurred in 21.8%, hypoxemia in 12.9%, hypoglycemia in 16.9% and aspiration pneumonia in 4.8%. Therefore the

study suggests that there is need to carefully evaluate and monitor babies immediately after birth [19].

2.4 Studies related to management of birth asphyxia.

A study conducted on" Experience with training of traditional midwives on the prevention and management of birth asphyxia in a rural Zimbabwe's Chimanimani district 51% of deliveries A study conducted on "Management of birth asphyxia in home deliveries in rural Gadchiroli India: the effect of two types of birth attendants and of resuscitating with mouth-to-mouth, tube-mask or bag-mask", to evaluate the effect of home-based neonatal care on birth asphyxia and to compare the effectiveness of two types of workers and three methods of resuscitation in home delivery. Trained traditional birth attendants (TBA) used mouth-to-mouth resuscitation in the baseline years (1993 to 1995). Additional village health workers (VHWs) only observed in 1995 to 1996. In the intervention years (1996 to 2003), they used tube-mask (1996 to 1999) and bag-mask (1999 to 2003). The incidence, case fatality (CF) and asphyxia-specific mortality rate (ASMR) during different phases were compared. During the intervention years, 5033 home deliveries occurred. VHWs were present during 84% home deliveries. The incidence of mild birth asphyxia decreased by 60%, from 14% in the observation year (1995 to 1996) to 6% in the intervention years ($p<0.0001$). The incidence of severe asphyxia did not change significantly, but the CF in neonates with severe asphyxia decreased by 47.5%, from 39 to 20% ($p<0.07$) and ASMR by 65%, from 11 to 4% ($p<0.02$). Mouth-to-mouth resuscitation reduced the ASMR by 12%, tube-mask further reduced the CF by 27% and the ASMR by 67%. The bag-mask showed an additional decrease in CF of 39% and in the fresh stillbirth rate of 33% in comparison to tube-mask. The study has identified that Home-based interventions delivered by a team of TBA and a semiskilled VHW reduced the asphyxia-related neonatal mortality by 65% compared to only TBA. The bag-mask appears to be superior to tube-mask or mouth-to-mouth resuscitation, with an estimated equipment cost of US dollars 13 per death averted [20].

2.5 Studies related to knowledge of nurses on management of birth asphyxia

A descriptive study was conducted to assess the knowledge regarding management of Birth Asphyxia among the Staff Nurses working in NICU and Labour room of Prabhakar hospital Belgaum, Karnataka. The major findings indicated that the level of majority of staff nurses is 18

(60%) had average knowledge, 7 (23.33%) had good knowledge and 5 (16.67 %) had poor knowledge [21].

A cross sectional study conducted on "Assessment of knowledge of nurses in Western Nigeria about neonatal resuscitation". One hundred and seventy nine nurses were interviewed by using a closed ended questionnaire that tested evaluation and appropriate action aspects of neonatal resuscitation. Of these, 72.6% had worked in the labour room and the special care baby unit within the last 5 years while only 14.0% has attended neonatal resuscitation training course within the last 5 years. The study recommended that the knowledge of the respondents about appropriate action to be taken during neonatal resuscitation was poor. This study shows that frequent and intensive courses on neonatal resuscitation are highly directed [22].

Descriptive survey study was conducted to assess knowledge, attitude and practice of nursing management of birth asphyxia in Federal Medical Centre Asaba, Delta State, Nigeria. It participate 50 nurses selected by purposive sampling technique from the Maternity and Neonatal Units of the Centre. 19(38%) of the respondents had neonatal resuscitation training, 21 (42%) had no training while there was no response from 10 (20%) of the respondents. 16 (32%) of the respondents had at least one training in neonatal resuscitation while 3(6%) had two trainings periods. 3 (6%) had their last training less than a year ago, 7 (14%), 2 (4%) and 5 (10%) had their last training between 1-2 years, 3-4 years and more than 5 years ago respectively. Years of experience have no significant effect ($p > .05$) on the nurse's level of knowledge of nursing management of birth asphyxia and that only 10% of nurses adopted appropriate practice level. The result shows that majority 22 (44%) of the respondents fall within 31-40 years, others 15 (24%) and1 (2%) were within 21-30 years, 41-50 year. Respondents scored mean and standard deviation 10.5 (2.5), 9.4 (2.7), 10.4 (2.0), 8.3 (3.3) and 12 (0) for 1-5,6-10, 11-15, 16-20 and 21-30 years of practice accordingly and in regard to neonatal resuscitation training, respondents scored 9.6 (2.9) and 10.1 (2.3) for those with and without training respectively [23].

A study conducted to assess the knowledge, attitude and practice of community health center staff on birth asphyxia Kolokani, Mali in. It included the matrons, the nurse chief available at the time of survey. In this study they have observed some good practices as aspirating with the bulb

(69.7%) and clearing upper air way with a finger covered with gauze (30.3%) doing the mouth to mouth (51.5%) stimulating the newborn (66.7%). The improvement of the neonatal mortality requires the training of the staff and the equipment of the centers in small simple materials of resuscitation. [24]

2.6 Study of practice neonatal resuscitation

Descriptive study was conducted in Baghdad on 40 nurses to evaluate the nurse's practice toward the neonatal resuscitation in delivery room. 70% 0f nurses had no training on NR and among trained 66.7% of nurses had theory training of neonatal resuscitation. Training session consider an important to improve nurses' practices in operation room it is appositive effect and supportive for nurses' practices for neonatal resuscitation [25]

The retrospective study was conducted on newborn resuscitation methods vary in developing countries. This study describe the delivery experience at rural Kenyan Mission Hospital by analyzing delivery data and newborn resuscitation outcomes for a 12 month period andprospectively characterizing newborn resuscitation practices.36 of 878 newborns (4%) suffered unfavorable outcomes , significantly associated with caesarian section , breech and vacuum deliveries and birth weight of 2000gm or less observed. Newborn resuscitation practice was inconsistent and notable for umbilical vein injections given in live of bag and mask ventilation.

A basic newborn resuscitation protocol was developed. It is concluded that at Kenyan Hospital, unfavorable newborn outcomes were significantly associated with delivery other than normal vaginal and with birth weight of 2000g or less. Newborn resuscitation methods could be modified for use in this setting and might be most useful for term infants delivered by caesarean section, breech or vacuum deliveries [26].

CONCEPTUAL FRAMEWORK

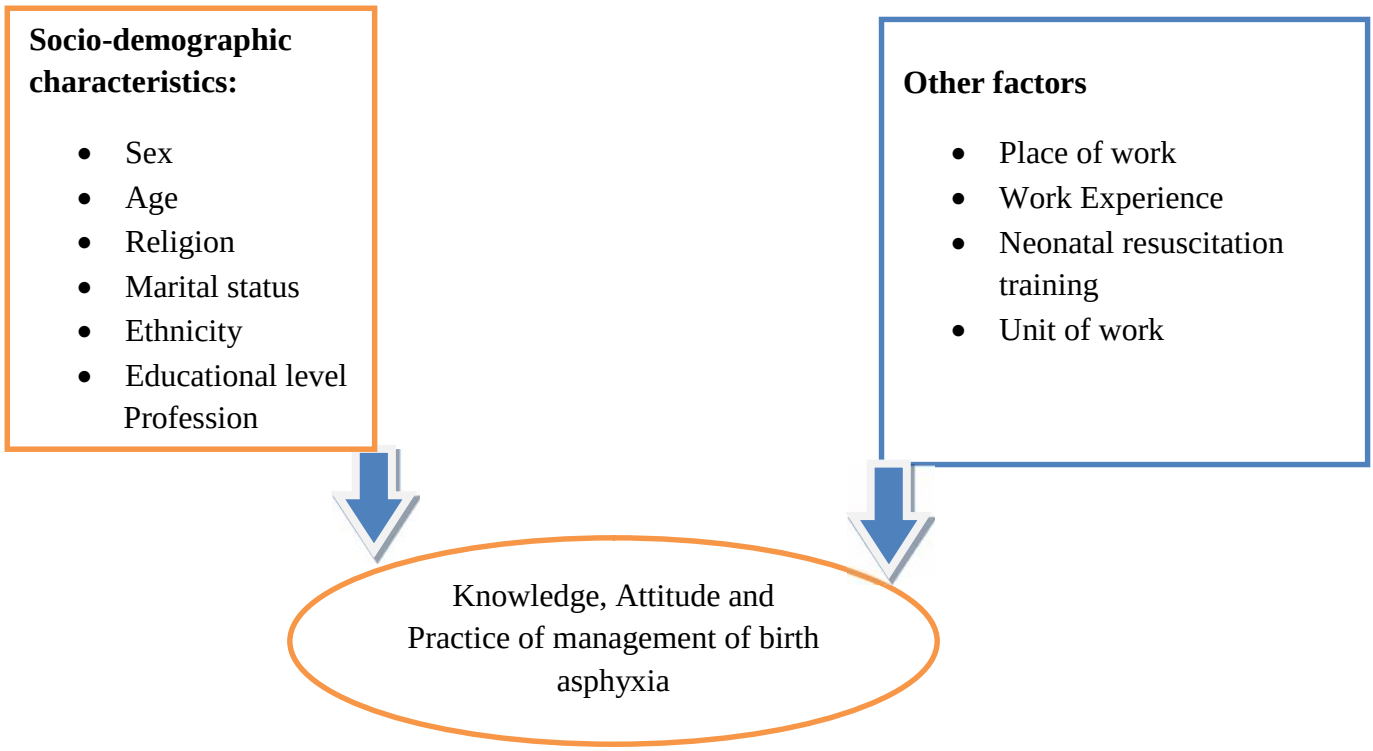

Figure1: Schematic presentation of conceptual framework(21- 25)

CHAPTER THREE

3. OBJECTIVE

3.1. General Objective

- To assess knowledge, attitude and practice of nurses and midwives working in labour ward and NICU towards management of birth asphyxia in governmental Hospitals Addis Ababa, Ethiopia.

3.2. Specific objectives

- To determine knowledge of nurses and midwives toward management of birth asphyxiain selected public hospitals in Addis Ababa.
- To determine the attitude of nurses and midwives toward management of birth asphyxiain selected public hospitals in Addis Ababa.
- To determine the practice of nurses and midwives toward management of birth asphyxiain selected public hospitals in Addis Ababa.
- Todetermine factors affecting KAP of nurses and midwives towards management of birth asphyxiain selected public hospitals in Addis Ababa.

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CHAPTER FOUR

METHODOLOGY

4.1 Study Area and period

The study was conducted in Addis Ababa in randomly selected public hospitals. It covers 540 sq km and has 10 sub cities. Based on the 2015 Census conducted by the central statistical Agency of Ethiopia (CSA), Addis Ababa has total population of 3,384,569 [25]. The city has 12 governmental hospitals among these only 6 hospitals have NICU and labour ward in one according to Addis Ababa city health office. Then, four hospitals are selected by simple random sampling. The study was conducted Tikur Anbesa hospital, Yekatit 12 hospital, Zewditu Memorial hospital and Gandhi memorial hospital which is selected by simple random sampling. In these hospitals there are 254 nurses both in NICU and labour ward. Among these 178 nurses are in those selected hospital, 96 are in NICU and 82 are in labour ward of selected hospitals according to Human resource management of each hospitals. The research was conducted in Governmental Hospitals, Addis Ababa, Ethiopia from February 20 to march 20, 2017.

4.2. Study Design

Institution based cross sectionalquantitative study design was conducted at selected public hospital in Addis Ababa.

4.3. Population

4.3.1. Source Population

All staff nurses and midwives working in labour ward and NICU of governmental hospitals, Addis Ababa, Ethiopia.

4.3.2. Study population

Nurses and midwives working in NICU and labour ward of selected governmental Hospitals in, Addis Ababa, Ethiopia who fulfills the inclusive criteria.

4.4 Eligibility criteria

Inclusion criteria

All nursesand midwives who are working in labour ward and NICU of selected governmental Hospitals of Addis Ababa during data collection.

4.5 Sample size determination and sampling procedure

Sample size was determined using the formula for single population proportion based on the following assumptions.

$$n = \frac{(Z\alpha/2)^2 p(1-p)}{d^2}$$

Where: n= is desired sample size

Zα/2= is the standard normal value corresponding to the desired level of confidence

d=error of precision

P=is the estimated population proportion

Assumptions

1. Proportion of K A P of labour ward and NICU nurses toward management of birth asphyxia is 50%

2. Degree of error d= 5%

3. A confidence interval of 95% is assumed (Zα/2=1.96).

$$n = \frac{(1.96)^2\ 0.5(1-0.5)}{(0.05)^2} = 384$$

Based on the above calculation estimated sample size is (384)

Correction formula was applied since N is less than 10,000 (254)

nf = n/ (1+ n/ N)

384/ (1+384/254) =153

n- Sample size

nf- final sample size

N- Total population of study area

The calculated final sample size is153 plus a non-response rate of 10%

nf =168

by using proportional to size allocation formula

1. TAH n = $\frac{nfxNTAH}{N} = \frac{168x\ 52}{178} = 49$
2. ZMH= n= $\frac{nfxNZMH}{N} = \frac{168\ x\ 40}{178} = 38$
3. GMH=n= $\frac{nfxNGMH}{N} = \frac{168\ x\ 38}{178} = 36$

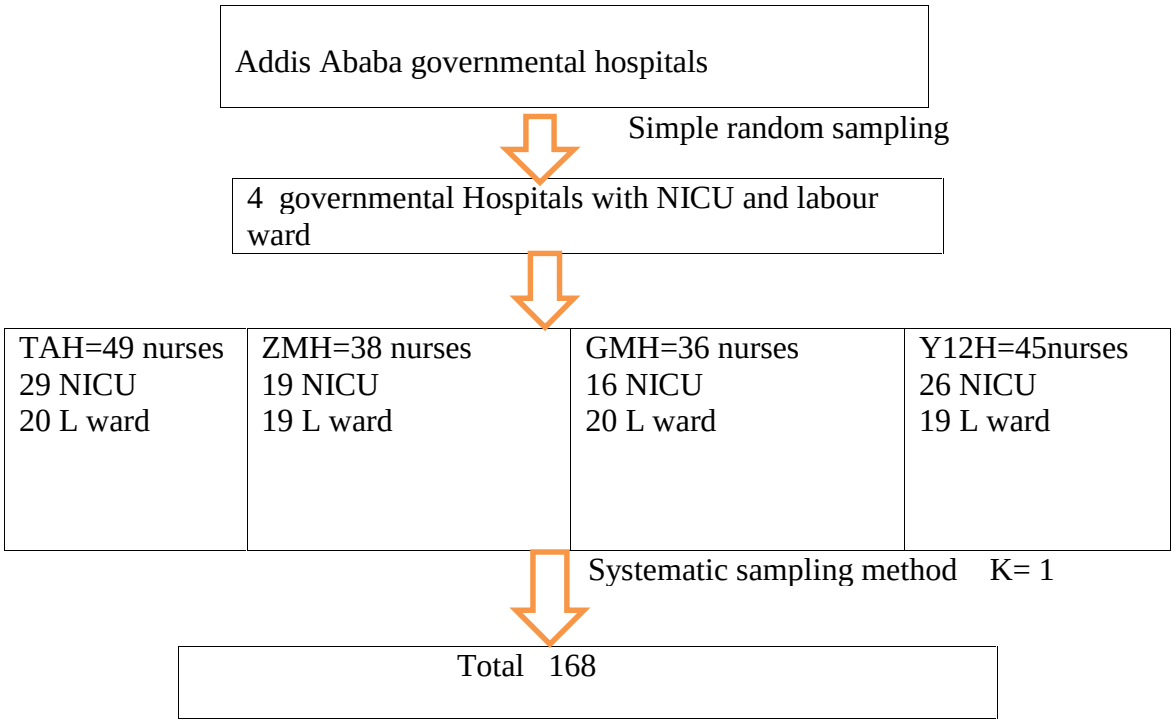
4. Y 12 H = nf x NY12H =168 x 48 = 45

N 178

In this N (178) is total number of population of selected hospitals.

4.6 Sampling procedure

Among all governmental hospitals, four hospitals were selected by simple random sampling. Then by using allocation proportion formula estimated number of nurses for each is participated by systematic random sampling in this study.



TAH- Tikur Anbessa Hospital
ZMH- Zewditu Memorial Hospital
GMH- Gandhi Memorial Hospital
Y12H- Yekatit 12 Hospital

Figure 2: Schematic presentation of sampling procedure.

4.7 Data collection methods

4.7.1 Data collection tool

Data was collected by using pretested, structured self-administer questionnaire which consists of socio-demographic information, knowledge, attitude and practice questions toward management of birth asphyxia was usedwhich was adapted by revising various related researches. The questionnaire was prepared in English version.The questionnaire had three parts, Part I- 13 questions of socio-demographic characteristics, Part II- 14 question related to knowledge of nurses and midwives on management of birth asphyxia, Part III- 8 question of related to attitude of nurses and midwives on management of birth asphyxia, and part IV 8 question related to practice of nurses and midwives on management of birth asphyxia.

4.7.2 Data collection procedure

Data collectors were 3 diploma nurses with 1 BSc supervisors. Training was given for one day on clarification of some terms and assessment tools, aim of the study, concerning need for strict confidentiality of respondents information, time of data collection, timely collection and reorganization of the collected data from respective hospitals and submission on due time. The questionnaires were filled by nurses working in NICU and labour ward. Data was collected for approximately 20 days including training and pretest, facilitated by data collection facilitators and supervisors.

4.8. Variables

4.8.1 Dependent variables

- Knowledge
- Attitude
- Practice

4.8.2 Independent variables

- Age, Sex, Religion, Ethnicity, Marital status, Educational level
- Previous neonatal resuscitation training
- Profession
- Unit of work
- Work Experience

4.9. Operational Definitions

The overall knowledge, attitude and practice were estimated by taking the average score of all subscales. The subscale score was obtained by summing items score and dividing by the total number of items. If it was above or equal to the average, it had good knowledge and less than the average it had poor knowledge. This assumption works for all operational.

Good knowledge: - Participant who scored above mean for knowledge questions.

Poor knowledge: - Participant who scored below mean for knowledge questions.

Positive attitude: - Those responded correctly above mean for attitude questions.

Negative attitude: -Nurses those responded correctly below mean for attitude questions.

Practice: in this study practice is the self-reported activities of nurses performed in NICU and labour ward during management of birth asphyxia.

Good practice: Participants those scored above mean for practice questions.

Poor practice: Participants those scored below mean for practice questions

4.10 Data quality management

Data quality was ensured during collection, coding, entry and analysis. During data collection, adequate training and follow up was provided to data collectors and supervisors. Supervision of data collectors includes observation of on how the data collectors are administering questions.

The questionnaires were pre tested on 5% of sample size at St. Paul hospital, two week prior to data collection. The questionnaires were checked for completeness by data collectors, supervisors and PI on a daily basis. After data collection, each questionnaire was given a unique code by the principal investigator. The principal investigator prepared the template and entered data using EPI Info version 3.5.1. Frequencies were used to check for missed values and outliers.Any error identified was corrected after revision of the original data using the code numbers

4.11 Data Processing and analysis plan

The collected data was checked for its completeness, consistency and accuracy before analysis. It was be processed and analyzed by using descriptive statistics like percentage, and frequency. Data first checked manually for completeness then coded and entered into Epi-Data version 3.5.1 statistical software and cleaned thoroughly before transferred to SPSS version 21 for further

analysis. Result was presented by text, table, pie chart and histogram. Bivariate and multivariate analysis regression was assessed separately. 95% Confidence interval was used to determine the strength of association between variables. Those variables which have significant association wereselected for further analysis. Results were interpreted as association if ($p<0.05$).

4.12 Ethical Consideration

Ethical clearance was obtained from of Addis Ababa University, College of Health Science, department of Nursing And Midwifery, Institutional Review Board Committee and official letter was written to Addis Ababa health bureau, permission was obtained from each governmental hospitals of Addis Ababa. Informed consent was obtained from respondents who were participated in the study. In addition, all the responses were kept confidential and anonymous by assuring that any information was never be passed to any individual or institution without their agreement.

4.13 Dissemination of the result plan

The results of this study will be disseminated or communicated to University of Addis Ababa College of Health Science, Department of Nursing and Midwifery, Addis Ababa health Bureau, Federal Ministry of health, Governmental hospital of Addis Ababa, local institutions and other concerned bodies through publication on appropriate journal. Effort will be made to present on professional association meetings.

5. RESULT

5.1 Socio-demographic characteristics of study population

Out of 163 participant of the study 102(62.6%) are females and 61(37.4%) are males. Majority 127(77.9%) of the participants were in the age group of 22-31, and the mean age of respondents was 29.26 ±0.6 years. Regarding their religion, majority 105(64.4%) were orthodox Christian followers and concerning educational status of respondents 130(79.8%) were BSc degree holders (table 1).

Table-1: Socio-demographic characteristics of nurses and Midwives in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variable		**Frequency (n=163)**	**Percentage (%)**
Age	22-31	127	77.9
	32-41	26	16
	42-51	8	4.9
	>51	2	1.2
Sex	Female	102	63.1
	Male	61	37.4
Religion	Orthodox	105	64.4
	Protestant	31	19
	Muslim	23	14.1
	0ther	4	2.5
Marital status	Single	88	54
	Married	70	42.9
	Divorced	5	3.1

Profession	Nurse	96	58.9
	Midwife	67	41.1
Educational status	MSc	6	3.6
	Degree	130	79.8
	Diploma	27	16.6

5.2Characteristics of nurses and Midwives related to work and training

A total of 87(53.4%) were working in NICU and 76(46.6%) were from labour ward and majority of respondents had work experience of 1-5 years 76(46.6%). In relation to training of the participants, only 29.4% of the study respondents had taken training related to management of birth asphyxia (table2).

Table-2: characteristics of nurses and Midwives related to work and training in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variable		**Frequency (n=163)**	**Percentage (%)**
Unit of work	NICU	87	53.4
	Labour ward	76	46.6
Work experience	<1	39	23.9
	1-5	76	46.6
	6-10	36	22.1
	11-15	7	4.3
	>16	5	3.1
Training	Yes	48	29.4
	No	115	70.6

Types of training	Theory	5	4.5
	Practical	4	3.4
	Theory and Practical	106	92.1
Frequency of training	One	65	39.9
	Two	32	19.6
	More than two	18	11
Time of last training	< 1 year	53	32.5
	1-2 Years	39	23.9
	>2 year	23	14.1

5.3 Knowledge of nurses and midwives on management of birth asphyxia.

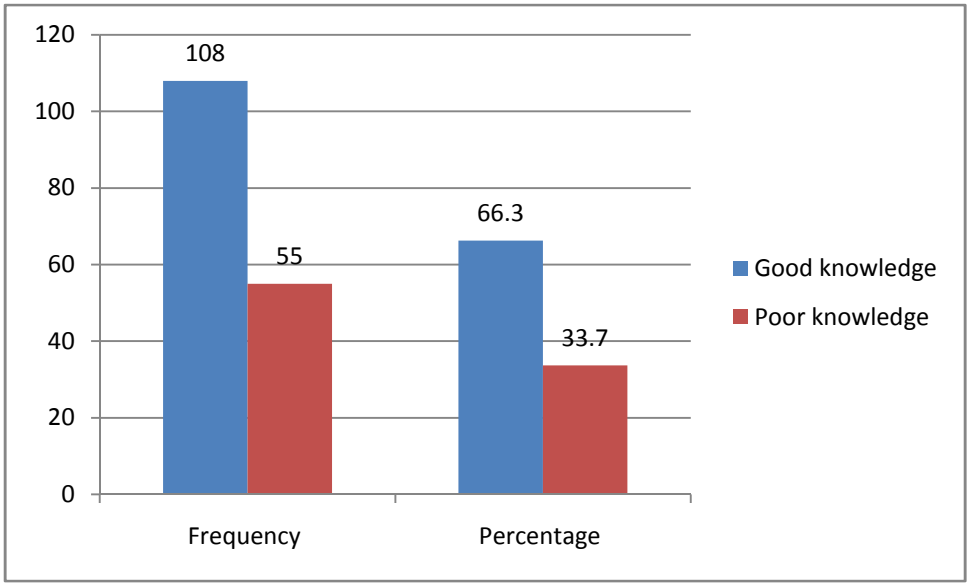
Regarding to knowledge of midwives and nurses, 160 (98.2%) of them gave the definition for birth asphyxia and 144(85.7%) of the participants correctly define birth asphyxia. 72 (42.9%) of midwives and nurses mentioned spontaneous vaginal delivery as a cause of birth asphyxia, whereas 144(67.7%), 47 (28%), 13 (7.7%) of them reported multiple pregnancy, cesarean section and previous delivery as causes of birth asphyxia respectively. Among the respondents 44.6% of them reported pneumonia as the complication of birth asphyxia and 5.5% of the participants manage birth asphyxia in hospital (table 3).

Table-3: Knowledge of nurses and midwives on management of birth asphyxia in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variables		**Frequency (n=163)**	**Percentage (%)**
Defining term birth asphyxia	Yes	160	98.2
	No	3	1.8
Definition of	Unable to breath at birth	144	85.7

asphyxia	Bluish discoloration	17	10.1
	Unable to breast feed	4	2.4
	Abnormal movement	3	1.8
Risk factors of birth asphyxia	Caesarian section	47	28
	SVD	72	42.9
	Multiple pregnancy	114	67.9
	Previous delivery	13	7.7
Complication of birth asphyxia	RDS	121	72
	Pneumonia	75	44.6
	Hypothermia	61	36.3
	Sepsis	70	41.7
Manage birth asphyxia in hospital	Yes	154	5.5
	No	9	94.5
Manage birth asphyxia	Administering fluid	21	13.7
	Warming baby	15	9.8
	Start resuscitation	117	75.9
	Start feeding	1	0.6
Birth asphyxia is preventable	Yes	154	94.5
	No	9	5.5
Asphyxia can be prevented by	Telling mothers to use contraceptive	13	8
	Identifying high risk pregnancies such multiple pregnancy	119	73
	By C/s delivery	33	20.2
	By antibiotics during pregnancy	18	11
The ratio of ventilation	1:2	51	31.3
	2:3	14	8.6
	1:3	66	40.5

with chest compression	3:1	32	19.6
Start resuscitation	When hypothermic	28	17.2
	When neonate stops breathing	67	41.1
	When heart beat is <60	58	35.6 %
	When neonate is cyanosed	10	6.1 %



5.5 Association of socio demographic factor with knowledge of nurses and midwives.

Bivariate and multivariate analysis was performed between knowledge, attitude and practice of birth asphyxia management (dependent variable) and socio demographic factor. In the binary logistic regression experience and training were associated with knowledge birth asphyxia management.The factors that showed a p-value of 0.2 and less were added to multivariate regression model. In multivariate logistic regression only training remains associated with knowledge of birth asphyxia management.

In multivariate logistic regression nurses and midwives who had got training were 2.6 times **{AOR=2.6; 95% CI (1.02-6.63)}** more likely to have knowledge of birth asphyxia compared to those didn't get training (table 4).

Table 4: Factors associated with nurses and midwives knowledge of birth asphyxia management in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variables	Knowledge		COR,95%CI	AOR,95%CI
	Good	**Poor**		
Sex				
Male	44(72.1%)	17(27.9%)	1.53 (0.77-306)	2.13 (0.95-4.7)
Female	64(62.7%)	38(37.3%)	1	1
Educational level				
Diploma	16(59.3%)	11(40.7%)	1	1
Degree	87(66.9%)	43(33.1%)	1.39 (0.59-3.2)	1.39 (0.54-3.55)
Masters	5(83.3%)	1(16.7%)	3.43 (0.35-3.36)	4.4 (0.34-5.5)
Profession				

Nurse	68(70.8%)	28(29.2%)	1.63 (0.85-3.16)	1.56 (0.35-6.97)
Midwife	40(59.7%)	27(40.3%)	1	1
Experience				
<1	29(74.4%)	10(25.6%)	1	1
1-5	47(61.8%)	29(38.2%)	0.55 (0.23-1.31)	0.67 (0.26-1.7)
6-10	24(66.7%)	12(33.3%)	0.69 (0.25-1.87)	0.84 (0.25-2.82)
11-15	4(57.1%)	3(42.3%)	0.46 (0.08-2.41)	0.94 (0.10-8.08)
>=16	4(80.0%)	1(20.0%)	**1.37 (1.13-3.84)***	2.49 (0.15-4.01)
Training				
Yes	73(63.5%)	42(36.5%)	**1.5 (1.3-3.25)***	**2.6 (1.02-6.63)****
No	35(72.9%)	13(27.1%)	1	1

***P value is significant at p< 0.2** **** P value is significant at P < 0.05**

COR: crude odds ration **AOR: adjusted odds ratio**

5.6 Attitude of nurses and midwives on management of birth asphyxia.

From all the respondents 106 (65%) of them believe as they have knowledge to handle birth asphyxia and 86 (47.2 %) of the study participants believe that as they have enough practical training in how to handle birth asphyxia.

One hundred thirty eight (84.7%) and 86 (47.2 %) of them believe that more frequent training in neonatal resuscitation would make them more comfortable and believe that they have enough practical training in how to handle birth asphyxia respectively (table 5).

Table-5: Attitude of nurses and midwives on management of birth asphyxia in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variables		**Frequency (n=163)**	**Percentage (%)**
Believing to have enough knowledge to handle birth asphyxia	Yes	106	65
	No	57	35
Believing to have enough practical training in how to handle birth asphyxia	Yes	86	47.2
	No	77	52.8
Believing that more frequent training in neonatal resuscitation would make more comfortable	Yes	138	84.7
	No	25	15.3
confidently knowing the steps of neonatal resuscitation	Yes	128	78.5
	No	35	21.5
Feeling comfortable with doing chest compressions	Yes	127	77.9
	No	36	22.1
Feeling comfortable with doing bag-and-mask ventilation	Yes	138	84.7
	No	25	15.3
Birth asphyxia managing is one of the most important tasks in my job.	Yes	147	90.2
	No	16	9.8
Canexplain to the mother about what has been done and possible consequences of birth asphyxia.	Yes	134	82.2
	No	29	17.8

5.7Over all attitudes of nurses and midwives on management of birth asphyxia.

Out of 163, eighty one (49.7%) of the participants had positive attitude towards birth asphyxia management whereas 82 (50.3%) were found as having negative attitude towards birth asphyxia management (table 6).

Table 6: Over all attitudes of nurses and midwives towards management of birth asphyxia in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variable	Mean	Frequency (n=163	Percentage (%)
Positive attitude	>6.1	82	50.3
Negative attitude	<6.1	81	49.7

5.8Association of socio demographic factors with attitude of nurses and midwives.

In the multivariate logistic regression, there was no association between sociodemographic characteristics and attitude of nurses and midwives towards management of birth asphyxia.

5.9 Practice of nurses and midwives on management of birth asphyxia.

Regarding to practice of nurses and midwives towards birth asphyxia, majority of them 150 (92 %) done bag ventilation, 146 (89.6%) applied face mask and 154 (94.5 %) administered intranasal oxygen (table 7).

Table-7: Practice of nurses and midwives on management of birth asphyxia in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variables		Frequency (n=163)	Percentage (%)
Bag and mask ventilation?	Yes	150	92
	No	13	8
Practiced chest compression?	Yes	140	85.9
	No	23	14.1
Administering intranasal	Yes	154	94.5
oxygen	No	9	5.5
Practiced clearing air ways?	Yes	158	96.9
	No	5	3.1
Applying facemask	Yes	146	89.6
	No	17	10.4
Applying CPAP	Yes	101	62
	No	62	38
Nose and mouth suctioning	Yes	148	90.8
	No	15	9.2
Giving adrenaline	Yes	92	56.4
	No	71	43.6

5.10 Over all practice of nurses and midwives towards birth asphyxia management

Out of 163, above half 94 (57.7%) of the participants had good practice of birth asphyxia management whereas 69 (42.3%) were found as having poor practice of birth asphyxia management (table 8).

Table 8: Over all practice of nurses and midwives towards management of birth asphyxia in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variable	Mean	Frequency (n=163)	Percentage (%)
Good practice	>6.7	94	57.7
Poor practice	<6.7	69	42.3

5.11 Association of socio demographic factors with practice of nurses and midwives.

In the multivariate logistic regression, nurses were 5.3 times **{(AOR=5.37; CI (2.35, 12.27)}** more likely to have good practice compared to those midwives. The other variable associated to practice of nurses and midwives was educational level. Nurses and midwives those have masters were 4.3 times **{(AOR=4.35; CI (1.54-12.25)}**more likely to have good practice management of birth asphyxia compared to those have diploma (table 6).

Table 9: Factors associated with nurses and midwives practice of birth asphyxia management in governmental Hospital Addis Ababa, Ethiopia, 2017.

Variables	COR	AOR
Sex		
Male	0.57 (0.30-1.09)	0.69(0.30-1.56)
Female	1	1
Education		
Diploma	1	1
Degree	1.136(0.108-11.992)	0.144(0.004-4.744)
MSc	**4.7 (1.8-11.98)***	**4.35(1.54-12.25)****

Profession		
Nurse	**6.13 (3.08-12.21)***	**5.37(2.35-12.27)****
Midwife	1	1
Training of neonatal resuscitation		
Yes	0.39 (0.19-0.78)	0.86 (0.35-2.14)
No	1	1
Experience		
<1	1	1
1-5	0.52 (0.23-1.17)	0.46 (0.18-1.19)
6-10	0.7 (0.27-1.79)	0.53 (0.15-1.82)
11-15	0.6 (0.13-3.43)	0.41 (0.04-4.07)
>16	2 (0.2-19.75)	1.89 (0.11-32.28)

***P value is significant at p< 0.2** **** P value is significant at P < 0.05**

COR: crude odds ration **AOR: adjusted odds ratio**

6. Discussion

This facility based cross sectional study has attempted to identify the knowledge, attitude and practice of birth asphyxia management among nurses and midwives in Addis Ababa.

The study found that more than half (66.3%) of nurses and midwives have good knowledge related to management of birth asphyxia. The result was comparable with the level of knowledge reported in the study conducted in Nigeria where more than half of the participants had average knowledge (22) and in Uganda majority of the study participants had good knowledge regarding management of birth asphyxia. This may be because of socio demographic status of study participants.

Regarding to definition of birth asphyxia, almost two third of the participants could define correctly birth asphyxia. This result is in line with the findings in the study conducted in Malawi where majority of them could define it (27).

In the present study related attitude and practice of nurses and midwives more than half of them have positive attitude and good practice towards birth asphyxia management. This result was consistent with the finding in the Nigeria where the majority of the study participants had good practice in the management of birth asphyxia (22).

Regarding to factors associated to birth asphyxia management, there was no significant association between nurses and midwives knowledge and their age, marital status, training in neonatal resuscitation and years of experience. This result was consistent with the result of a cross sectional study conducted in Nigeria (22).

Training is one of the strategies that can increase the knowledge of health care workers and can improve their skill to provide quality of care. This also can increase birth asphyxia management skill and their knowledge. In the current study only 29.4% of nurses and midwives were taken training. This finding was comparable with the finding in the study conducted in Kenya were only 23% of the study participants were given training (28) and in Nigeria where 32% of the respondents had at least one training related to management of birth asphyxia(22). However,the result was inconsistent with the findings in Malawi, where 85.3 % of them had given training. The difference may be due to lack of prioritization of job training on birth asphyxia and in our country most of the time the training was basedon interest of funder and it is difficult to get fund based on the interest of health care providers(27).

Concerning to trainings periods and their last training less than a year ago, 19.6% of nurses and midwives were got training two times and 32.5% of them got the last training less than a year ago. The finding in this study was consistent with the finding reported in the Nigeria where 6% had two trainings periods and 6%had their last training less than a year ago (22).In our study among those got training, more than half of them taken both theory and practice training. This finding was not in line with the finding in the Baghdad where more than half the study participants got only theory training (24).

In relation to the practice of nurses and midwives this study revealed that majority of them was practiced birth asphyxia management well. In Nigeria a different finding was reported where only one out of ten was appropriately practiced management of birth asphyxia. The explanation for this difference may be due to the reason the appropriateness of practice was not assessed in the current study but it was evaluated in the study conducted in Nigeria (22).

7. Strengths and limitation of the study

7.1 Strengths

- This study is the first study that attempted to assess nurse'sand midwives knowledge, Attitude and Practice related management of birth asphyxia.
- The instrument was adapted from validated source and pretested before data collection.

7.2 Limitation

- Lack of literatures hinders further discussion and comparison
- Since the study design is cross sectional it cannot revealed cause effect
- Lack of time and financial problem to do observational check list assessment.
- Lack of enough references.

8. Conclusion

The study revealed about sixty six percent of nurses and midwives towards have knowledge of birth asphyxia management. More than half of themhave good practice and positive attitude towards the management of birth asphyxia. Proper management of birth asphyxia is critical in the reduction of neonatal mortality. Out of all those define birth asphyxia, 85% of them could define correctly birth asphyxia. Nurses and midwives were frequently mentioning multiple pregnancies as risk factor of birth asphyxia. In the multivariate regression training was associated with knowledge of nurses and midwives and profession was significantly associated with practice birth asphyxia management among nurses and midwives. There is aneed to design and implement knowledge increasing program on birth asphyxia management.

9. Recommendation

Federal ministry of Health

- Preparation for specialized training in pediatric training to increase their knowledge, specialization in pediatrics can positively improve knowledge and improve management of birth asphyxia.

Hospital decision makers

- Providing regular training and retraining for nurses and midwives on birth attendants on neonatal resuscitation.

Other researchers

- Further research should be conducted to assess the quality of care and appropriateness of practice related to management of birth asphyxia.

Health care workers

- Health care providers should increase their knowledge of birth asphyxia management by reading different books and resources.

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Annex I: Information sheet and consent form

Addis Ababa University College of Health Science Department of Nursing and Midwifery

Consent form: - Hello! I am _____i am conducting the survey on the assessment of Knowledge, attitude and practice of nurses and midwives working in NICU and labour ward towards management of Birth asphyxia in governmental hospitals Addis Ababa, Ethiopia, 2017.

The assessment is made for the partial fulfillment of Master's Degree in Child Health, Addis Ababa University College of Health Science Department of Nursing and Midwifery. The results of the study will be used as base line information to design appropriate intervention strategies to increase nurse's knowledge, attitude and practice of birth asphyxia management. The questionnaire contains both closed and open ended questions and will be provided in self-administered form. You are therefore kindly requested to provide genuine answers to the questions. The information you provide is confidential and is used only for the purpose of this study. If you have any question, don't hesitate to ask the data collector. Y our cooperation and participation until the completion of the questionnaire is very necessary for the successful completion of the study. We therefore ask your genuine willingness. However, you have the right to refuse if you are not voluntary to participate by making thick mark in -No' in the box below.

If you are voluntary Yes No

Thank you in advance for your cooperation

Data collectors Name_____, date _____sign: _____

Questionnaire code: _____

Persons to contact:

If you have any question to ask, please contact

Ayantu Fekede: PI

Tel: +251-922875582, Email = ayuhundessa@gmail.com

Annex II: English Questionnaires

Part I: Socio-demographic characteristics of nurses in governmental hospital Addis Ababa, 2017

No	Socio demographic	Response
1	Sex	1. Male 2. Female
2	Age	------in years
3	Marital status	1. Single 2. Married 3. Divorced 4. Widowed
4	Level of education	1. Diploma 2. BSc 3. MSc
5	Your profession	1. Nurse 2. Midwife
6	Unit of work	1. NICU 2. Labour ward
7	Experience in	1. <1 2.1-5 3. 6-10 4.11-15 5.>16
8	Religion	1. Protestant 2.Muslim

		3.Orthodox 4. other
9	Neonatal Resuscitation training	1. Yes 2. No
10	If yes what kind of training do you have?	1. Theory 2.Practical 3.Theory and practical
11	How many times do you get training?	1. One 2. Two 3. More than two
12	When was the last time you got neonatal resuscitation training?	1.<1year 2. Between 1-2 years 3.>2 years

Part II: Questions to assess knowledge of nurses towards management of birth asphyxia.

SNO	**Questions**	**Responses**
1	Can you define the term birth asphyxia?	1. Yes 2. No
2	If, yes, what is the definition?	1. Unable breath at birth 2. Bluish discoloration 3. Unable to breast feed 4. Abnormal movement
3	What are the risk factors of birth asphyxia? More than one answer is possible.	1. Caesarian section 2. SVD 3. Multiple Pregnancy 4. Previous delivery 5. Other.....

4	What are the complications of birth asphyxia? More than one answer is possible.	1. RDS 2. Pneumonia 3. Hypothermia 4. Sepsis 5. Other.....
5	Have you ever manage birth asphyxia in your hospital?	1. Yes2. No
6	If yes, what do you do to manage birth asphyxia?	1. Administering fluid 2. Warming baby 3. Start resuscitation 4. Start feeding
7	Do you think birth asphyxia is preventable?	1. Yes 2. No
8	If yes for ques.no 7, how can you prevent it?	1. Telling mothers to use contraceptive 2. Identifying high risk pregnancies such multiple pregnancy 3. By C/s delivery 4. By antibiotics during pregnancy 5. Other....
9	What the ratio of ventilation with chest compression	1. 1:2 2. 2:3 3. 1:3 4. 3:1
10	When do you start resuscitation?	1. When hypothermic 2. When neonate stops breathing 3. When heart beat is <60 4. When neonate is cyanosed

Part II: Questions to assess attitude of nurses towards management of birth asphyxia.

S NO	Questions	Responses
1	I believe I have enough knowledge to handle birth asphyxia.	1. Yes 2. No
2	I believe that I have enough practical training in how to handle birth asphyxia	1. Yes 2. No
3	I believe that more frequent training in neonatal resuscitation would make me more comfortable	1. Yes 2. No
4	I confidently know the steps of neonatal resuscitation	1. Yes 2. No
5	I feel comfortable with doing chest compressions	1. Yes 2. No
6	I feel comfortable with doing bag-and-mask ventilation.	1. Yes 2. No
7	Birth asphyxia managing is one of the most important tasks in my job.	1. Yes 2. No
8	I can explain to the mother about what has been done and possible consequences of birth asphyxia.	1. Yes. 2. No

Part III: Questions to assess practice of nurses toward management of birth asphyxia.

S No	Question on practice of nurses to manage birth asphyxia	Responses
1	Have done bag and mask ventilation?	1. Yes 2 .No
2	Have you practiced chest compression?	1. Yes 2. No
3	Administering intranasal oxygen	1. Yes 2. No
4	Have you practice clearing air ways?	1. Yes 2. No
5	Applying facemask	1. Yes 2. No
6	Applying CPAP	1. Yes 2. No
7	Nose and mouth suctioning	1. Yes 2. No
8	Giving adrenaline	1. Yes 2. No