

**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING AND MIDWIFERY
DEPARTMENT OF NURSING
POST GRADUATE STUDIES**

**IDENTIFYING CAUSES AND ASSOCIATED FACTORS OF
NEONATAL MORTALITY AMONG NEONATES ADMITTED
TO NEONATAL INTENSIVE CARE UNITS IN
GOVERNMENTAL HOSPITALS ADDIS ABABA, ETHIOPIA,
2020.**

BY: NETSANET KETEMAW (BSC)

**A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT
OF NURSING, SCHOOL OF NURSING AND MIDWIFERY,
COLLEGE OF HEALTH SCIENCE ADDIS ABABA
UNIVERSITY, FOR PARTIAL FULFILLMENT OF THE
REQUIREMENTS OF MASTER'S DEGREE IN NEONATAL
NURSING.**

MAY, 2020

ADDIS ABABA, ETHIOPIA

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BY: NETSANET KETEMAW (BSC)

ADVISORS:

- 1. Dr. AMSALE CHERIE (PHD)**
- 2. Mr. TADESSE BEDADA (MSc)**

MAY, 2020

ADDIS ABABA, ETHIOPIA

DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in this or another university and that all sources of materials used for this thesis have been fully acknowledged.

Name: NetsanetKetemaw(BSc)

Signature: _____

Date_____

Place: Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery,
Department of Nursing and Midwifery

Date of submission: _____

This thesis is submitted for examination with my approval as university advisors.

Approved by:

1. Name of Major Advisor:DrAmsale Cherie (Phd)

Signature_____

Date_____

2. Name of Co-Advisor:MrTadesseBedada(Msc)

Signature_____

Date_____

APPROVAL BY THE BOARD OF EXAMINATION

This Thesis By **Netsanet Ketemaw** (Bsc) is Accepted in its Present Form By the Board of Examiners as Satisfying Thesis Requirement for the Degree of Masters of Science in Neonatal Nursing.

1.

EXAMINER

Name of Examiner: **Hussen Mekonnen**

Rank (BSc, MPH, & PhD)

Signature _____

Date _____

2. RESEARCH ADVISORS:

1. Name of Major Advisor: **Dr Amsale Cherie (Phd)**

Signature _____

Date _____

2. Name of Co-Advisor: **Mr Tadesse Bedada (Msc)**

Signature _____

Date _____

3. DEPARTMENT HEAD:

Name of examiner: _____

Rank _____

Signature _____

Date _____

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ACRONYMS

ANC	Ante natal Care
GC	Gregorian calendar
GMH	Gandhi Memorial Hospital
EDHS	Ethiopian Demographic Health survey
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
MRN	Medical Record Number
NGO	Non-Government Organization
NICU	Neonatal Intensive Care Unit
NMR	Neonatal Mortality Rate
PNR	Perinatal Mortality
RDS	Respiratory Distress Syndrome
SDG	Sustainable Development Goals
WHO	World Health Organization
TAHS	TikurAnbessa Specialized Hospital

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ABSTRACT

Background: Ethiopia has made a considerable improvement in reducing child mortality. However, neonatal mortality is still a concern which needs priority attention. Little is known about factors affecting neonatal mortality in Ethiopia among those admitted to NICUs in Addis Ababa governmental hospitals. Neonatal mortality is still accounts the largest proportion of under five deaths the same situation was also seen in the MDG.

Objective: To assess neonatal mortality and associated factors among newborns admitted to the neonatal intensive care unit in governmental hospitals, Addis Ababa, Ethiopia, 2020.

Method: Retrospective cohort study design was conducted in Addis Ababa selected governmental hospitals at NICUs from March 25th, 2020 to April 30th, 2020. Data was collected using data extraction after conducting the pre - test. Data was entered into the Epi-data version 4.6 and exported to SPSS for window version 26.0 for cleaning, editing, and analysis. Binary and multiple logistic regressions were used to observe the association (P-value = 0.25 for binary and P-value < 0.05 for multiple) between independent variables and a dependent variable.

Results: The study included 298 neonates died after admission to NICUs in Addis Ababa selected governmental hospitals. Among all deaths the major causes of neonatal mortality are cardio respiratory arrest secondary to (prematurity, respiratory distress) were 43.6%, sepsis secondary to overwhelming were 25.5% and perinatal neonatal asphyxia were 16.4%. In this study results showed that, there was statistically significance association found between neonatal mortality within the first week were antenatal care follow up (AOR=0.22, 95% CI: 0.11-0.44), neonates birth weight 1500-2499gram (AOR=0.41, 95% CI: 0.17-0.97), neonates admitted with pre-term problem (AOR=2.36, 95% CI: 1.01-5.51) and neonates admitted with perinatal neonatal asphyxia (AOR=2.91, 95%, CI: 1.28-6.64).

Conclusion: In general, this study showed that has described different variables such as socio-demographic factors, obstetric factors, and diagnosis on admission and possible causes of neonatal death. The major causes of neonatal mortality were cardio respiratory arrest secondary to prematurity, respiratory distress, infection and birth asphyxia as identified by this study. Both maternal and neonatal risk factors for neonatal mortality were identified in this study.

Key word: Neonatal mortality, causes, Neonatal intensive care unit, Ethiopia

1. INTRODUCTION

1.1. Background

The neonatal period is refers to the period in the first 28 days of life. It is the most crucial time for Childs survival (1). Neonatal mortality is the death of neonates that happens within the first 28th day of life. It is also divided into early neonatal mortality which is before the seventh day of life and late neonatal mortality which is occurring thereafter(1).

The first week of life is the most critical for a neonate with 36% of neonatal deaths occurring (1 million) in the first 24 h of life, 37% (1 million) occurring between days 1 and 7 of life and 27% (0.8 million) occurring between day 7 and day 27 of life(2, 3).

Despite a remarkable reduction in the under-five mortality in the past few years following important interventions like immunization and diarrhea control programs, the neonatal mortality in resource poor countries is still alarmingly high. It accounts for over 40% of all deaths of children under the age of five years. It is estimated that 34 of every 1000 babies born in developing countries die in the first month of life. This happens primarily because of most child survival strategies being deigned bypassing the newborn. About two-third of infant deaths occur in the neonatal period, of which nearly two-thirds die during the first week and of these two thirds die during the first 24 hour(4, 5).

Neonatal mortality rate (NMR) are often used as a standard index for evaluation of health, education, social systems, nutritional status and health programs for neonates and the first step in reducing mortality rate promoting the level of this indicator is to identify the causes of mortality(6)

The causes of neonatal mortality are generally classified into biological and non-biological groups. Although biological factors such as prematurity, infections and asphyxia at birth are known causes of neonatal mortality, non-biological causes are equally important, including socioeconomic condition, gender and mothers' education. Maternal and fetal prenatal issues and also conditions during childbirth, affect the perinatal mortality rate. Perinatal deaths are associated with issues such as intrauterine growth restriction, embryonic asphyxiation conditions

such as fetal immaturity, severe congenital malformations, early and risky infection for neonate, low birth weight, early birth and congenital fatal abnormalities(6).

Neonatal mortalities mainly occur as a result of preventable or treatable causes and conditions. Such as prematurity, birth asphyxia, and sepsis, is the three areas that can be mitigated by the presence of skilled clinicians at the time of delivery (7).

1.2. Statement of the Problem

Approximately, 3.1 million babies die worldwide in the 1st month of life, each year, Majority of these deaths occur in developing world (8). Over 1.1 million neonatal deaths, comprising 28% of the global burden, occur in sub-Saharan Africa with Nigeria, Ethiopia, Democratic Republic of the Congo and Tanzania is contributing 6%, 4%, 3%, and 2% of the global burden of neonatal deaths, respectively (9).

Children are still dying of diseases which could have been prevented and/or treated easily with low cost and effective interventions (10). Furthermore, In most developing countries, almost 50% of these deaths are related to severe infection, tetanus and complications related to LBW in countries like Bangladesh and India with higher neonatal mortality rates (NMR>45) (11). Study in Burkina Faso showed NMR about 46.3 per 1000 live births. Among 864 live births followed to day 28, there were a total of 40 neonatal deaths.

Ethiopia is the second most populous country (with population grows at a rate of 2.6% per annum) in Africa after Nigeria who's the majority of people live in rural areas. High mortality, high fertility, and low life expectancy characterize the country's demography like most sub-Saharan African countries (12).

In the face of improvements over the past decade, Ethiopia's current neonatal mortality rate is 29 deaths per 1,000 live births (EDHS 2016) and it is still one of the highest in the world (8). Other maternal factors including in-vitro fertilization, earlier still birth, higher maternal age, maternal diabetes and lower socioeconomic status, smoking during pregnancy and being a single mother were also found to be associated with increased risk of perinatal mortality.

Despite the fact that the Addis Ababa governmental Hospital is high case loads of neonatal morbidity, it is the belief of the researcher that the neonatal mortality and its associated factors are limited studied and documented. Therefore, the purpose of this study will be to assess neonatal mortality and associated factors among neonates admitted to neonatal intensive care units (NICUs) of Addis Ababa governmental hospitals.

1.3. Significance of the Study

Little is known about factors affecting neonatal mortality in Ethiopia among those admitted to NICUs in Addis Ababa governmental hospitals, by providing information. It helps in programming and policy improvement in identifying associated factors determinants to neonatal mortality. Despite the fact that most of Addis Ababa governmental Hospitals are high case loads of neonatal morbidity, as to the best knowledge of the researcher, neonatal mortality and its associated factors in the hospital are limited studied.

This helps the health professionals in the study hospital to take special consideration of general preventive mechanisms of these factors. Similarly, the findings of this study were helpful for policy makers in filling the gap of preventing these specified factors aside from being a reference data for NGOs and other researchers interested in the area.

2. LITERATURE REVIEWS

2.1. Prevalence of neonatal mortality

Globally, the neonatal mortality rate is not the same across different studies. A Study Conducted in India on neonatal mortality found that the rate in the country to be 26.6% (13). Similar studies conducted in Cairo and Iran also showed that the overall mortality rate was 29.1% (14) and 13 % (15) respectively.

Substantial progress has been made in reducing child deaths globally, including sub-Saharan Africa-the region with the highest under-five mortality rate in the world. Similarly, the global neonatal mortality rate fell from 36 deaths per 1,000 live births in 1990 to 19 in 2015. In absolute terms, the number of neonatal deaths declined from 5.1 million to 2.7 million over the same period. However, between 1990 and 2015, neonatal mortality showed a slower the decline than that of post-neonatal under-five mortality, i.e. 47 percent compared to 58 percent globally (10). Studies have shown in Ethiopia, the neonatal mortality rate is not the same across different studies; it ranges from 5.7% in Somali region ten (10). A study conducted at Gondar specialized Hospital noted that the Neonatal mortality rate among admitted neonates was 14.3% (17). The neonatal mortality rate was 22.8%, 22.4%, and 16.5% in studies conducted in MizanTepi(18), Arba-Minch (19), and southern Ethiopia respectively (20).

2.2. Factors associated with neonatal mortality

2.2.1. Socio demographic and economic related factor

Poor economic status of mothers or poverty is influencing the likelihood of neonatal death through two general mechanisms: increasing of risk, and reduction of access to health facilities (preventive and therapeutic interventions) that may be effective in minimizing the impact of the elevated risks (21).

A study Conducted in Status of neonatal death in sick newborn care units of a tertiary care hospital. They observed that the majority of the prevalence of neonatal deaths

occurred among lower socioeconomic status as compared to that of higher social economic status (22).

A study conducted in Assosa zone, Western Ethiopia Neonates born to mother's age at 1st pregnancy <20 years old were 4.3 times at higher risk of death than those neonates born to mother's age at first pregnancy ≥ 20 (23). A similar study Conducted in Status of neonatal death in sick newborn care units of a tertiary care hospital higher percentage of rural neonates (20.4%) died compared to that of urban counterparts (5.6%) (22).

Maternal education is also an important determinant of infant and child mortality and is mostly used as a proxy for socioeconomic status of mother, Less educated mothers are found to experience more child mortality (24). A study conducted in Ethiopia of a specialized referral teaching hospital maternal occupation, were significantly associated for neonatal mortality (4).

2.2.2. Obstetric factors

A study conducted in Assosa zone, Western Ethiopia: a matched case control study Prime Para mother was 3.37 fold at higher risk of having neonatal death than those mothers with parity of two to four (23). Some studies have shown that prime Para has a higher neonatal mortality than multi-parish birth (25). A study conducted in Assosa zone, Western Ethiopia neonates born to mothers who had complications during pregnancy were 4.59 times more likely at risk of death as compared with those neonates born to mothers who had no complication during pregnancy (23).

A study conducted in Arba-minch General Hospital, Southern Ethiopia in a Survival Status and Predictors of Neonatal Mortality among Neonates Who were Admitted in Neonatal Intensive Care Unit at Neonates born from mothers whose rupture of the membrane was ruptured more than 12 hours of delivery have 2.6 times higher hazard of neonatal mortality than the counterparts whose mothers membrane ruptured within 12 hours of delivery (19).

A study conducted in Jimma Zone, Southwest Ethiopia, first birth order and birth order of five or above were found to increase the likelihood of neonatal mortality by more than five and two times respectively (16).

Another study Conducted in Southern Ethiopia of a retrospective cohort study neonates of multiple births had 1.8 times higher risk of death than singleton neonates (20). Multiple

pregnancies (which included twin and triplet pregnancy) were found to be an independent predictor of early neonatal mortality; singleton pregnancy was found to be protective of mortality (4). Prematurity is also recognized as the most common significant causes of mortality (26). For example, in Nouri study, prematurity was the main cause of neonatal mortality (47.42%) followed by congenital anomalies (22.42%) (27).

A study conducted in FelegeHiwot referral hospital, Bahir Dar, Amhara Regional State, North West Ethiopia Late initiation of breastfeeding was also associated with the occurrence of neonatal mortality. Mothers who initiate breastfeeding within 1 hour of birth of infant were almost three times higher to save their newborn than those who delayed breastfeeding initiation (28).

2.2.3. Neonatal Related Factors

Most neonates die in their early neonatal period as this period is highly vulnerable time for the neonate who is completing many of the physiological adjustments required for extra uterine existence and also almost two-third of infant deaths occur in the first month of life. Among these, more than two thirds die in their first week and among those also, two thirds die in their first 24 hours (29).

A study conducted in FelegeHiwot referral hospital, Bahir Dar, Amhara Regional State, North West Ethiopia Early age of the newborn (neonates in the first week) was significantly associated with neonatal mortality in the study area. Neonatal mortality was significantly higher at an earlier age (first week) of the neonates than at later age (28).

Low birth weight, which is less than 2.5kg, is also closely associated with fetal and neonatal morbidity and mortality (27). In the same study indicated above, low birth weight below 2500g was the cause of neonatal mortality for 60% of the study samples.

2.2.4. Medical diagnosis and related factors

Globally, it is well documented that around 60% of early neonatal deaths (within the first 7 days of life) are associated with birth asphyxia, which is failure to initiate spontaneous respiration at birth (30). Another most significant cause of neonatal mortality is sepsis. For example, a study conducted in India indicated that Neonatal sepsis was the most common significant cause of neonatal mortality (13).

Neonatal infection is also indicated as one of the causes of neonatal mortality. For example, a study conducted in North West Ethiopia, Gondar, indicated that Neonatal infection is the leading cause of neonatal mortality in Ethiopia, contributing to 31% of neonatal deaths (31). Another similar study in North West Ethiopia of Gondar also indicated that Hypothermia at NICU admission increased the chance of early neonatal death (32). As another cause for neonatal mortality, study conducted at Arba Minch General Hospital, Southern Ethiopia APGAR scores less than 3 were significantly associated for neonatal mortality (19).

2.2.5. Health care related factors

In similar studies Neonates born from mothers who did not attend ANC visits during their pregnancy were six times at higher risk of death than neonates born from mothers who had ANC visits 4 and above (20).

In order to reduce neonatal deaths all pregnant women should have access to skilled birth attendants (33). There is strong evidence that births attended by well-trained health providers, the neonates have a high chance of survival. Training and equipping all skilled birth attendants with mandatory knowledge and skills in neonatal death prevention is a key indicator of achievement of MDGs 4 and 5 (34). 23% of neonatal deaths could be prevented if all pregnant women could have access to skilled birth attendants who are expert and educated in dealing with normal and abnormal pregnancies and childbirth. Skilled birth attendants should be able to recognize and manage complications in women and newborn babies, make required referrals and be competent enough to resuscitate newborn neonates in all settings (35).

Skilled care during pregnancy, childbirth, and the postpartum period are important interventions in reducing maternal and neonatal morbidity and mortality (36). A study conducted in Indonesia a decline in the odds of neonatal death was found as the percentage of deliveries assisted by trained delivery attendants increased (37). Increasing institutional deliveries are important for reducing maternal and neonatal mortality. However, access to health facilities in rural areas is more difficult than in urban areas because of distance, inaccessibility, and the lack of appropriate facilities. Although institutional delivery has been promoted in Ethiopia, home delivery is still common, primarily in hard-to-reach areas (36).

2.3. Conceptual framework

This conceptual framework is developed from different literature. This framework conceptualizes neonatal mortality as the result of interaction between various factors. In this study this conceptual framework looks at the relationship between dependent and independent variables (**Figure 1**).

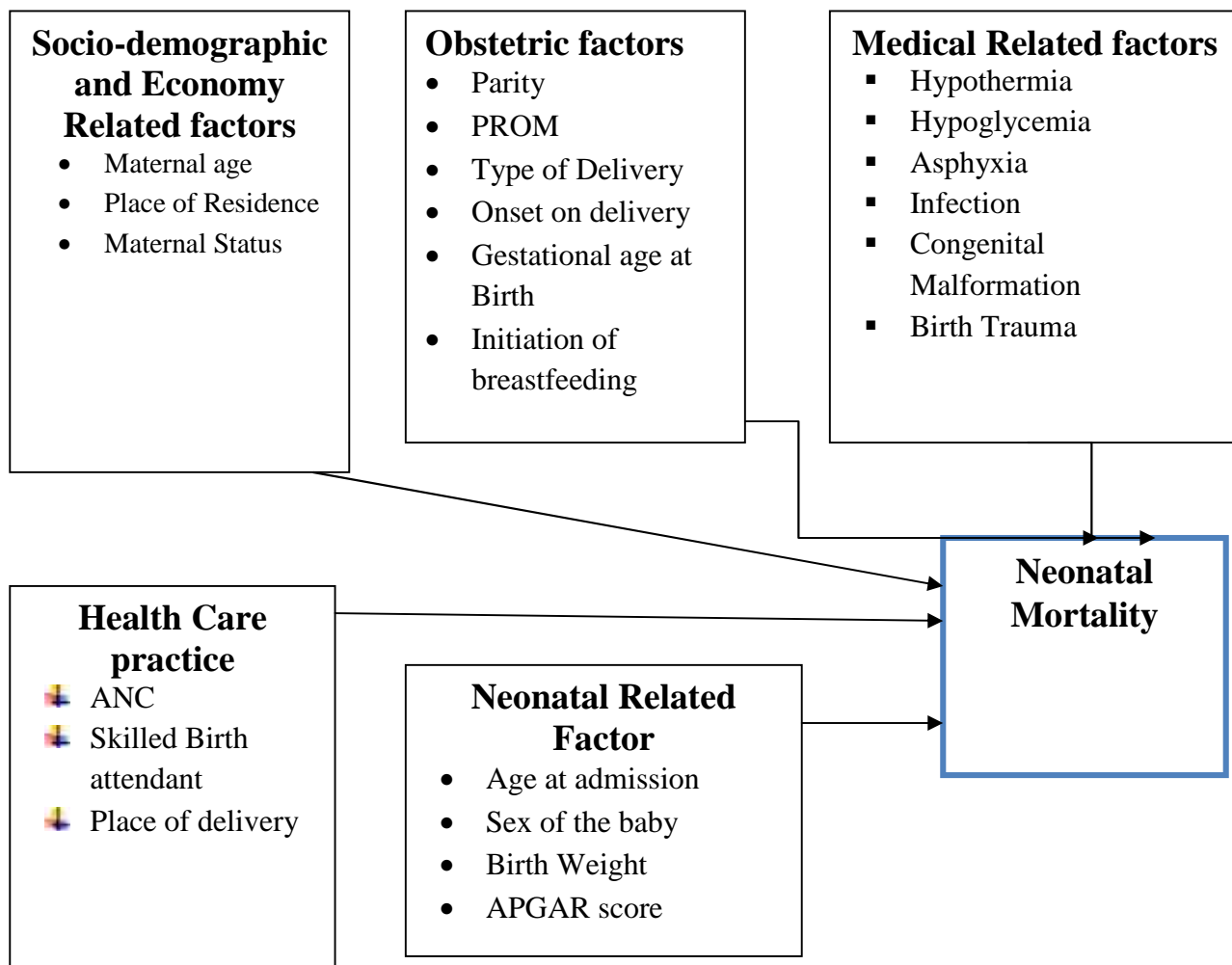


Figure 1: Conceptual framework on identifying cause and associated factors of neonatal mortality among neonates admitted to NICU in AA governmental hospitals, 2020. Adapted from different. Source: (1-5)

3. OBJECTIVES

3.1. General objective

- To identify cause and associated factors of neonatal mortality among neonates admitted to neonatal intensive care units in governmental hospitals, Addis Ababa, Ethiopia, 2020.

3.2. Specific objectives

- To identify the cause of neonatal mortality among newborns admitted to Neonatal intensive care unit in governmental hospitals, Addis Ababa, Ethiopia, 2020
- To describe factor associated with neonatal mortality among newborns admitted to Neonatal intensive care unit in governmental hospitals, Addis Ababa, Ethiopia, 2020.

4. METHODS AND MATERIALS

4.1. Study area and period

4.1.1. Study area:

The study was conducted in governmental hospitals in Addis Ababa town, Addis Ababa, Ethiopia. It is the capital city of Ethiopia and Seat of African Union and the United Nations and World Economic commission for Africa. It covers an area of 527 square kilometers and has 10 sub cities. According to population projection value for 2014 the city has an estimated population of 3,195,000 The proportion of male counts 1,515,000 and female accounts 1,680,000(6).

The city has 13 government Hospitals among these 10 hospitals have neonate intensive care unit. These are 6 Addis Ababa Health Bureau, 4 Ministry of Health, 1 Addis Ababa University (TikurAnbessa Specialized hospital), 1 Ministry of Defense and 1 Police hospital (7).

The research was conducted in three Addis Ababa government hospitals selected by lottery method. These selected hospitals are Gandhi Memorial hospital (GMH), TikurAnbessa special hospital (TASH) and Yekatit 12 hospital medical college (Y12HMC).

In GMH, The number of admitted neonates varies from time to time; the average annual admission rate being 2,500. The NICU has a 32-bed capacity .Gandhi memorial hospital has a total of 25 nurses, 3 health officers, 6 physicians and 12 AAU physicians are working in its NICU. In TASH, In NICU 3 neonatologists, 32 nurses and 18 AAU physicians are currently working in the unit. In Y12HMC, In NICU 1 neonatologists, 43 nurses and 10 AAU physicians are currently working in the unit.

4.1.2. Study period:

The data were collected from March 25th, 2020 to April 30th, 2020.

4.2. Study design:

Retrospective cohort study design was conducted.

4.3. Source of population and study population

4.3.1. Source population

A collection of all medical charts (records) of neonates died after admission to neonatal intensive care units of governmental hospitals in Addis Ababa from January 1st 2019 to December 30th 2019 GC.

4.3.2. Study population

A collection of selected medical charts (records) of neonates died after admission to neonatal intensive care units of the selected Addis Ababa governmental from January 1st 2019 to December 30th 2019 GC.

4.4. Inclusion and exclusion criteria

4.4.1. Inclusion criteria:

All medical charts (records) of neonates died after admission to neonatal intensive care units during January 1st 2019 to December 30th 2019 GC in the selected hospitals.

4.4.2. Exclusion criteria:

Medical charts (records) of neonates died after admission to neonatal intensive care units during January 1st 2019 to December 30th 2019 GC in the selected hospitals whose medical records was impossible to read and incomplete information will be excluded from the study.

4.5. Sample size determination and sampling procedures

4.5.1. Sample Size Determination

Sample size was calculated by using single population proportion formula

$$n = (z / 2)^2 * pq / d^2$$

$$n = (z / 2)^2 * p (1-p) / d^2$$

$$n = (1.96)^2 [0.228(1-0.772)] / 0.0025$$

$$n = 271$$

Where, n=the required sample size

d=margin of error between the sample and population=5%=0.05

Z=standard normal distribution value at 95% confidence level

Z /2=1.96 for 95% confidence interval

p=Prevalence of Neonatal mortality (22.8%) from the previous study conducted in MizanTepi University Bench Maji Zone, South-West Ethiopia, 2018 (1).

N.B: Then, by adding 10% of non-respondent rate, final desired sample size is 271+ 10% non - response rate, n=**298**.

❖ Then, the final sample size was 298.

4.5.2. Sampling procedure/techniques

There are 10 hospitals in Addis Ababa having neonatal intensive care units. These hospitals are TikurAnbessa Specialized Hospital, Zewditu Memorial Hospital, Yekatit 12 Hospital, St. Paul Hospital, Gandhi Hospital, Ras-desta Hospital, DagmawiMinilik Hospital, St. petro's, Defense Hospital and Tirunesh-Bejing Hospital. Among these, Three of them namely: Gandhi Memorial Hospital, TikurAnbessa Specialized Hospital and Yekatit 12 hospital medical college were selected using the lottery method. During the study period, that means from January 1st 2019 to December 30th 2019 GC, the total admission to neonatal intensive care units of the selected hospitals was 9,750. Among these neonates, 636 were died. Then proportional allocation to each hospital, 196, 228 and 212 study units respectively have been selected by using systematic sampling from the three selected hospitals.

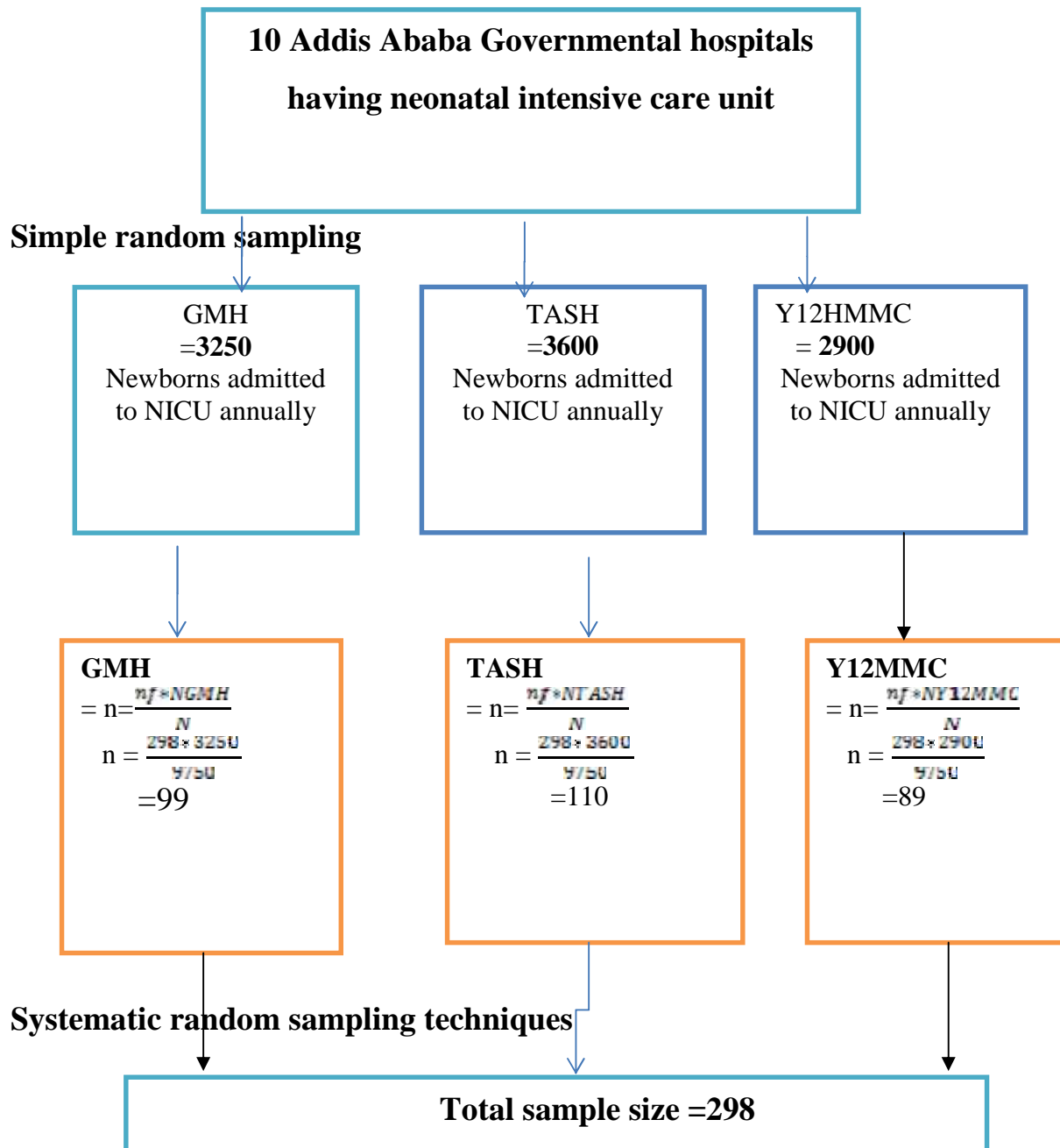


Figure 2: Schematic presentation of sampling procedure on identifying cause and associated factors of neonatal mortality among neonates admitted to NICU in AA governmental hospitals, Ethiopia, 2020.

4.6. Study variables

4.6.1. Dependent variable

- Neonatal mortality

4.6.2. Independent Variables

- **Socio demographic factor**
 - Mothers age
 - Marital status
 - Residence
- **Health Care related factors**
 - ✓ ANC
 - ✓ Skilled Birth attendant
 - ✓ Place of delivery
- **Neonatal factors**
 - Age at admission
 - Sex of the baby
 - Weight of the baby
 - APGAR score
- **Obstetric related factors**
 - Parity
 - PROM
 - Type of Delivery
 - Onset on delivery
 - Gestational age at Birth
 - Initiation of breastfeeding
- **Medical Related factors**
 - Hypothermia
 - Hypoglycemia
 - Asphyxia

- Infection
- Congenital Malformation
- Birth Trauma

4.7. Operational definitions of terms

Causes of neonatal death: In this study it is to mean that any medical or other cause which was diagnosed on the chart as a cause of neonatal death.

Antenatal care visit: Any history of visit or follow up during current or index pregnancy at any health institution for checkup of pregnancy and designated or recorded on chart.

Congenital malformation: Body deformity or deformities from the birth believed to have impact on health of the baby.

Hypoglycemia: A measure of low blood glucose that was diagnosed and recorded on charts by professionals on admission.

Hypothermia: Any low body temperature measurement diagnosed and recorded on charts during admission of neonates.

Premature: Any viable neonate before term (<37weeks of gestation) that was already diagnosed by professionals in charge on admission of neonate to neonatal intensive care units.

Sepsis: Record of infection or sepsis diagnosed either clinically or with culture by professionals during admission of the neonate and as possible causes of death and designated or recorded on chart.

4.8. Data Collection instruments

Two days training was given for all data collectors and supervisors. These trained data collectors used data extraction checklist adopted and modified from different literature's to collect information from medical charts (8). First of all, the medical charts of neonates died after admission to selected hospitals after one year (2019-2020 GC), were collected using a sampling frame from registration book. Then, using the checklist, Socio-demographic characteristics of the mother, the medical problem during the pregnancy, place of delivery, gestational age, age of the neonate, medical problem and treatments were some of the items included in the data extraction checklist. During the process, the principal investigator has supervised these trained data collectors.

The outcome or dependent variable for this study are neonatal mortality where as independent variables are Socio-demographic factors, health care related factors, obstetric related factors, Neonate related factors and other medical related factors like those associated with treatment. These variables are listed under study variables under the preceding subsection. Note that levels are labeled simply regardless of the degree of association.

4.9. Data quality assurance

Pretest was employed in 5% of the sample size by using the data extracted checklist in Zewditu Memorial Hospital with medical charts of neonates died after admission to neonatal intensive care unit during the 2019-2020 G.C. This was a help for modification of prepared tools to measure intended variables. In addition, the close supervision of data collectors by principal investigator will also be continued during the progress of data collection.

4.10. Data processing and analysis.

After the necessary data is collected it was entered, categorized, coded, and summarized using EPI data version 4.6 software, and then, it was transferred to statistical package for the social science (SPSS) version 26 software, for further analysis.

Descriptive statistics were used to describe demographic and socioeconomic variable using frequencies and mean, and standard deviation. Binary and multiple logistic regressions were used to observe the association (p-value ≥ 0.25 for binary and p-value < 0.05 for multiple) between independent variables and a dependent variable. The strength of statistical association was measured by odds ratio and 95% of confidence intervals and statistical significance was considered at $P < 0.05$.

4.11. Ethical consideration

Ethical clearance was obtained from AAU, department of nursing and midwifery research committee. The ethical clearance was submitted to Gandhi memorial hospital, Tikur Anbessa specialized hospital and Yekatit 12 millennium medical hospital to get permission for conducting the Study.

After getting permission from the hospital administration, the request letter will be written for the concerned bodies of respective departments. Following this, searching and obtaining of the

selected samples' medical record was processed with assigned person. Finally, strict care of the patients' medical records and the confidentiality of records that could identify study participants were protected. This has been achieved through anonymity and by abandoning the individually identifiable information, which specifically refers to identity of patients like MRN and coding was used instead

4.12. Dissemination and utilization of the result

The result of the study was submitted and presented to department of Nursing and Midwifery, School of Health Sciences Addis Ababa University. The result of the study was disseminated to Federal Minister of Health, Addis Ababa public health research and emergency management core process and Addis Ababa town governmental hospitals. Hard and soft copy was available in the library of Addis Ababa University for graduate students as well as for other concerned readers. An effort was made to present the result in locally or internationally held seminars, Workshops, conferences and meetings. For the publication purpose, the abstract of this thesis will be submitted to national or international peer reviewed publishers.

5. RESULTS

5.1. Socio-demographic characteristics of mothers

A total of 298 study participants was recruited in this study. Of these, 123 (41.3%) of the mothers were of age 25-29, the mean age of the mothers was 27.3 with SD=4.8. Almost all, 276 (92.6%) of mothers were married and most 135 (45.3%) of the respondents were housewives. The majority of mothers 235 (78.9%) were from urban areas (**Table 1**).

Table 1: Socio demographic characteristics of mothers in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, 2020 GC (n=298).

Variable	Frequency	Percent
Age group of the mother		
24	89	29.9
25-29	123	41.3
30-34	61	20.5
35	25	8.4
Marital status		
Married	276	92.6
Unmarried	22	7.4
Occupation		
Housewife	135	45.3
Government employee	44	14.8
Private employee	119	39.9
Residential		
Urban	235	78.9
Rural	63	21.1

5.2. Proportion of neonatal mortality

During the time from January 1st 2019 to December 30th, 2019 GC, there were the total admissions of 9,750 neonates to Neonatal Intensive Care Units of the three selected hospitals. From these, 636 neonates died. This means the proportion of deaths to total admission was 6.5%. Among the neonates died during the period, 298 were included in the study and the result is presented in subsequent sections.

5.3. Obstetrics and neonatal characteristics

A majority, 159 (53.4%) of respondents were multi-gravid. About 266 (89.3%) of mothers had single birth and 172 (57.7%) of the neonates are male. Among the respondents who had ANC followed up, 147 (49.3%) had 1-3 visit. About three quarters 225 (75.5%) of mothers' delivered their neonate's in hospital. Majority 175 (58.7%) of mothers gave birth in 37-42 weeks of gestational age and 96 (37.2%) of the neonates had 2.5kg birth weight. A majority, 151 (50.7%) of the neonates were admitted aged less than 1day. About, 123 (41.3%), of the neonates had 4-6 first minute APGAR score and 121 (53.1%) had greater than 7 APGAR score in the fifth minute after birth. Majority 259, (86.9%) of mothers didn't initiate breast feeding among these 255 (98.5%) neonates were on maintenance fluid feeding. Those mothers who have PROM <12hrs were 119 (66.1%)(Table 2).

Table 2: Obstetrics and neonatal characteristics in neonatal intensive care unit at Addis Ababa governmental hospitals from 2019-2020 GC, Add (s Ababa, Ethiopia, 2020(n=298).

Variable	Frequency	Percent
Parity		
Prime-gravida	139	46.6
Multi gravid	159	53.4
Recent Birth type		
Single	266	89.3
Twin	31	10.4
Triple	1	0.3

Sex of the neonate		
Male	172	57.7
Female	126	42.3
Birth weight		
1000	28	9.4
1000-1499	82	27.5
1500-2499	92	30.9
2500	96	32.2
APGAR score 1st minute		
0-3	37	12.4
4-6	123	41.3
7	68	22.8
APGAR score 5th minute		
0-3	5	2.2
4-6	102	44.7
7	121	53.1
Age of the neonate admitted at NICU		
1 hour	150	50.3
1-24 hour	109	36.6
24 hour	39	13.1
ANC follows up		
1-3 times	147	49.3
4 times	130	43.6
No	21	7.0
Place of delivery		
Home	21	7.0
Hospital	225	75.5
Health center	51	17.1
Private clinic	1	0.3

Gestational Age		
<37 week	177	59.4
37-42 week	111	37.2
42 week	4	1.3
Un known	6	2.0
Initiate breast feeding for the recent birth		
Yes	39	13.1
No	259	86.9
when you initiated BF after birth (n=39)		
1 hour	26	86.7
>1 hour	13	33.3
Which type of feeding are practicing (n=259)		
Maintenance fluid	255	98.5
Formula milk	4	1.5
ROM before delivery		
Yes	180	60.4
No	118	39.6
PROM hour (n=180)		
<12 hour	119	66.1
12 hour	61	39.9

Regarding complication before giving birth or during delivery 48(30.9%) mothers had preeclampsia, 20(12.9%) had neonatal related problems such as IUGR and 17(10.9%) had Ante-partum hemorrhage (Figure 3).

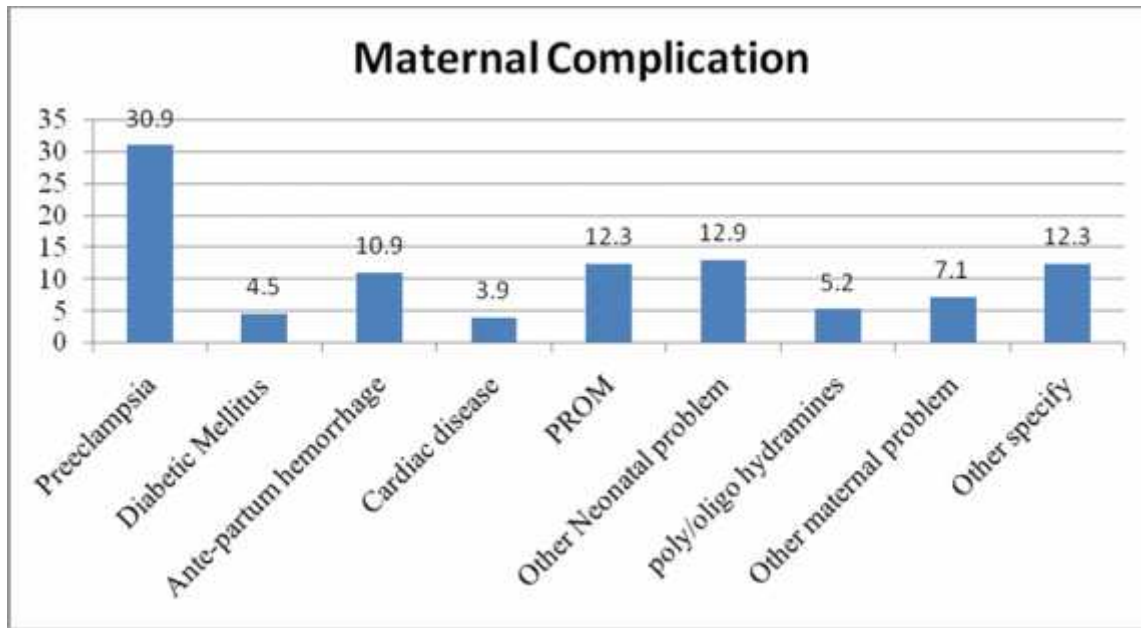


Figure 3: Distribution of maternal complication of neonates died in Neonatal Intensive care Units in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, Ethiopia, 2020 (n=298).

Majority, 187(62.8%) of mothers delivered by spontaneous vaginal delivery, 99(33.2%) delivered by caesarean section and 12(4%) of them are instrumental delivery (Figure 4).

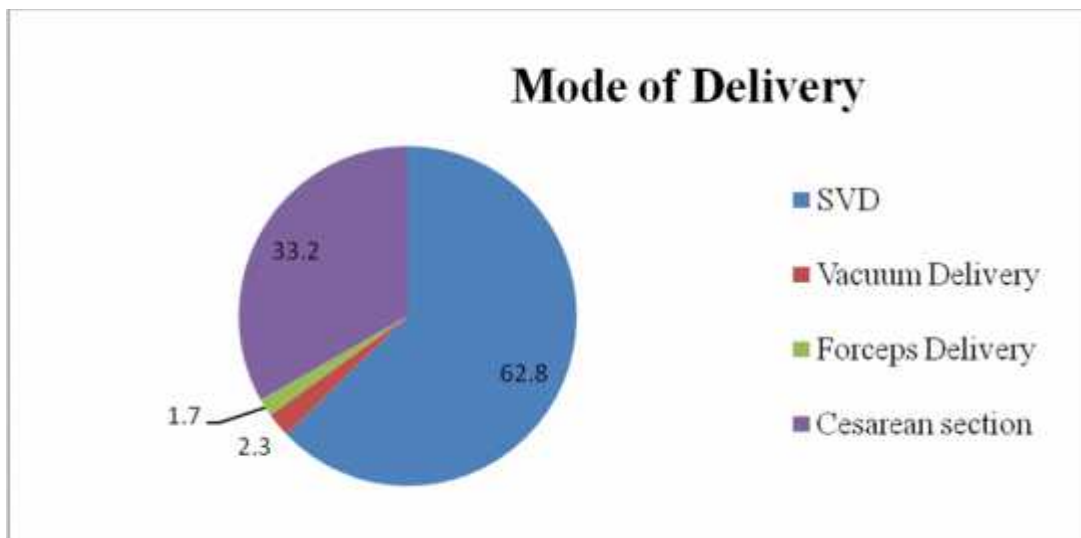


Figure 4: Distribution of mode of delivery of neonates died in neonatal intensive care units in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, Ethiopia, 2020 (n=298).

5.4. Medical Diagnosis and treatment of died neonates

A total of 71(23.8%) neonates had congenital malformations among these 33(23.9%) of newborns had GI anomaly. Twelve (4.0%) neonates diagnosed with birth injury among these 8(66.7%) of neonates had Subgaleal hemorrhage. Almost all 286(96.0%) of the neonates get IV antibiotics of these 171(57.4%) of neonates were given Ampicillin and Gentamycine (Table 3).

Table 3: Medical Diagnosis and treatment of died neonates in Addis Ababa Governmental Hospitals from 2019-2020 GC, Addis Ababa, 2020 GC (n=298).

Variable	Frequency	Percent
Congenital malformation		
Yes	71	23.8
No	227	76.2
Type of congenital (n=71)		
GI anomaly	33	23.9
Spinal problem	6	11.1
Cardiac problem	10	21.5
Clip lip/palate	5	12.2
Down syndrome	10	18.1
Other	7	13.2
Birth trauma		
Yes	12	4.0
No	286	96.0
Type of birth trauma(n=12)		
Subgaleal hemorrhage	8	66.7
Cephallohematoma	2	16.7
Caput succedaneum	1	8.3
Hip dislocation	1	8.3
Iv antibiotic treatment		
Yes	286	96.0
No	12	4.0

Type of Iv antibiotic (n=286)

Ampicillin &Genta	171	57.4
Ampici&cefotaxim	80	26.8
Vancomaycine	6	2.0
Meropeneum	4	1.3
Ampillinsulbactam	13	4.4
Metrindazole	11	3.7
Phenobarbitone	1	0.3

There was different medical diagnosis during admission of the neonates to Neonatal Intensive Care Unit. As can be shown from Figure 5 below, most 233(21.2%) of neonates admitted in NICU due to respiratory problem.

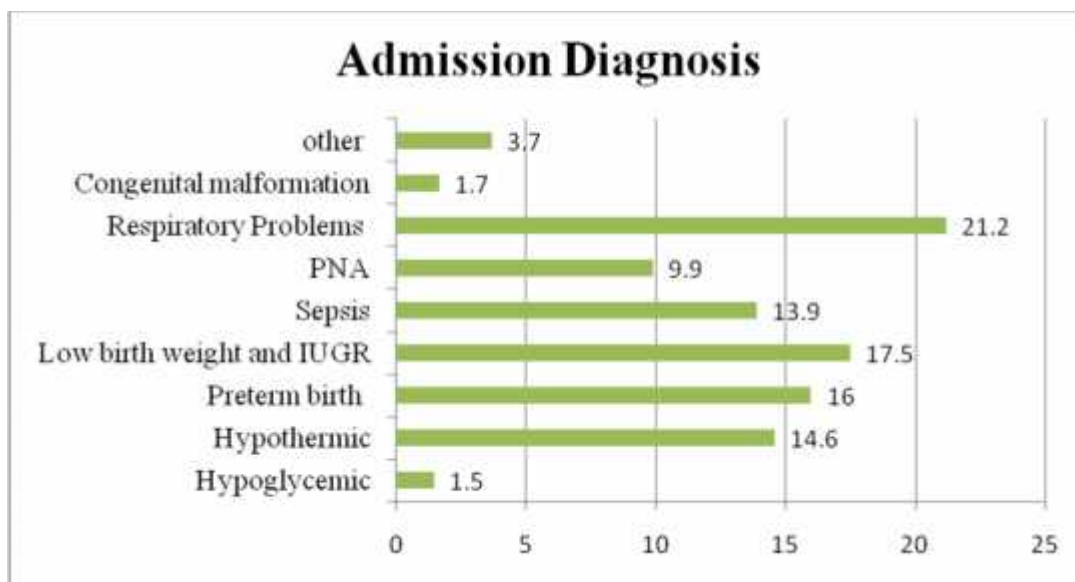


Figure 5: Distribution of admission diagnosis of neonates died in Neonatal Intensive care Units in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, Ethiopia, 2020.

5.5. Causes of neonatal death

In this study the three possible causes of neonatal deaths are 103(34.6%), cardio respiratory arrest secondary to respiratory problems, 80(26.8%) sepsis and 66(22.1%)perinatal neonatal asphyxia.

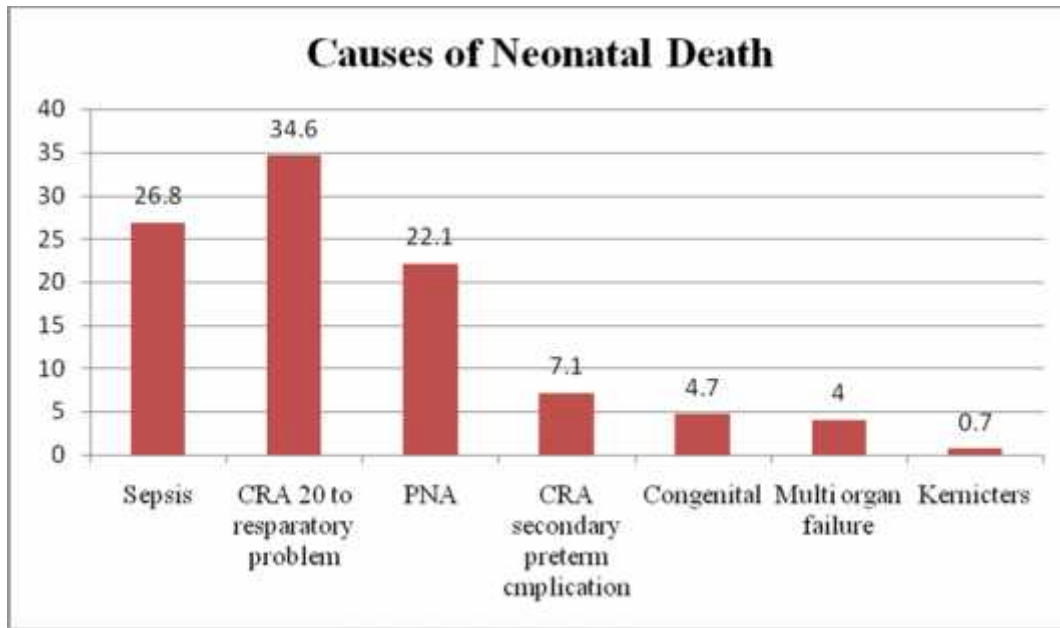


Figure 6: Recorded causes of neonatal deaths in neonatal intensive care units in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, Ethiopia, 2020 (n=298).

- On the other hand, 238(76.5%) of the neonates were admitted to NICU at the age of less than 7 days (Figure 7).

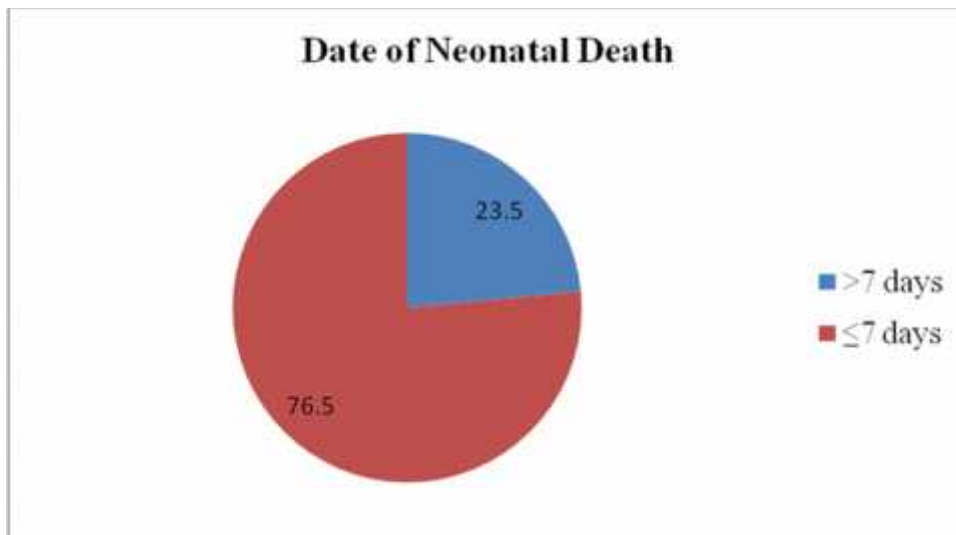


Figure 7: Age of admission of neonates to neonatal intensive care units in Addis Ababa governmental hospitals from 2019-2020 GC, Addis Ababa, Ethiopia, 2020 (n=298).

5.6. Associated factors of neonatal death

The association of the independent and dependent variable were first tested by using bi-variate analysis variable which was associated ($P < 0.25$) was tested in the final multivariate analysis to see their significant association with early neonatal mortality. Accordingly, as shown in Table 4 below those bi-variate regression associated with the crude odds ratios (COR) for early neonatal mortality such age of the neonate admitted to NICU, antenatal care follow up, birth weight of the neonate, neonates admitted with preterm problem, neonates admitted with respiratory problem, neonates admitted with sepsis, neonates admitted with congenital malformation and neonates admitted with perinatal neonatal asphyxia.

In Multivariate analysis results showed that, there was a statistically significant association found between neonatal mortality, parameters which showed p-value of below 0.05 were antenatal care follow up, neonates admitted with preterm problem and neonates admitted with perinatal neonatal asphyxia.

Mothers who had a history of ANC follow up greater than 1-3 times were 78% (AOR=0.22, 95% CI: 0.11-0.44) times less likely to dying neonates within the first week compared to those who had regular ANC follow up during current newborn. Neonates birth weight of 1500-2499gram were 59% (AOR=0.41, 95% CI: 0.17-0.97) times less likely to dying neonates within the first week compared to those neonates birth weight greater than 2500gram.

In this study, preterm neonates are the determinate factor in neonatal mortality. The odds of preterm neonates were 2.36 (AOR=2.36, 95% CI: 1.01-5.51) times more likely dying within the first week of life when compared to those term neonates. Neonates who had perinatal birth asphyxia had 2.91 (AOR=2.91, 95%, CI: 1.28-6.64) times more likely dying within the first week of life when compared to those not asphyxiated neonates.

Table 4: Bi-variate and multivariate logistic regression of neonates dying in NICU of governmental hospitals, Addis Ababa, Ethiopia, 2020 (N=298).

Variable	Neonatal mortality	COR	AOR
	Late (after 7 days)	Early (less than 7 days)	

Age of the neonate admitted at NICU				
<1 hour	20(12.9%)	135(87.1%)	4.11(1.82-9.27)*	1.98(0.70-5.61)
1-24 hour	36(34.0%)	70(66.0%)	1.18(0.54-2.57)	0.72(0.28-1.85)
24 hour	14(37.8%)	23(62.2%)	1	1
ANC				
1-3 times	51(34.7%)	96(65.3%)	0.26(0.14-0.49)*	0.22(0.11-0.44)**
4 times	16(12.3%)	114(87.7%)	1	1
Birth weight (gram)				
<1000	2(6.1%)	31(93.9%)	5.76(1.27-25.78)*	1.79(0.31-10.57)
1000-1499	13(15.7%)	70(84.3%)	2.00(0.95-4.21)	0.93(0.31-2.78)
1500-2499	29(33.7%)	57(66.3%)	0.73(0.39-1.38)	0.41(0.17-0.97)**
2500	26(27.1%)	70(72.9%)	1	1
Preterm birth				
Yes	31(17.3%)	148(82.7%)	2.33(1.35-4.01)*	2.36(1.01-5.51)**
No	39(32.8%)	80(67.2%)	1	1
PNA				
Yes	14(13.0%)	94(87.0%)	2.81(1.48-5.33)*	3.91(1.28-6.64)**
No	56(26.3%)	134(70.5%)	1	1
Congenital malformation				
Yes	25(35.2%)	46(64.8%)	0.46(0.25-0.82)*	1.07(0.48-2.38)
No	45(19.8%)	182(80.2%)	1	1
Cause of neonatal death by respiratory problem				
Yes	14(13.6%)	89(86.4%)	2.56(1.35-4.87)*	2.25(0.94-5.38)
No	56(32.3%)	139(71.3%)	1	1
Cause of neonatal death by Sepsis				
Yes	29(36.3%)	51(63.7%)	0.41(0.23-0.72)*	0.98(0.44-2.19)
No	41(18.8%)	177(81.2%)	1	1

Key 1= Reference

* Statistically significant by COR at p-value <0.25

**Statistically significant by AOR at p-value <0.05

6. DISCUSSION

This study was intended to identify causes and associated factors of neonatal mortality among neonates admitted to neonatal intensive care units in governmental hospitals, Addis Ababa. Among the neonates died during the period, 298 were included in this study in the three selected hospitals. This means the proportion of death to total admission was 9,750(6.5%).

To meet MDG-4, a substantial decline in NMRs in high-mortality countries is needed and reducing deaths in the first month of life will be essential for progress(9).According to 2019 Ethiopian Mini Demographic Health Survey report, the neonatal mortality rate was 30 deaths per 1,000 live births. In general substantial declines neonatal deaths will in the future will depend on increasing health services coverage with interventions that improve neonatal survival within the context of maternal and child health programs.

In this study the three most common causes of neonatal deaths are due to cardio respiratory arrest secondary to (RDS, MAS and prematurity), sepsis secondary to overwhelming sepsis and perinatal neonatal asphyxia.The rationale may be from the point of cardiovascular, which is whenever the baby is extremely preterm it will be difficult to establish the respiration which could cause asphyxia. Once asphyxia is developed, the circulation will be directed establishing circulation toward the vital organs like brain, kidney, and heart by decreasing the blood flow to skin, intestine and adrenal gland.

Mothers who had history of ANC follow up less than 1-3 times were 78% times less likely to dying neonates within the first week compared to those who had regular ANC follow up during current newborn. This is similar with studies done in Southeast and in Ethiopia Gondar(10)Jimma(11) andBrazil(12). This is obvious that the pregnant mother avoids preventable risk factors after having several ANC follow up, early identification and treatment of preexisting conditions, and early screening of conditions that occur during pregnancy.The absence of a proper antenatal care follow-up is associated with an increased neonatal mortality; this would be the reason for hampering prevention of most other preventable factors during pregnancy. The failure of having a proper antenatal care is associated with an increased neonatal mortality in this study.

Neonates birth weight of 1500-2499 gram were 59% less likely to dying neonates within the first week compared to those neonates birth weight greater than 2500 gram. This is consistently, a study which was conducted in Indonesia(13), in Kenya(14) and a prospective study done in Jimma Ethiopia(11). This may be due to the fact that low birth weight by itself is a consequence of either preterm birth or intrauterine growth restriction resulting in small for gestational age births or a combination of the two: low birth weight per se is not thought to be on the causal pathway to early neonatal mortality. And another explanation this might be unable to cope-up with a new environment and possible infections and as a result could be at risk of neonatal death as compared to normal birth weight.

In this study, preterm birth was the determinate factor for neonatal mortality. The odds of preterm birth neonates were 2.36times more likely dying within the first week of life when compared to those term neonates.This was consistent with the study done in Ethiopia, Gondar(11). This is because those newborns whose gestation age less than 37 weeks (preterm) are more likely to develop different complications during and after delivery and results for severe morbidity and mortality.Another explanation is pre term birth aggravates another risk because of intrauterine growth retardation, which has been shown to increase the risk of mortality and morbidity(15). These findings have public health importance when thinking about the potential of interventions that focus on reducing intrauterine growth retardation, or on reducing prematurity in this setting. In developing countries, sepsis, RDS and perinatal asphyxia accounted for more than 60% of admissions(16). In addition, after preterm births many studies have underlined that infections are the main cause of neonatal admission and death after the first week of life (17). The highlights that interventions on infection control, early diagnosis and treatment with improved hospital care are detrimental to neonatal survivals and must be further strengthened(18).

Neonates who had perinatal birth asphyxia had 2.91 times more likely dying within the first week of life when compared to those not asphyxiated neonates. The high prevalence of neonatal mortality attributed to perinatal birth asphyxia may be because of poor maternal conditions identifications(17). So, this study was highlights the need for early identification and appropriate management of risks to reducing neonatal mortality, and make the sustainable development goals achievable.

7. LIMITATION OF THE STUDY

The challenge of the study is incomplete medical records which took time trace charts for replacement. A few variables of interest were not recorded in general from all study sites. For, educational status of the mothers and monthly household income were not recorded at all.

In this study, data were restricted to neonates admitted to NICU in governmental hospital, and hence did not cover those neonates died at home, health center and other private institution.

Another limitation of this study was the cause of death is reported by subjectively (based on neonatal admission diagnosis, physical examination, laboratory findings, and sign and symptoms), so it is difficult to report without autopsy results.

8. CONCLUSIONS

This study describes different variables such as socio-demographic factors, obstetric factors, and diagnosis on admission and possible causes of neonatal death. The major causes of neonatal mortality were cardio respiratory arrest secondary to prematurity, respiratory distress, infection and birth asphyxia as identified by this study. Both maternal and neonatal risk factors for neonatal mortality were identified in this study.

Therefore, early identification of obstetric complications and immediate interventions, strengthen antenatal care services both in the community as well as in the health care institutions, screening the conditions early during intra-partum and postnatal period to give immediate measures to avoid preventable causes of neonatal mortality. The health professionals are responsible to provide quality antenatal care services for pregnant mothers, both at health care institutions and in the community.

9. RECOMMENDATIONS

The following concerned bodies are responsible and recommended as per below.

9.1. It is better if the policy makers

- Incorporate the need of training for health professionals on general prevention of sepsis, and develop standard protocols for all facilities to aware all health professionals attending delivery and working in NICUs in general.
- Training of Neonatology nurses can also be the gate in reducing the sepsis in general.
- Availability and proper functioning of sterilizing machine should also be supervised.
- Minister of health should be urged to achieve accessibility for surfactant and parental nutritional especially for those pre-term and low birth weight newborns.

9.2. It is better if health professionals

- As early neonatal sepsis is maternally and delivery related, it can be prevented by increasing the awareness of the ANC and plan of birth place for screening of complications during pregnancy and delivery respectively, then it would be better if focus is given to the area.
- Health care providers, especially those working in labor and delivery wards, must Give increased attention to complicated labors, to anticipate and take early action in order to avoid birth asphyxia.
- The health professional with infection or lesion should not directly involve in the care of neonates in the NICU and delivery ward especially in preterm neonates.

9.3. For hospitals

- The department head of the neonatal intensive care unit and delivery ward should promote hand washing practice and provide the equipment like gloves and prepare the hand rub to reduce cross contamination during care provision.

9.4. For the researchers:

- Finally, researchers should do further study to identify the practice of mothers with qualitative data about neonatal mortality of neonates at large scale.

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11.APPENDIX

Annex I: English Informed consent

I am _____, Post graduate student at Addis Ababa university, School of Health sciences, department of Nursing and midwifery in neonatal nursing track. Now is conducting my thesis on the identifying causes and associated factors of neonatal mortality among neonates admitted to neonatal intensive care units in governmental hospitals, Addis Ababa, Ethiopia by using secondary data from 2019-2020, the objective of the study is to assess neonatal mortality and associated factors among neonates admitted to neonatal intensive care unit. I hope study will have no risk but there is no doubt that the study will have the positive impact on survival of neonates. I ensure confidentiality by protecting the medical records that could identify study participants, the individual identifiers will be removed and not to be presented at all, privacy and confidentiality rules in accordance with the applicable regulatory requirements are all respected during the data collection through the presentation of the finding. As purpose of the study has been explained for me in the language I can understand, on behalf of NICU department of this hospital for safeguarding the registration book and patients' data, I agree to allow the data collection process and ensure with my signature below.

Name

Qualification

Date.....

Signature.....

With regards, Netsanet Ketemaw

Annex II: English version Questionnaires

Data Extraction Checklist

Name of the organization _____

Data collection date _____

Part I: Socio Demographic and Economic Variable			
No	Variables	Characteristics	Remarks
101	Mother's age in years?	_____	
102	What is your current marital Status?	<ol style="list-style-type: none"> 1. Single 2. Married 3. Divorced 4. Widowed 	
103	What is your Occupation?	<ol style="list-style-type: none"> 1. Government Employee 2. Private 3. Self-employee 4. House Wife 5. Other (Specify -----) 	
104	Mother's Residence?	<ol style="list-style-type: none"> 1. Urban 2. Rural 	
Obstetric Related Variables			
201	How many alive births have you ever had (Parity)?	_____	
202	What type of birth you delivered?	<ol style="list-style-type: none"> 1. Single 	

		<ul style="list-style-type: none"> 2. Twin 3. Triple or more 	
203	Did you initiate breast feeding for the recent birth?	<ul style="list-style-type: none"> 1. Yes 2. No 	
204	If the answer for question 203 is yes, when you initiated breast feeding after birth?	_____	
205	If the answer for question 203 is No, what feeding practice/s you are practicing?	
206	Does she develop Complication During her last Pregnancy?	<ul style="list-style-type: none"> 1. Yes 2. No 	
207	If the answer for Q 206 is yes, what was the complication? (circle more than one)	<ul style="list-style-type: none"> 1. Preeclampsia 2. Diabetic Mellitus 3. Ante-partum hemorrhage 4. Cardiac disease 5. Other (specify -----) 	
208	Does she develop a rupture of membrane before delivery?	<ul style="list-style-type: none"> 1. Yes 2. No 	
209	If yes, how many hours before delivery?	

210	What was the Gestational Age in month during her delivery?	
211	What was the mode of delivery for this pregnancy?	1. Spontaneous Vaginal Delivery 2. Vacuum Delivery 3. Forceps Delivery 4. Cesarean section	
Neonatal Related Data			
301	Sex of the baby?	1. Male 2. Female	
302	Age of the baby during admission?	
303	What was the weight of the baby during birth?		
304	What was the APGAR score at the 1 st and 5 th minute of life respectively?	1 stand 5 th -----	
Health Care Practice Related Data			
401	Have you had ANC follow up for the indexed pregnancy?	1. Yes 2. No	
402	If the answer for question 401 is yes, how many ANC visits had you had?	_____	

403	Where was the Place of delivery?	<ol style="list-style-type: none"> 1. Home 2. Hospital (public/private) 3. Health center 4. Private clinic 5. Other, specify: _____ 	
404	Was the delivery attended by health professionals?	<ol style="list-style-type: none"> 1. Yes 2. No 	
Medical Diagnosis and Related Data			
501	What is the diagnosis of the baby during admission? (circle more than one)	<ol style="list-style-type: none"> 1. Hypoglycemic 2. Hypothermic 3. Sepsis 4. Respiratory Distress 5. Low birth weight 6. Preterm birth 7. PNA 8. Other 	Multiple response possible
502	Does any congenital malformation recorded?	<ol style="list-style-type: none"> 1. Yes 2. No 	
503	If Yes, what was it?	
504	Was there a birth trauma during delivery?	<ol style="list-style-type: none"> 1. Yes 2. No 	

505	If Yes, what was it?	
506	Was any antibiotic treatment was given for the baby	1. Yes 2. No	
507	If yes Q 506 Which antibiotic treatment was given for the baby?	
508	When did the baby die?		
509	What was the cause of death?	_____	

Annex III: Amharic Informed consent

አዲስአበባዩኒቨርሲቲ

ስም _____ ይጻፍ።

በአዲስ አበባ ዩኒቨርሲቲ የሚሰጥ የማስተርስ ዲግሪ መርሃ የህፃናት ጤንነት ተማሪ ስሆን በአሁን ጊዜ ለማስተርስ ስማሚያ እና ለመመረቅ የሚሆን ምርምር በሆስፒታል የጨቅላ ህፃናት ፅኑ ህመምን ክፍል የጨቅላ ህፃናት ሞት መጠን እና ተያያዥ ምክንያቶች በሚል ርዕስ ላይ በመስራት ላይ እንኛለሁ። በመሆኑም ይህ መጠይቅ የተዘጋጀው ለጥናቱ አስፈላጊ የሆኑ መረጃዎችን ለመሰብሰብ እርስዎም በዚህ ጥናት ላይ እንዲሳተፉ በአክብሮት ታስባለሁ።

በጥናቱ ላይ እንዲሳተፉ በአክብሮት የምጠይቅዎበት እርስዎ መልካም ፍቃድ ላይ በመመስረት ሲሆን በጥናቱ ያለ መሳተፍ መብት እንዲሁም በማንኛውም ሰዓት እራስዎን ከጥናቱ ማግለል እንደሚችሉ በቅድሚያ በመግለፅ ይነው። ፍቃደኛ ከሆኑ መረጃውን ለመሰብሰብ የሚፈጀው ጊዜ 20 ደቂቃ ይሆናል። ከእርስዎ የሚሰበሰበው መረጃ የሚውለው ለዚህ ጥናት አላማ ብቻ ሲሆን መረጃውን በመስጠት ዎም ሆነ በጥናቱ መሳተፍ ዎ የሚደርስ ብዎም ንምስጋና ይደረግልዎታል። እንደ ማይኖርና ጥናቱ በአዲስ አበባ ዩኒቨርሲቲ የምርምር ኮሚቴ ማረጋገጫ እና የስነምግባር (የስራ) ፈቃድ እንዳለው ላረጋግጥልዎ እወዳለሁ።

በማንኛውም ጊዜ ለሚኖርዎት ጥያቄ እኔን ወይም አማካሪዎቼን በሚከተሉት ስልክ ቁጥሮች በመደወል መጠየቅ ይችላሉ።

- 1. ስልክ ቁጥር 09 20 49 95 97

ፍቃደኛ ነዎት፣ መቀጠል እንችላለን? መልሱ አዎ ከሆነ ይቀጥሉ።

የመጠይቅ ቁጥር -----

የመረጃ ሰብሳቢው ስም ----- ቀን -----

ፊርማ -----

Annex IV: Amharic version questionnaires

መረጃ መሰብሰቢያ መጠይቅ

መለያ	የመረጃው አይነት	አማራጭ መልሶች
-----	------------	-----------

ቁጥር		
የወላድ እና ትንህህት ለሥራ ለመረጃ በተመለከተ		
101	እድሜ	
102	የጋብቻ ሁኔታ	<ol style="list-style-type: none"> 1. ያላገባች 2. ያገባች 3. የተፋታች 4. ባሏቸው ተባብረው
103	የስራ አይነት	<ol style="list-style-type: none"> 1. የመንግስት 2. የግል 3. የቤት እመቤት 4. ሌላ-----
104	መኖሪያ ቦታ	<ol style="list-style-type: none"> 1. ከተማ 2. ገጠር.
የወላድ እና ትንህህት የሥራ ለመረጃ በተመለከተ		
201	ስንተኛ ልጁ ይሆናል?	
202	አሁንም ንግድ ለመጀመሪያ ጊዜ ትገባለሁ?	<ol style="list-style-type: none"> 1. አንድ ልጅ 2. ሁለት ልጆች 3. ሶስት ልጆች ናቸው
203	ጡት ማጥባት ጀምረዋል?	<ol style="list-style-type: none"> 1. አዎ 2. አልጀመርኩም
204	ከወለዱ በኋላ ለምን ያህል ሰዓት ጡት ማጥባት ጀመሩ?	

205	ለ204 መልሱ አልጀመርኩም ከሆነ ልጅዎን እንደት እየመገቡ ነው?	
206	ከእርግዝናው ጋር በተያያዘ ችግር ነበረብዎት?	1. አዎ 2. አልነበረም
207	ለ206 መልሱ አዎ ከሆነ ችግሩ ምንነብር? (ካለ ከአንድ በላይ ይምረጡ)	1. የደምግፊት 2. የስኳር ህመም 3. የእንግዲል ጁቀድ ሞመም ጣት 4. የልብ ህመም 5. ሌላ.....
208	ከምጥበፊት የሽርት ውሃ ቀድሞ ፈሶ ነበርዎልዎ?	1. አዎ 2. አልፈሰሰም
209	ለ206 መልሱ አዎ ከሆነ የሽርት ውሃ ከፈሰሰ በኋላ ላሳታ ምጥምን ያህል ቆየች?	-----
210	በወሊድ ወቅት የምን ያህል ላምንት ነብሰጡር ነበሩ?	
211	በምን አይነት መንገድ ወለዱ?	1. በምጥ (በማህጸን) 2. በመሳሪያ በመታገዝ 3. በአፕሬት
ከጨቅላው ማህደር መረጃ መሰብሰቢያ ቅጽ (ጨቅላውን በተመለከተ)		
	የመረጃው አይነት	አማራጭ መልሶች

301	የጨቅላውያታ	1. ወንድ 2. ሴት
302	ጨቅላውፅኑ-ህመምንክፍልሲተኛአድሜውምንያህልነበር?	
303	ጨቅላውሲወለድምንያህልየክብደትመጠንነበረው? (በግራም)	
304	APGAR Score	በ1 ደቂቃ ----- እና በ5 ደቂቃ -----
የወሊድጊዜየጤናአገልግሎትንበተመለከተ		
401	በእርግዝናጊዜክትትልነበረሽ?	1. አዎ 2. አልነበረኝም
402	የ 401 ጥያቄመልሱአዎከሆነስንትጊዜ?	
403	የወለዱትየትነበር?	1. ሴት 2. ሆስፒታል 3. ጤናጣቢያ 4. የግልተቋም 5. ሌላ -----
404	ሲወልዱየባለሙያእገዛአግኝተውነበር ወይ?	1. አዎ 2. አላገኘሁም
የጨቅላውንየጤናችግርበተመለከተ		
501	ጨቅላውበፅኑ-ህመምንክፍልየተኛበትም ክንያትምንድንነው? (ካለከአንድበላይይምረጡ)	1. የስኳርመጠንማነስ 2. የሙቀትመጠንማነስ 3. ኢንፌክሽን

		<p>4. መታፈን</p> <p>5. የክብደት-መቀነስ</p> <p>6. ያሰጊዜመወለድ</p> <p>7. ሌላ -----</p>
502	ጨቅላው-የአፈጣጠርችግርነበረበት?	<p>1. አዎ</p> <p>2. አልነበረበትም</p>
503	የ 502 መልሱ-አዎከሆነችግሩምንነበር?	
504	ጨቅላው-በወሊድወቅትችግርደርሶበትነበር?	<p>1. አዎ</p> <p>2. አልደረሰበትም</p>
505	የ504 መልሱ-አዎከሆነችግሩምንነበር?	
506	ጨቅላው Antibiotic (የኢንፎክሽን) ህክምናአግኝቶነበር?	<p>1. አዎ</p> <p>2. አልነበረም</p>
507	የ506 መልሱ-አዎከሆነየወሰደው-መድሃኒት-ምንነበር?	
508	ጨቅላው-መቸሞተ?	
509	የጨቅላው-ሞት-ምክንያት-ምንነበር?	ይጥቀሱ _____