



SCHOOL OF NURSING

ESSENTIAL NEWBORN CARE PRACTICE AND IT ASSOCIATED
FACTORS AMONG POSTNATAL MOTHERS IN PUBLIC HOSPITAL
ADDIS ABABA, ETHIOPIA. 2024.

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Essential newborn care practice and its associated factors among postnatal mothers at public hospitals in Addis Ababa, Ethiopia 2024.

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1.	Research title	Essential newborn care practice and associated factors among postnatal mothers at public hospitals in Addis Ababa, Ethiopia 2024.
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4.	Study area	At Public hospitals (SPMMC, Gandhi memorial hospital peter specialty hospital, Alert hospitals) in Addis Ababa, Ethiopia. 2024.
5.	Duration of project	December 2023-June 2024.
6.	Study period	From May 10 – Jun 30, 2024
7.	Sponsoring institution	SPMMC
8.	Total cost	29,405 ETB.

ABSTRACT

Introduction:

Background: - Essential newborn care practices are compressive strategic and cost-effective intervention to promote newborn health. It involve thermal care, delayed bathing, recognizing danger signs, infection prevention, breastfeeding initiation, cord care, and overall well-being promotion.

Objective: -This study was conducted to assess essential newborn care practice and associated factors among postnatal mothers at public hospital in Addis Ababa, Ethiopia 2024 G.C.

Method: - This embedded mixed-methods study for quantitative and quantitative mothod. 394 postnatal mothers were enrolled in cross sectional study, of whom 8 were purposively selected for in depth interviews of qualitative study. The study was conducted from May 10, - Jun 10, 2024 Addis Ababa city, Ethiopia, at selected public hospitals. Data was cleaned, entered into Epi-data 4.6, and analyzed using SPSS version 28. Binary and multivariable logistic regression was identified significant variables ($p \leq 0.25$ in bivariable analysis) for further analysis ($p < 0.05$ threshold). Data analysis was performed using a inductive thematic analysis approach. Finally, the results of qualitative and quantitative studies contributed to comprehensive understanding of parent's essential newborn practice.

Results: level of good essential newborn care practices was 43.1% (170 out of 394) with 95% confidence interval ranging from (38.2 to 48.0%).(AOR=2.16; 95%CI: 1.2, 3.894), Counselling on ENCP [(AOR=3.22; 95%CI: 1.84, 5.61), Mode of delivery (AOR=2.01; 95%CI: 1.13, 3.60), Immediate Postnatal Care visit (AOR=2.53; 95%CI: 1.37, 4.68), and mother's knowledge on newborn danger signs (AOR=3.48; 95%CI: 1.36, 4.17)] birth preparedness.

Conclusion: The level of essential newborn care practices was found to be below the national target

Keywords: - Essential newborn care practice (thermal care, Safe cord care, Optimal breastfeeding, Postnatal mothers)

Abbreviations and acronyms

ANC.....	Ante-Natal Care
AOR.....	Adjusted Odds Ratio
BCG.....	Bacilli Chalmette Guerin
BSC.....	Bachelor of Science
CI.....	Confidence Interval
EDHS.....	Ethiopian Demographic and Health Survey
EMDHS.....	Ethiopian Mini Demographic and Health Survey
ENAP.....	Every Newborn Action Plan
ENC.....	Essential New born Care
GMH	Gandhi Memorial Hospital
HC.....	Health Center
PNC.....	Post -natal care
IDI.....	In-Depth Interview
NGO.....	Non-Governmental Organization
PI.....	Principal Investigator
SDG.....	Sustainable Development Goals
SPSS.....	Statistical Package for Social Sciences
SPMMC.....	St. Paul's mill mum medical college
SPH	St' Peter Hospital
VIF.....	Variance Inflation Factor
WHO.....	World Health Organization
HMIS.....	Health management information system

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1. Introduction

1.1. Background

The word "newborn" describes the first 28 days of a newborn's life, a crucial time marked by quick changes and possible effects on the infant's health(1). Newborns at this neonatal stage need specific care called "Essential Newborn Care" (ENC). It is a comprehensive strategy encompasses immediate care at birth through under the guidance of skilled health worker (2), and continue care up to entire newborn period, it involve thermal care delay bathing, recognition and response for newborn danger sing, infection prevention, breast feeding practice, cord care, timely referral, postnatal care checks perform under mother at health facility continue at home, promoting newborn health and well-being (3).

According to several African countries, including Ghana, Cameroon, and Uganda, basic newborn care practices were not widely adopted (4). Systematic review on neonatal care practices in sub-Saharan Africa (published between January 2001 and May 2014), from 33 countries identified a total of 42 studies, The review identified that levels of prelacteal feeding, a specific newborn care practice, were over 40% in about a third of countries and fewer than 10% in only four countries.(5) This indicates significant variability in the prevalence of this particular practice across the region. Factors such as access to healthcare services, cultural beliefs and practices, and socioeconomic conditions can influence the adoption of recommended newborn care practices(6).

Pervious study shows a variety of conditions have a significant impact on postnatal mothers in utilization essential new born care (7), including; accessibility to health facilities, level of education, knowledge about essential newborn care, receiving ANC, and receiving immediate postpartum, counseling during pregnancy and delivery, cultural belief, and socio- economic status; poverty, home delivery(8). Inadequate basic newborn care practices can lead to serious outcomes and an increase in the number of newborn deaths from avoidable causes (9).

In a mixed-type, community-based cross-sectional study conducted in Chench District, Southern Ethiopia in 2017, various newborn care practices were examined. The study revealed that 39.8% of respondents applied substances on the umbilical stump. Eye care was provided for 72.4% of babies, with 89.3% of caregivers being health extension workers and 10.7% being health professionals. Colostrum was given to 90.2% of babies, while 14.3% received pre-lacteal feeding. Among those practicing pre-lacteal feeding, the majority gave plain water (58.9%), followed by butter (31.1%), animal milk (88.9%), and honey (1.1%). These findings highlight specific practices in newborn care in Chench District, Southern Ethiopia in 2017(10).

1.2. Statement of the problem

Obviously! Newborn survival is a vital worldwide health goal. Throughout their first 28 days of existence, babies are susceptible to a range of illnesses, injuries, and even death (11). Approximately 2.3 million infants worldwide perished in 2022. Of these, one million perished in the first twenty-four hours of birth, making up seventy-five percent of all neonatal deaths that happened in the first week of life (12).

The disparity in neonatal mortality rates across countries and regions is evident (13). Recent UNICEF data from 2022 highlights that high -income countries like Australia and New Zealand had a low newborn mortality rate of 7 per 1000 births. In contrast, Sub-Saharan Africa and Southern Asia had higher rates of approximately 27% and 21%, respectively(14). Ethiopia reported a neonatal mortality rate of 29 per 1000 births, surpassing the rates in high-income countries (15).

Despite this , inadequate adherence to essential newborn care practices is a major problem in low- and middle-income nations,(7) a significant challenge, compounded by limited access to health care services like antenatal, labor and delivery, and postnatal care (16). This lack of adherence includes insufficient counseling on essential newborn care practices (17). Limited knowledge about recognizing danger signs (15). Traditional harmful practice discards colostrum and pre-lacteal feeding (18), these behaviors have significant adverse effects on newborn health and raise the rates of neonatal mortality when they're common in developing countries(19).

The 2021 report by the World Health Organization (WHO) emphasizes the significant differences in mortality rates among newborns, where infants in sub-Saharan Africa have a ten times higher risk of dying in the first month compared to those in affluent countries(12). Furthermore, a comprehensive study conducted in 45 developing nations found that more than 25% of births occur at home without professional medical assistance, which hinders access to essential care for newborns and postnatal support, as well as life-saving interventions. The report highlights the inadequate commitment to crucial newborn care practices in these regions (20). Additionally, the 2011 Bangladesh Demographic and Health Survey revealed

that poor practices in caring for newborns can have adverse effects on their health and development, potentially leading to long-term consequences such as impaired physical growth, cognitive abilities, and overall well-being(21).

The Sustainable Development Goals (SDGs) and the Every Newborn Action Plan (ENAP) have as their global targets; to ensure high-quality care more accessible to all babies. In order to address preventable causes of newborn deaths and improve overall newborn health outcomes internationally, essential newborn care practices, the availability of qualified health staff, prenatal and postnatal care, and emergency obstetric and newborn care should be prioritized. (22). In addition, given the seriousness of the situation, Ethiopia's Federal Ministry of Health created community-based evidence new born care (CBENC) focuses on providing essential newborn care at the community level, train health extension workers and facilitate home visits to improve newborn care practices and outcomes in Ethiopia (23).

Insufficient practices for maternal and newborn care persist in developing countries like Ethiopia due to various barriers (6). These barriers include traditional practices, challenges related to distance, lack of transportation, and costs associated with seeking care. (24). A recent study from 2019 to 2021 revealed that only 8.7% of newborn care practices in Ethiopia were optimal, with safe cord care at 38%, optimal thermal care at 37%, and optimal feeding care at 43% (25).

Ethiopia's elevated rate of newborn mortality underscores a significant knowledge deficit, emphasizing the neglect of essential care practices concerning maternal behaviors, cultural viewpoints, and the healthcare environment(8). The page recommends investigating the factors influencing postnatal moms' ability to give necessary care through a mixed-method approach that blends qualitative and quantitative design in order to explore the determinants affecting postnatal mothers' capacity to provide essential care (26).

1.3. Significant of the study

Essential newborn care is paramount, as it directly impacts the well-being newborns. The research outcomes will play a crucial role in shaping the planning and execution of essential newborn care services across various levels of healthcare provision, including the Federal Health Office, the Addis Ababa Health Office, NGOs, and zonal health departments; To enhance crucial newborn care procedures, the healthcare system will use the findings as a roadmap to develop targeted interventions, provider training programs, and resource allocation.

Additionally, more information and understanding about essential newborn care practices can benefit families and improve the health of both parents and their newborns. In addition, by having knowledge about essential newborn care procedures, mothers can be more prepared to make well-informed choices regarding the health of their newborns and promote better health early in life.

Finally, the findings of this study will also in the end, it will be a useful source of data for additional research on this area of study.

2. Literature review

2.1. Overview of essential newborn practice

As World Health Organization's recommendations; include the adoption of essential newborn care practices by postpartum mothers can help in recognizing areas in need of improvement(12) . Reduced mortality rates can be achieved by encouraging good practices like, thermal protection, early breastfeeding initiation, hygienic cord care, immunization, infection prevention (11), understanding and responding to newborn danger signs, and making sure that those neonates who cannot be managed at home are properly referred(27). These recommendations concentrate on postnatal care for expectant mothers and their babies in low- and middle-income countries where resources are scarce. After giving delivery, it is advised that all women and their infants have at least three further postnatal contacts: on day three (48–72 hours), between days 7–14, and six weeks later(3, 28).

1.2. Level of essential newborn practice

According to randomized controlled trials conducted between 2001 and 2011. In the districts of Makwanpur and Dhanusha in Nepal, Eastern India, and Bangladesh, the data to identified on essential newborn care practices revealed relatively low coverage, ranging from 20% to 70%, among all research sites for both immediate breastfeeding and thermal care (29).

Study carried out a population-based survey on neonatal care practices in eastern Uganda, Of the babies, 46% were delivered in a facility, and only 38% were deemed to have received acceptable cord care, 42% to have received ideal thermal care, and 57% to have received adequate neonatal nutrition (30).

According to a Ghanaian study, 36.8% of babies were found to have received safe cord care, 34.9% had ideal thermal care, and 73.7% (308) had received appropriate newborn feeding. Only 15.8% of newborns received adequate care overall, which included proper cord care, ideal thermal care, and appropriate neonatal feeding techniques(31).

An across-sectional study carried out in Southeast Nigeria reveals that 61% of mothers practiced and 77% had good knowledge about essential newborn, and 78.9% of mothers who received newborn care counseling(32).

A systematic review and meta-analysis done in Ethiopia, were conducted 11 articles from August 30, 2019, to September 30, 2019, essential newborn care utilization and associated factors the pooled estimate of essential newborn care utilization was 48.7%(26).

Another systematic review and meta-analysis conducted in Ethiopia, 25 articles reviewed from April 1–30, 2021, prevalence of essential newborn care knowledge and practice among women was 55.05% and 41.49% respectively(33).

Study conducted in Eastern Tigray, Gulomekeda, Ethiopia, revealed that about 80.4% of mothers had good knowledge on essential newborn care, but 60% of mothers applied butter or oil on the cord stumps (34).

The study stated in the sources showed that the following essential newborn care practices were most common among postnatal mothers in Northeast Ethiopia, in Dessie Referral Hospital, starting to breastfeed within an hour 83.9%, bathing the baby after 24 hours 75.8%, cutting the cord with a safe instrument 46.9%, and thermal care 80.8% (35).

Another study conducted in East Wollega, Guto Gida District, Zone, focused on essential newborn care practices among home-delivered mothers, prevalence of essential newborn care practice was low 28%, as compared with the World Health Organization recommendation that it should be 100% (36).

The study done in Western Ethiopia in Nekemte zone, that the level of essential new-born care practice was 44.1%. The overall safe cord care practice of the respondents was 68.3% while the optimal thermal care practices and good neonatal feeding were 78.7%) and 77.2% respectively (17).

According to the study conducted in Southwest Ethiopia, in Hosanna town, 46% of newborns were delivered in a facility. Among these newborns, only 38% received acceptable neonatal feeding, 42% received optimal thermal care, and 38% received good cord care (37).

A mixed type, community-based cross sectional study was conducted in Southern Ethiopia Chenchu district; found that 38.4% of mothers had good practices in essential newborn care. Of the neonates, 52.9% received safe cord care, 71.0% received optimal thermal care and 74.8% had good neonatal feeding(10).

In addition to cross-sectional study was conducted in Addis Ababa City Health Centers, that the level of essential newborn care practices was 38.8%, out of those 16.0% respondents were as applied anything on the cord, and 19.6% were applied Vaseline and butter, danger 62.3% respectively (38).

1.3. Factors that affect level of immediate new born care practice

1.3.1. Socio –demographic characteristics the of mother

Numerous studies show that maternal sociodemographic factors, such as age, place of residence, education level, and monthly income, have a significant impact on standard newborn care practices, including safe cord management, optimal thermal care, and appropriate feeding practices (32).(29).

A cross-sectional study was conducted in refugee settlements, Adjumani district, west Nile, Uganda, 2019, studies were shows that mothers socio-demographic factors including; maternal aged 20–24 years (AOR 0.37, 95% CI: 0.16, 0.91) were less likely to have practice good cord care. Mothers who had obtained at least primary education were more likely (AOR 1.45, 95% CI: 3.11, 7.14) to have initiated breastfeeding early as were those involved in subsistence farming (AOR 2.54, CI: 1.12, 5.77). Mothers who are Catholics (AOR 1.89, CI: 1.10, 2.23) were almost two times more likely to have breastfed their newborn early compared to those of other religions (39).

A cross-sectional study conducted in Tigray, Town, Ethiopia in 2018, and 2017, indicated that Employed women (AOR = 7.08; 95% CI (2.21, 12.72), marital status (AOR=0.05 95% CI: 1.00, 3.35), were statistically significantly correlated with their essential newborn care practices (40, 41)

On the other hand, a systematic review and meta-analysis carried out in Ethiopia examined 25, articles found that knowledge level whereas; primary education (AOR = 7.08, 95% CI 4.79, 10.47), urban residency (AOR = 2.22, 95% CI 1.65), Secondary education (AOR = 2.75, 95% CI 1.62, 4.66), knowledge (AOR=2.93; 95% CI 1.81, 4.75) were statistically significant with essential newborn practice. Some of these variables including; mother's age, religion, ethnicity, marital status, or occupational situation are not always significantly correlated with mothers essential newborn (33).

1.3.2. Obstetric related characteristics of the mother .

In Ethiopia, a systematic review and meta-analysis carried out 25 articles, that several factors were associated with maternal essential newborn care practices including; mother attending monthly meetings (AOR = 2.07, 95% CI 1.64, 2.62), antenatal care (AOR = 2.89, 95% CI 1.97, 4.26), postnatal follow-up (AOR = 7.08, 95% CI 4.79, 10.47) were statistically significant with essential newborn practice(33).

Another more Ethiopian systematic review and meta-analysis examined 11 articles, that several factors were associated with maternal essential newborn care practices including; Postnatal care [OR = 5.53, 95% CI = (3.02, 10.13], antenatal care follows up (OR = 6.84; 95% CI: 1.15, 4.70) and maternal educational status [OR = 1.63 (95% CI: 1.12, 2.37)] were identified statistically significant with essential newborn care practices (26). Study done in Boset district, Oromia Regional State mothers with good knowledge of essential newborn care [AOR=21.3, 95%CI (10.21-44.3)], and mother mode of delivery [AOR=2.84, 95% CI (1.51, 5.34)]. significantly associated with mother practice ENC(42). In addition to study conducted in southern Ethiopia Region, Wolayita Zone , Damot pulasa Woreda, study showed that maternal obstetric related variables like ANC visit (AOR =0.213,P = 0.015,CI = 0.102–0.446),PNC visit (AOR = 0.209, P =0.00,CI =0.110–0.399), planned pregnancy (AOR = 7, P = 0.00, CI =3.732–11.813) were the independent predictors of ENBC practices(16).

1.3.3. Health service related factors

The five aspects of care access those are crucial for ensuring quality maternity care are accessibility, acceptability, accommodations, affordability, and availability. These factors play a significant role in determining the effectiveness and inclusivity of maternal and newborn healthcare services(43). Clean and comfortable spaces designated for prenatal care, birth, and and promotes continuity of care for mothers and infants(27), postpartum care are essential to provide a conducive environment that supports essential newborn practices (12),(44),(3),(42).

The study conducted in Addis Ababa revealed that health facility related factors including; advise about essential newborn care practices during and after birth by skilled birth attendants (OR=2.17, 95%, CI=1.42, 3.31), and place of delivery at health center (OR=7.69,

95% CI =1.32, 36.42), at private health facility (OR=9.18, 95% CI=1.32, 63.75) and government hospital (OR=6.68, 95% CI =1.32, 33.87) were found to have statistically significant association with essential newborn care practices(38).

1.4. Conceptual frame work

This conceptual framework will show association between essential newborn care practice and associated factors among postnatal mothers, developed by reviewing related literatures, (8, 24, 26, 29, 30, 32, 33, 36, 42, 45-47)

Conceptual framework

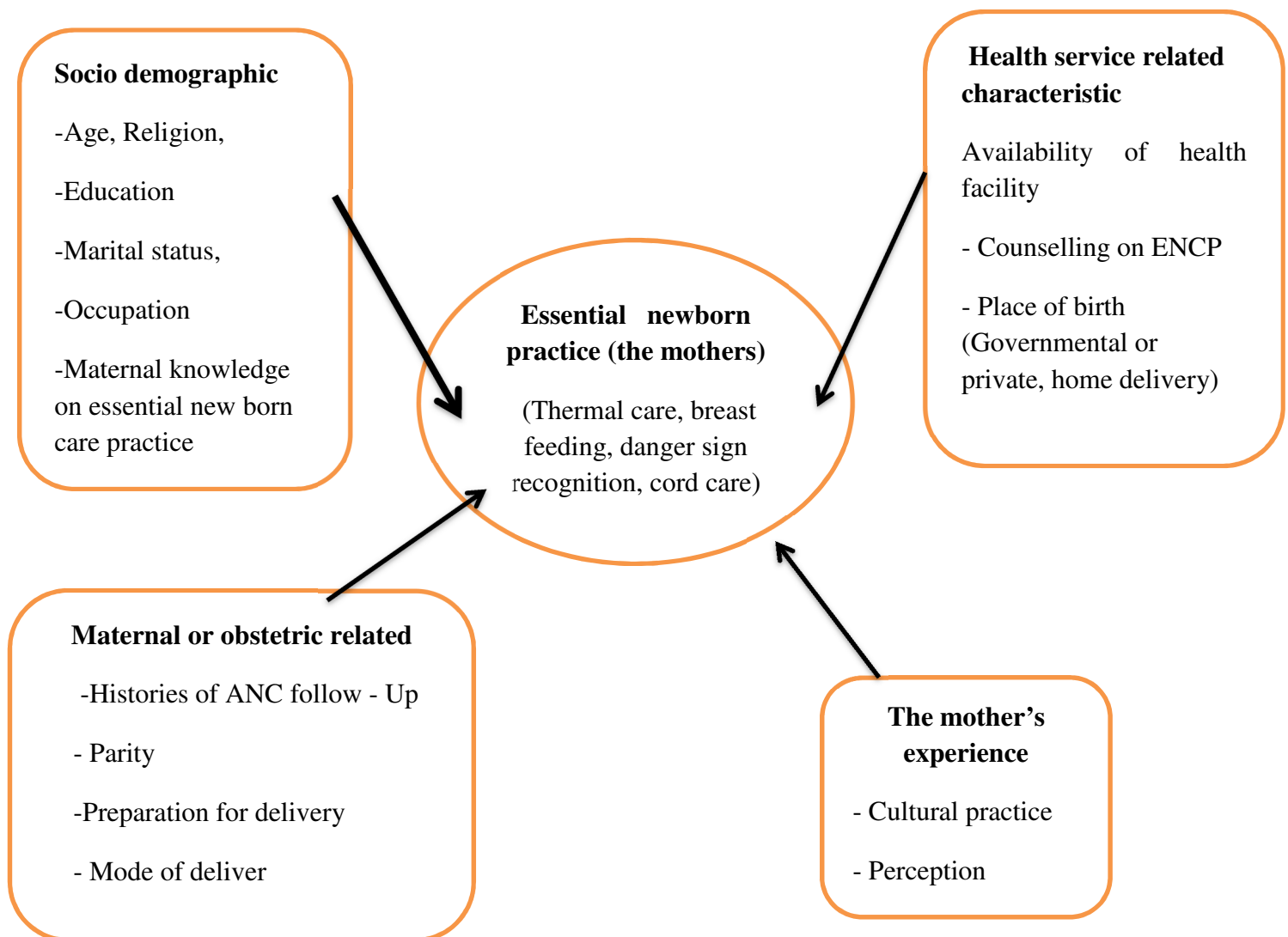


Figure 1: conceptual frame work adapted from different literature

3. Objectives

3.1. General Objective

- ❖ To assess essential newborn care practices and influencing factors among postnatal mothers in public health Facilities in Addis Ababa, Ethiopia, 2024.

3.2. Specific Objectives

- ❖ To assess the level of essential newborn care practices among postnatal mothers in public health Facilities in Addis Ababa Ethiopia, 2024.
- ❖ To identify factors contributing with essential newborn care practices among postnatal mothers in public health Facilities in Addis Ababa Ethiopia, 2024.

4. Methods

4.1. Study area

The study was done in Addis Ababa, the capital city of Ethiopia and seat of charter of African union. It has eleven sub-cities and according to the central statistics agency population projection of the city in 2020 is to be 3.6 million. Totally there are fourteen hospitals in the city out of these six of them governed under federal government, six of them governed under Addis Ababa city health bureau, one owned by police force and one owned by defense army and eighty six health centers and 31 private hospitals and 700 different level private clinics are providing health service in the city. Among all public health facility 96 governmental and 34 private health facility are available MCH service in the city of Addis Ababa(48, 49).

Therefore, this study was conducted in four public hospitals selected by simple lottery method in Addis Ababa Ethiopia.

St. Paul's Hospitals Millennium Medical College (SPHMMC) among the biggest public hospitals in the city of AA. The late Emperor Haile Selassie founded the hospital in 1968, but the medical school didn't open until 2007. Instead, it was created by a decree issued by the Council of Ministers in 2010. Offers medical, academic, and research services. A body under the Federal Ministry of Health is in charge of it. Over 700 beds are available for inpatient care, And it also the hospital provides antenatal care and delivery service for more than 2500, 8000 women per year respectively. In addition to the services of family planning and abortion care, the micu clinic also provides gender based violence, cervical cancer screening and postnatal care services about average 714 women visit postnatal care monthly(50).

The study was also done at St. Peter specialized Hospital (SPH) is one of among governmental state hospitals in Addis Ababa which is established 40 years ago. The hospital offers a variety of service disciplines in addition to a nationally known maternity service Centre with a dedicated maternal-fetal medicine staff. Approximately 5,600 births a year, and at list 420 postnatal mom receive first PNC service monthly each assured to be unique and supported by skilled physicians and nurses with specialized programs and experienced staff, bringing across both community(48).

Gandhi Memorial hospital is a governmental hospital that specializes in maternity services. The hospital serves as a teaching center for Addis Ababa University students who specialize

in gynecology and obstetrics and other undergraduate medical students. The hospital daily manages 40–50 delivery and average 920 postnatal cases handle monthly mothers who come from various corners of Addis Ababa and nearby towns.

The study was also undertaken at ALERT hospital, a medical facility located on the outskirts of Addis Ababa, specializing in Hansen's disease, commonly known as "leprosy." ALERT has been offering leprosy training to medical students from Addis Ababa University since its inception. Additionally, within ALERT is the Armauer Hansen Research Institute, established in 1970, focusing on leprosy research. The hospital features a 240-bed teaching facility encompassing dermatology, ophthalmology, and surgery departments, or the Maternal Health Task Force. Maternity services department managed about 500-800 delivery and up to 550 postnatal mothers attended, as well as ambulance services, are provided free of charge in all government hospitals in Addis Ababa (59).

4.2. Study design

This concurrent, embedded mixed –methods study included a quantitative and qualitative study aimed at explaining the practice of parents on essential newborn care. The qualitative (Inductive thematic analysis).Both data was collected and analyzed at the same time. Finally, the result of quantitative and qualitative phases were merged in the interpretation and discussion stage(Figure)

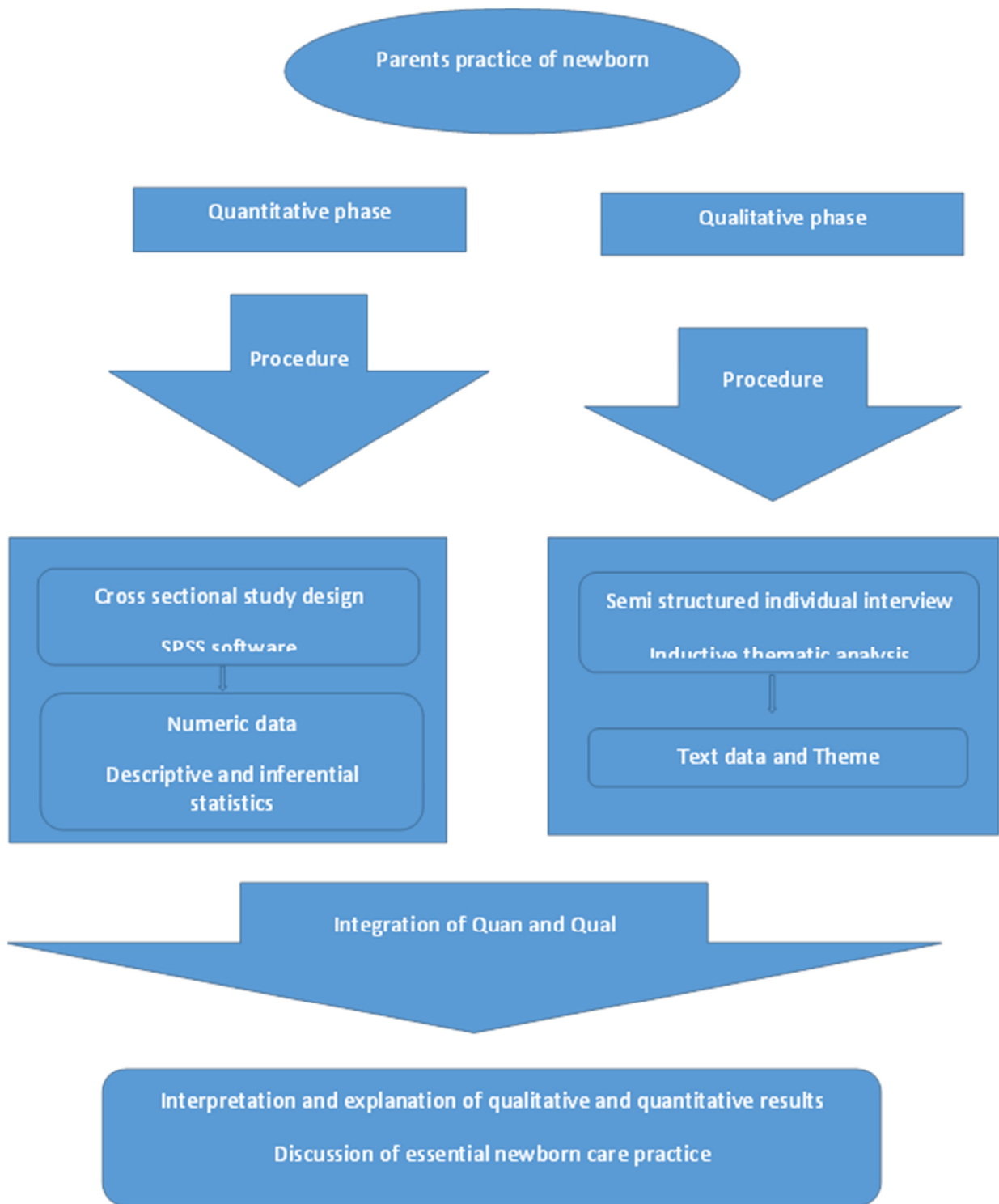


Figure 2: Study diagram for emebended type, quantitative and qualitative study digns

4.3. Population

4.3.1. Source population

All post-natal women attending postnatal unit at selected public hospital in Addis Ababa, Ethiopia.

4.3.2. Study population

All postpartum women visit postnatal unit at selected hospital public hospital Addis Ababa Ethiopia.

4.3.3. Sampling unit

All postnatal mothers that presented during study period, whom fulfil the eligibility criteria.

4.3.4. Inclusion and exclusion criteria

Inclusion criteria

Post-natal mothers who will be visit postnatal service within the study period in Addis Ababa selected public hospital.

Exclusion criteria

Post - natal mom who are seriously ill, during the data collection period.

4.4. Sample size and sampling procedures

4.4.1. Sample size determination

In order to choose the sample size for a single population proportion based on prior research on postnatal mothers' essential newborn care practices, first took into consideration the prevalence of previous studies from various studies, and chose high essential new born care practice prevalence from those studies (10, 26, 32, 33, 36, 40, 51, 52)

The sample size for first objective was determined by a single population proportion Formula by assuming the 68.3% as proportion of mothers having good essential newborn care practice from previous study (17).

95% confidence level (CI), 5% margin of error, and adding 10% non-response rate.

The minimal sample size will be calculated as follows;

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

Where,

n- Required sample

Z- Standard normal value at 95% CI which is 1.96

p- Estimated population proportion which is 0.62.8

d- Possible margin of error tolerated which is 0.05

$$n = \frac{(1.96)^2 0.372(1-0.62.8)}{(0.05)^2} = 376$$

Adding 10% of non-respondent rate the final sample size becomes

$$n = 333 + 34 = 367$$

To calculate Second objective based on these factors, I can use the following formula to calculate the sample size:

$$n = \frac{(Z^2 * \sigma^2)}{(\epsilon^2 * (1 - \rho))}$$

Where:

n = sample size

Z = Z-score corresponding to the desired level of confidence (e.g. 95% confidence level corresponds to Z = 1.96)

σ = population standard deviation of the primary outcome variable

ϵ = minimum effect size we want to detect

ρ = correlation between the primary outcome variable and the associated

Table 1 ; Factors associated with essential newborn care practices, in Ethiopia Nekemte Zone, 2017.

Variables	CI	Po wer	Rati o	RR	Odd ratio	Proportion of exposed	Proportion of un exposed	Total sample size & non response rate (10%)	refer ence
ANC follow -up	95 %	80 %	1	5.41	4.38	180 (43.2)	4 (0.95)	358 +36 = 394	(16)
Knowledge of ENC	95 %	80 %	1	1.69	4.54	130 (31.2)	54 (12.9)	318+32 = 350	(16)
Got counseling about ENC	95 %	80 %	1	2.99	2.32	153(12.7)	31(7.4)	175+18 = 193	(16)

Where, AOR = Adjusted odd ratio, COR = Crude odd ratio, CI = confidence interval shows significant association at $P < 0.05$

Calculated 367 by the first objective and 394 were by the second objective. There were 394 samples in the final sample size.

Table 2; Proportional allocation to total sample size from

Name of selected hospitals	Postnatal care follow up report and proportional allocation		
	Per year No Postnatal care follow up	Average monthly PNC Per month Allocation	Proportion Allocation
SPHMMC	8,568	714	119
St. Peter hospital	4,236	353	59
Gandhi Memorial hospital	9,628	802	134
Alert specialized	5880	490	82

Monthly number of postnatal visit in all selected public hospital and privet clinic was 2,366)

4.4.2. Sampling Technique

In Addis Ababa, MCH services are provided by 96 public and 34 private healthcare facilities. The study included all public hospitals, with 30% of hospitals selected using simple random sampling. The final four public hospitals selected for the study are Saint Paul Hospital Millennium Medical College, Saint Peter's Specialized Hospital, Gandhi Memorial Hospital, and Marie Alert Hospital. The sample size of 394 postnatal mothers will be included in the study as participants from the four selected public health facilities. To allocate the study subjects proportionately to each facility, the formula used was based on a preliminary assessment of the source population, which had a monthly number of postnatal visits of 2,366 in all selected public hospitals.

The formula $= \frac{(n) \times (nf)}{N}$ Will used.

Where n=number of admissions in each hospital,

nf =total sample size and

N=the total number of total PNC attend in the four hospitals.

SPHMMC the first selected study area by simple random sampling technique average monthly admission is 714 so the sampling distribution for SPHMMC is

$$= \frac{714 \times 394}{2,366} = 119$$

St. Peter hospital the second selected study area by simple random sampling technique average monthly admission is 420 so the sampling distribution for St. Peter is

$$= \frac{353 \times 394}{2,366} = 59$$

Gandhi Memorial hospital the second selected study area by simple random sampling technique average annual admission is 802 so the sampling distribution for Gandhi is

$$= \frac{802 \times 394}{2,366} = 134$$

Alert specialized hospital the second selected study area by simple random sampling technique average monthly admission is 353 so the sampling distribution for Alert hospital.

$$= \frac{490 \times 394}{2,366} = 82$$

Purposive sampling technique will be selecting postnatal mothers on specific characteristics or unique experiences on essential newborn practices during the data collection period at selecting 4 public hospitals.

Sampling Frame

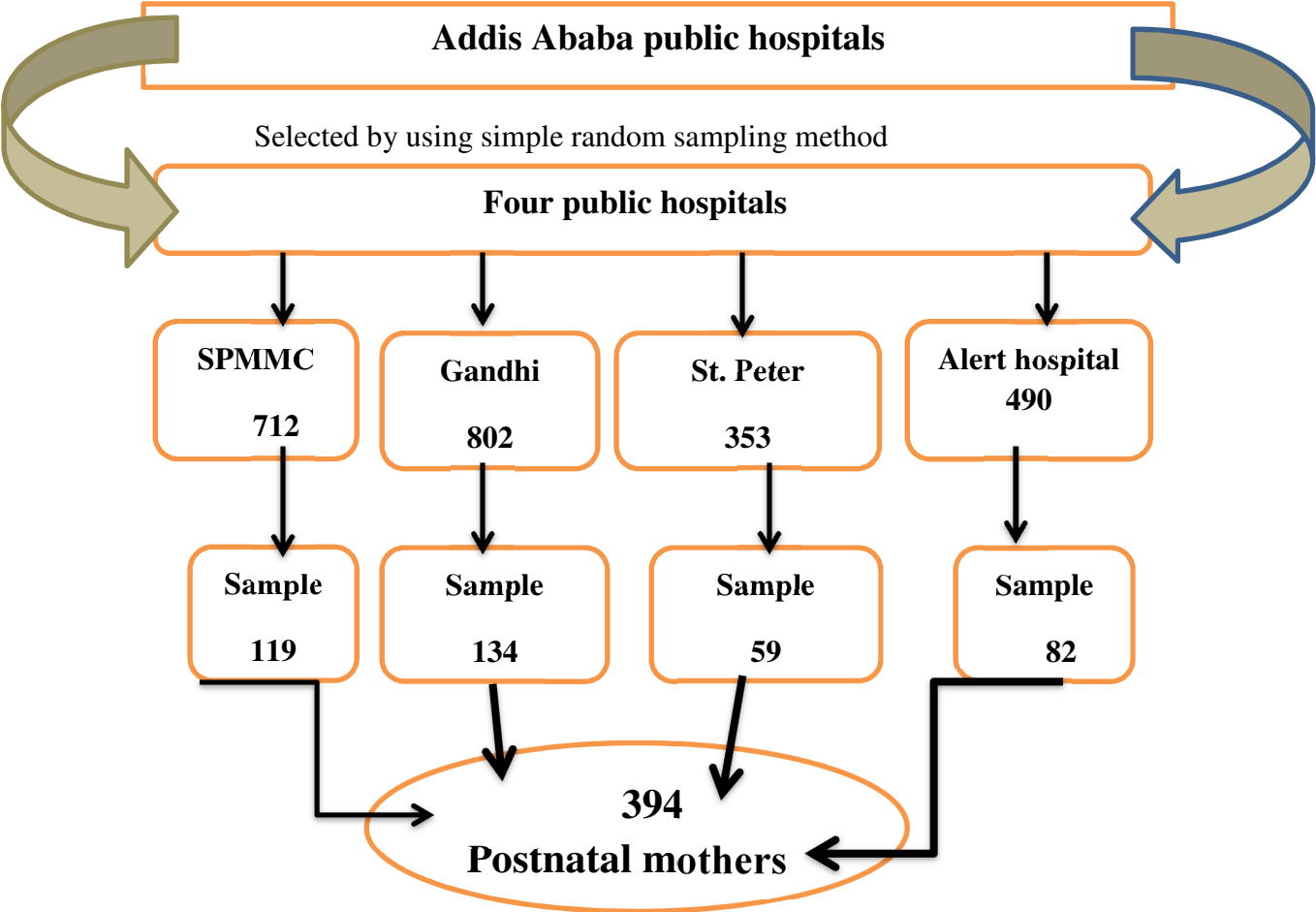


Figure 3: sampling allocation process in selecting public hospital 2024.

4.5. Study Variables

4.5.1. Dependent variable

Essential newborn care practice performed by mothers (thermal care, recognition of danger sign, breast feeding, and hand hygiene) Good/poor

4.5.2. *Independent variables*

- Socio-demographic characteristic of the mother: Age, education, residence, marital status, income, knowledge on components of essential newborn care, maternal knowledge on essential newborn care practice, (Good/poor)
- Obstetric history of mother: Parity, planned pregnancy, history ANC, birth preparedness, and mode of delivery, place of delivery, Counselling during pregnancy about ENCP.
- Health system related variables: Availability of health facility, Health facility Provide delivery, Decision for place of birth,
- Health professional related variables: Health workers competition on their work, Training on essential newborn care, counselling about essential newborn practice.
- Mothers' experiences: cultural practices, attitudes, and perceptions. Cultural practices significantly shape how mothers approach newborn care, impacting decisions regarding cord care, thermoregulation, and other essential practices.

4.6. Operational definition

Essential newborn care practices encompass crucial actions performed by postnatal mother's immediately after delivery and throughout the first six weeks after birth, both at healthcare institutions and at home(5). These practices include:

Thermal Care: Ensuring the baby's warmth through methods like mother-to-neonate skin-to-skin contact and appropriately wrapping the baby in new or washed cloths. Delayed bathing for 24 hours is recommended(28).

Cord care: maintain a dry umbilical cord. Do not apply substance, except prescribed medication.

Breastfeeding: Initiating exclusive breastfeeding within one hour of birth and not discarding colostrum, the first milk produced by the mother(43).

Recognition of Danger Signs: Identifying specific signs in newborns that may indicate a potential health issue. Examples include poor feeding, convulsions, rapid breathing, fever, weakness, jaundice(53).

Good essential newborn care practice is determined by mothers scoring 75% or above on related practice questions, while poor practice refers to those scoring below

The level of knowledge about newborn danger signs is assessed based on the ability of mothers to mention at least three WHO-listed danger signs. 75 (54),(2) ,(55).

4.7. Data collection tools and procedure

The questionnaires for quantitative data collection were used by adapting variables from relevant literature sources and aligning them with the study objectives. They were covered sociodemographic information about mothers, obstetrics-related details, factors related to health facilities and healthcare professionals, and practices concerning essential newborn care. Prepared in English, these questionnaires aim to ensure clarity and consistency in responses, facilitating effective collection of quantitative data through a semi-structured format.

A pilot test was conducted with a 5% or 20 of participants to improve the clarity and validity of the questionnaire on essential newborn care practices for postnatal mothers. Or statistical measures, such as Cronbach's alpha, was used to assess the internal consistency of the questionnaire items related to essential newborn care practices.

4.8. Data Quality Assurance

To ensure data quality in the quantitative study, supervisors and data collectors had received training on the data collection process and targeted information. A pre-test was conducted on a sample of 20 mothers (5% of the population) at Tikur Anbessa specialized hospital (TASH) to address any errors or issues. Regular checking for accuracy and consistency was conducted during and after data collection. Data cleansing, storage, and analysis was assessed consistency and completeness. Discrepancies were resolved by comparing source data with recorded information. Incomplete records were excluded.

4.9. Data processing and analysis

Data collection was conducted using EpiData version 4.6 software, followed by cleaning and error correction using data coding. Subsequently, SPSS version 28 was utilized for data import and analysis. Descriptive statistics was presented through frequencies, percentages, tables, and graphs. Binary logistic regression and multivariable logistic regression analyses

was performed. Variables showing significance in the bivariable analysis at a p-value < 0.25 will enter the multivariable logistic regression to control for confounders. Independent variables with a p-value < 0.25 in the bivariable logistic regression will be considered for the multivariable logistic regression. A p-value less than 0.05 will be used as the threshold for statistical significance. The backward logistic regression method will be employed in multiple regressions to identify independent predictors of the outcome variable. Adjusted odds ratios (OR) and 95% confidence intervals (CI) will be calculated to assess the strength of association between dependent and independent variables. Multicollinearity will be checked for independent variables using the variance inflation factor (VIF), ensuring all variables have $VIF < 2$. Model fitness was evaluated using the Hosmer and Lemeshow model fitness test.

4.10. Ethical considerations

Ethical clearance was obtained from ethical and research committees at St. Paul's millennium medical college, St. Peter specialized hospitals, Alert hospital and, Addis Ababa City administration Health Bureau, Gandhi Memorial Hospital (GMH) was wrote the letter of permission. In order to follow the care given to their baby and conduct interviews with them, written informed consent was obtained from each key informant and verbal consent from each mother. The study participants were upholding confidentiality at every stage of the response process. To ensure privacy, no personal identify was used in the survey. It was able to withdraw from the study at any point while it is ongoing.

4.11. Dissemination of research finding

The research result is submit to and presented to St. Paul's hospital millennium medical college, postgraduate nursing department, the final result of the study was reported to the hospitals, where the study was conducted, MOH, other governmental organizations who are specially working on it. Addis Ababa City administration Health Bureau, The hard and soft copies of manuscript were submitted to SPMMC research committee, finally, the manuscript of the study were submitted to peer reviewed and reputable scientific journals for publication.

Qualitative study on method

This phase of the study was conducted using an inductive thematic analysis approach to gain in-depth experiences of parent's perception and experience on essential newborn care practice.

Sample size and sampling method

Purposive sampling was employed to choose the participants in this qualitative study, and sampling continued until data saturation or until no new information could be gleaned about the categories or how they related to one another. The inclusion criteria with the greatest possible variety and generalisability were used to choose the samples. The research population consisted of parents of the newborn (i.e

Data collection

To collect qualitative data, in-depth and semistructured individual interviews were conducted after obtaining informed consent from the participants.

The time and place of interviews were chosen at the participants' consent without any restriction. Before starting the interview, I created a friendly environment by introducing myself and explained the reasons and objectives of the study.

In order to record the interviews, participants had to provide their permission. In semi-structured interviews, questions are often created as the interview progresses rather than being set and predefined. The following general and open questions were asked from the parents: in-depth and probing questions were asked based on the type of answer to each question to probe into their experiences. These questions included: 'What do you mean?', 'Why?', 'Explain more' and 'Could you please give an example so that I can better understand what you mean?' during the interview and continued until data saturation was achieved.

Data analysis

Inductive thematic analysis was used for data analysis. The process of data analysis was performed based on the steps suggested by First, were transcribed verbatim, and data analysis was done at the earliest possible time after conducting the interview, which was usually a few hours after the end of the interview. A broad idea of the interview's substance was then obtained by reading the whole text numerous times. Condensed meaning units of each meaning unit were

created first, after which they were coded. Based on comparisons of their similarities and differences, the codes were divided into themes and subthemes. Finally, the content of categories was revealed by consid-

The four criteria of Lincoln et al 18 were used to increase the trustworthiness of the data. The credibility of the data was ensured via continuous involvement of the researcher with the subject of research and spending sufficient time on data collection. During analysis, dependability was ensured by through a thorough description of the context, participants, environment and conditions; transferability of the findings was achieved. Finally, to ensure confirmability, put aside her presuppositions and thoughts and used the opinions

5. RESULTS

5.1 Socio - demographic characteristics

A total of 394 postnatal mothers have participated in the study giving the response rate was 100%. The mean ($\pm$ SD) ages of mothers were 29.0($\pm$ 4.19) years respectively. Of the mothers, 25-34 (72.3%) belonged to the 25–29 age group, making up the majority of the respondents 385(97.7%) were married. Among mothers included in the study 371(94.2%) were come from urban area. Regarding their employee 180(45.7%), 147 (37.3%) of them were protestant. Besides, 146(37.1 %) of respondents were secondary education. Lastly, average monthly family income ranged from 2500-5000 Ethiopian Birr among the 394 postnatal mothers.

Table 3: Socio-demographic characteristics of postnatal mothers in selected four public Addis Ababa city Administration, Ethiopia, 2024. (N=394) (See table 1)

Variables	Frequency(N)	Percent (%)
Age of respondent		
20-25	49	12.4
25-34	285	72.3
35-44	60	15.2
Religion		
Protestant	146	37.1
Orthodox	143	36.3
Muslim	96	24.4
Catholic	9	2.3
Marital Status		
Married	385	97.7
Never married	7	1.8
Divorced	2	.5
Educational level		
No formal education	41	10.4
Primary education	124	31.5
Secondary education	146	37.1
College and above	83	21.1
Mother's occupation		
Employee	180	45.7

House wife	119	30.2
Merchant	82	20.8
Farmer	13	3.3
Place of resident		
Urban	371	94.2
Rural	23	5.8
Family average monthly income (EB)		
<2500	152	38.6
2500-5000	157	39.8
>5000	85	21.6

5.2. Health service and obstetric related characteristics of postnatal mothers

The majority of the postpartum mothers, 382 (97%) had attended an antenatal follow-up. Out of those mothers, 179 (45.4%) had attended four or more antenatal follow-up. More than 291(73.9%) had 1- 2 live children. Regarding birth preparedness, 198(50.3%) mothers had taken steps to prepare for their deliveries, such as gathering essential items and securing funds for birth-related expenses. And 209(53.0%), had delivered through Spontaneous vaginal delivery. Nearly, 331 (84.0%), did not experience severe complications during their deliveries. Out of the total postpartum mothers, 244(61.9) had immediate postnatal care attended (Table: 4).

5.3. Health worker related characteristics of on postnatal mothers

As regarding to the essential newborn care practices that mothers received education, advice were provided by concerned health providers. Moreover, the majority of mothers, 234(59.4) of mothers were not counseled regarding essential newborn care practice during ANC follow-up. And about 223(56.6%) of the mothers did not receive education on recognizing neonatal danger signs after delivery. About 229 (58.1%), of the mothers received counseling on the critical practice of breastfeeding practice, lastly, 198 (50.3%), were educated on the essential practice of clean cord care(Table:4).

Table 4 : Health service and obstetric related characteristics of postnatal mothers in selected four public Addis Ababa city Administration, Ethiopia, 2024. (N=394)

Variables	Frequency(N)	Percent (%)
ANC follow-up		
Yes	382	97
No	12	3.0
Frequency of ANC visit		
Less than 4 times	179	45.6
Equal/more 4 times	215	54.4
Number of alive children		
1-2	291	73.9
3-4	92	23.4
5 and above	11	2.8
Education on ENC during ANC		

Yes	160	40.6
No	234	59.4
Birth preparedness		
Yes	198	50.3
No	196	49.7
Mode of delivery		
SVD and Instrumental delivery	209	53.0
C- Section	185	47.0
Faced obstetric complications		
Yes	63	16.0
No	331	84.0
Immediate Post Natal Care visit		
Yes	244	61.9
No	150	38.1
Counseled after delivery regarding ENC practice by Health providers		
i. Optimal breast feeding practice		
Yes	229	58.1
No	223	41.9
ii. Clean cord care practice		
Yes	198	50.3
No	196	49.7

Maternal Knowledge on new-born danger signs

About 394 postnatal mothers were surveyed for their knowledge of neonatal danger signs, with 43.4% demonstrating good knowledge of identifying newborn danger signs. These signs included poor sucking or inability to breastfeed, fever, rapid breathing, lethargy or unconsciousness, hypothermia, convulsions, and umbilical infections like redness of the cord (table)

Table 5: The maternal knowledge on neonatal danger recognition in selected four public Addis Ababa city Administration, Ethiopia, 2024. (N=138).

Variables	Frequence	Percent (%)
Maternal Knowledge on neonatal dander sign		
Yes	138	35.0
No	257	65.0
Poor sucking or not able to breastfeeding		
Yes	103	26.1
No	22	5.6
Hyperthermia or Hypothermia		
Yes	27	6.9
No	98	24.9
Neonatal seizure		
Yes	3	.8
No	122	31.0
Umbilical infection/such as redness of the cord		
Yes	20	5.1
No	105	26.6
Difficulty of breathing		
Yes	110	27.9
No	15	3.8
Lethargic or unconscious		
Yes	20	5.1
No	106	26.9
Vomiting		
Yes	14	3.6
No	96	24.4
Yellowish discoloration of palms/soles		
Yes	7	1.7
No	117	29.4

Good knowledge	43	10.9	31.2
Poor Knowledge	95	24.1	68.8

5.4. Level of essential newborn care practice

The level of essential newborn care practice is evaluated using three different indicators. These 3 indicators are then used to calculate a composite score that represents the overall level of essential newborn care practice.

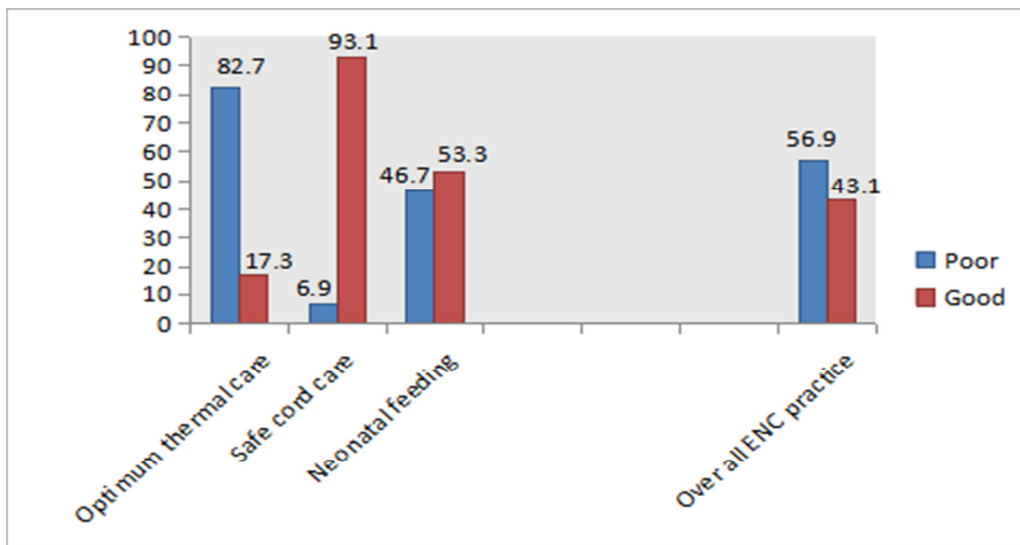


Figure 4 : Indicators to assess level essential newborn care practice and associated factors among postnatal mothers in selected four public Addis Ababa, Ethiopia, 2024 (N=394).

A total of 43.1 percent (170 out of 394) of the postnatal who took part in the postnatal survey exhibited appropriate newborn care practice. This percentage ranges between 38.2% and 48.0% within the 95% confidence interval. However, the remaining 56.9% (223 out of 394) of mother's demonstrated poor essential newborn care practices. Out of those, the majority of mothers (85.3% or 336 out of 394) initiated breastfeeding within the first hour after their baby's delivery. Colostrum (the first milk produced after birth) was given to 87.3% (344 out of 394) of the babies. Pre-lacteal feeding (feeding other than breast milk) was given to 35% (138 out of 394) of the babies. Among those who gave pre-lacteal feeding, 3.6% (14 out of 138) gave plain water, and 3.3% (13 out of 138) gave water with sugar. The majority of mothers (97.7% or 385 out of 394) bathed their baby after 24 hours of birth. Regarding cord care, 6.9% (27 out of 394) of

mothers applied a substance to the umbilical stump. Of those who applied a substance, 4.6% (18 out of 27) used Vaseline, 1.8% (7 out of 27) used breast milk, and only 0.5% (2 out of 27) used butter. (Table 3)

Tabel 3: Essential newborn care practices among postnatal mothers at selected public health hospital Addis Ababa city Administration, Ethiopia, 2024. (N=394)

Variables	Frequency	Percent (%)	C	Percent (%)
I. Breast feeding practice				
Initiation of the breast within 1hrs				
	336	85.3		
	58	14.7		
First breast milk (colostrum)				
Yes	344	87.3		
No	50	12.7		
Pre-lacteal				
Yes	142	36.0		
No	252	64.0		
II. Thermal care practice				
Placement of baby on mother abdomen at birth				
Yes	216	54.8		
No	178	45.2		
Time of baby body wash after birth				
Before 24 hrs	9	2.3		
After 24 hrs	385	97.7		
Cloth used to wrap the baby after bath				
Clean and warm	97	24.6		

Any available cloth	297	75.4	
III. Clean cord care practice			
Substance apply to umbilical cord			
Yes	27	6.9	93.1
No	367	93.1	

5.5. Factors associated with good practice of essential newborn care

Both bivariate and multivariate logistic regression methods was done to analyze the predictors of the dependent variables. The bivariate logistic regression analysis was conducted to examine the associations between each of the independent variables and the outcome variable separately. This analysis provided the unadjusted odds ratios of the associations and the 95% confidence intervals for each independent variable with the outcome variable.

The bivariate analysis revealed that a total of 10 variables showed an association with good practice of essential newborn care at a p-value of 0.25. These variables included the age of the mother, place of residency, number of children, attendance of antenatal care (ANC) visits, counseling on essential newborn care during ANC, birth preparedness, mode of delivery, mother faced severe obstetric complication, immediate postnatal visit, counseling on danger signs, and maternal knowledge on newborn care practice and counselling on optimal breast feeding. These variables were selected as candidate variables for the multivariable logistic regression analysis.

In the multivariable logistic regression analysis, five predictor variables were found to have a statistically significant association with the practice of essential newborn care practices at a p-value of 0.05. These predictors include Birth preparedness (AOR=2.38; 95%CI: 1.36, 4.17), Mothers who received education on essential newborn care during pregnancy (AOR=2.1; 95%CI: 1.84, 5.61), Mode of delivery (AOR=3.22; 95%CI: 1.84, 5.61), mothers who received counselling on neonatal danger signs after delivery (AOR=2.53; 95% CI: 1.37, 4.68), Immediate Postnatal Care visit (AOR=2.01; 95%CI: 1.13, 3.60)

The odds mothers that had birth preparedness were 2.3 times more likely to practice good essential newborn care as compared with mother that had not birth preparedness. The odds

mothers who received counseling after giving birth were 2.1 times more likely to recognize infant danger signs compared to those who did not receive any counseling. Mothers who deliver vaginally are 4.4 times more likely to engage in essential newborn care practices like keeping the baby warm, proper cord care, and exclusive breastfeeding, compared to those who delivered via cesarean section. The odds mothers who received immediate postnatal care were 2.0 times more likely to practice good essential newborn care compared to those who did not receive immediate postnatal care. This suggests a strong positive association between immediate postnatal care and good essential newborn care practices.

A total of 8 in depth interview were conducted on their experience of essential newborn care practice and challenges of to give appropriate newborn care practice.

“Most of mothers have lack of information and education about proper newborn care practices from health providers during antenatal visit and after gave birth is a major challenge reported by many postnatal mothers. This can include uncertainty around feeding, bathing, cord care, temperature regulation, and recognizing danger signs. (Ps) In indepth interview The participant shares their experience of caring for a newborn.

A 29 years para 3 mothers, “I delivered my newborn two week back at hospital and I was return home after 24hrs. Initially, my baby was doing well and was breastfeeding. However, after three days, he started crying and showed a decrease in breastfeeding. He was shaking his legs and arms. I thought he might be cold and experiencing abdominal cramps, so I wrapped him in several layers of cloth. I was gave him boiled Rue (Tena’Adame) and water using a teaspoon, but he began to have difficulty breathing. Consequently, I took him to the hospital. “I was told by the doctor” My child was experiencing seizures, and he required medical attention and hospitalization. My delivery took place in a hospital, but nobody told me about the warning signs for newborns.”

Another woman, 31 years mother of four children, shared her experience with newborn care. *“After giving birth, I was given a breast for my baby, but the first three days the breast did not produce adequate milk, so my baby did not sleep properly and he cried continuously, as I felt*

like he was starving." Sometimes I'm given sugar and water to help the child receive enough calories if there isn't any milk until my breast milk produces milk.

Cultural considerations when providing essential newborn care

A 26-year- para 2 mothers said, "In our culture, my mother or another family member generally takes care of a newborn after I gave birth, so I don't have expertise caring for my kid in the first postnatal days. I entrusted my baby to my mother during the first month of his existence, even though he was not able to eat or cry, because I think mothers are the finest caretakers because they have a wealth of traditional knowledge and experience with raising children.

Another A33-year- para 4 woman, "when I gave birth firstly I was removed colustrm milk by expressing I considered colustrm (first milk) it was dirty or difficult to digest." After three days, I took a bath, after which I applied fresh butter to every area of my skin and applied Vaseline to the umbilical cord to make it easier to remove.

Challenge of mode of delivery

C-section deliveries are challenging for moms due to the cause they physically and mental discomfort, which prevents them from taking care of the newborns.

A35 year mothers "when I gave birth my first baby through vaginal delivery, I was give only my breast milk and I was care my chilld confedently ' However in my current delivery was via cesarean section it is very difficult to give my breast milk only which is very painfull so I gave formula milk.

Table 6: Bivariable and multivariable analysis result of factors associated with good practice essential newborn care postnatal mothers at selected public health hospital Addis Ababa Ethiopia, 2024 (N=394).

Characteristics	Poor practice	Good practice	COR 95 % CI	P-value	AOR95% CI	P-value
Place of recedency						
Urban	214 (95.5)	157(92.4)	.564(.24,1.32)	.187	.62(.208, 1.860)	.395
Rural	10(4.5)	13(7.6)				
Age of respondent						
15-24	22(9.8)	27 (15.9)		.017		
25-34	159(71.0)	126(74.1)	3.68(2.00,1.09)	.005	1.83(.65,5.13)	1.83
35-44	111(52.4)	54 (29.7)	2.00(1.09, 3.68)	.025	2.03(.919, 4.50)	
Number of ANC visit						
Less than 4 times	113(50.4)	66(38.8)	.623(.41, .93)	.022	.60(.36,1.86)	.061
Equal/more 4 times	111(49.6)	104(61.2)				
Advised on ENC during ANC						
Yes	46(20.5)	114(67.1)	7.87(4.9,12)	.000	2.16(1.84,5.613)	.000

No	178 (79.5)	56 (32.9)	1.00			
Birth preparedness						
Yes	73 (32.6)	133 (78.2)	5.74(3.69, 8.92)	.000	2.38(1.36, 4.17)	.002
No	151 (67.4)	37 (21.8)	1.00		1.00	
Mode of delivery						
SVD + instrumental	76(33.9)	133(78.2)	7.00(4.431, 11.06)	.000	3.22(1.84, 5.61)	.000
C-Section	148(66.1)	37(21.8)			1.00	
Faced obstetric complications						
Yes	45 (18)	18 (10.6)	.471(.262, .848)	.012	.666(.310, 1.30)	.298
No	179(79.9)	152(89.4)				
Counselling onNDS						
Yes	50 (22.3)	121 (71.2)	8.59(5.44, 13.57)	.000	2.53(.137, 4.68)	.003
No	77.7 (22.4)	49(28.8)	1.00		1.00	
Koweldge on NDS						
Yes	31 (15.1)	96 (52.7)	4.12(2.66, 6.39)	.000	.709(.394, 1.27)	.253
No	180(84.6)	86(47.3)	1.00			
Immediate Post Natal Care visit						
Yes	98 (46.2)	146 (80.2)	3.85(2.45, 6.06)	.000	2.01(1.13, 3.60)	.017
No	114 (53.8)	36 (19.8)			1.00	

AOR: AdjustedOddRatio, COR: CrudeOddRatio,1=reference,CI: Confidence Interval, ANC: Antenatal care, ENC: Essential newborn care, CS: cesarean section, SVD: spontaneous vaginal delivery NDS: neonatal dangr sign.

Table 7: Health service and obstetric related characteristics of postnatal mothers in selected four public Addis Ababa city Administration, Ethiopia, 2024. (N=8)
Three themes were identified from postnatal mothers in depth interview.

Theme	Themes	Subthemes
1	Lack of understanding and information towards essential newborn care:	1.1 Not knowing Newborn danger sign 1.2 Not got counselling on ENC by health professional during ANC and after birth 1.3 Lack of immediate postnatal Care visit
2	Traditional mal practices	2.1Cultural mal practice 2.2 Cultural believes
3	Mode of delivery	Difficulty if feeding due to pain after C-section delivery,

6. DESSCUTION

The finding of this study revealed that the essential new-born care practices were 43.2%. This percentage has a 95% confidence interval ranging from 41.2% to 51.3%. These results are consistent with a previous study conducted across Makwanpur, Eastern India, and Bangladesh, which found relatively low coverage of essential newborn care practices, ranging from 20% to 70% for immediate breastfeeding and thermal care (29). Similar studies in other settings have also reported varying levels of essential newborn care practice coverage, such as 50% in Uganda(56), 4.2% in Cameroon (4). overall essential newborn practice highly similar to pervioues study conducted in Ethiopia, from 11 articles 48.7% were good practice(26), 44.1% in Nekemte zone(17), 41.4% in systematic reviw from 25 articles(33).

According to this study, 53.3% optimal breastfeeding, 82.7% thermal care, Similar to Nekemte good neonatal feeding were 78.7%) and 77.2% thermal care practices (17), Dessie Referral 46.9% good essential newborn practice with 75.8%, thermal care 80.8% (36), Addis Ababa was 38.8% and the prevalence of each component of new-born care practices included early initiation of breastfeeding (88.4%), safe cord care 84.0% and thermal care 53.6% (38). This similarities may be due to the study in Sub-Saharan African countries use similar study population and study design(6).

This particular finding is higher than study found in hossan 32.9% who have done safe cord care,and 30.6% thermal care (53), in Chench District, 52.9% received safe cord care, (10). However, the fnding was lower than a study conducted in Bangladesh 88.7%, In Adigrat 78.9% (41), Bosset District,Oromia was 62.8%((42).

This study discovered that essential newborn care practices had a significant association with associated characteristics with ENC practice, such as maternal awareness of warning signs, counselling on important newborn care practices, mother preparation for childbirth, delivery style, and immediate postnatal visitation. Similar factors include birth preparation [AOR = 4.58, 95% CI = 1.51, 5.34], mother's mode of delivery [AOR=2.84, 95% CI (1.51, 5.34), (AOR=4.83; 95% CI:1.82,12.8), birth preparation [AOR = 4.58, 95% CI = (2.93, 7.16)], and counselling on essential new-born care by skilled birth attendant [AOR=21.3, 95% CI (10.21-44.3)]. knowledge of the mother regarding ENC, (AOR = 3.27, 95%CI: 1.99, 5.35) immedate postpartum visit(16, 27), (8),(16),(14, 33),(17, 42), are apositive impact on women's level of ENC practice, adequate

counseling on essential newborn care, tend to be more confident and better able to focus on essential newborn care after birth, and may reduce stress and improves a mother's ability to provide proper ENC, the mode of delivery can impact a mother's physical and emotional state, which in turn affects her capacity to immediately engage in ENC and Immediate a postnatal checkup soon after delivery allows healthcare providers to assess the health of both the mother and newborn, identify any issues, and provide guidance on proper ENC practices.

6.1 Limitation and strength of the study

- **Self-Reported Data:** The study relies on self-reported data from participants, which may be subject to bias. Participants might overestimate or underestimate their knowledge and practices regarding essential newborn care due to social desirability or recall bias.
- **Cross-Sectional Design:** The study employs a cross-sectional design, which captures data at a single point in time. This limits the ability to establish causal relationships between variables and may not account for changes in knowledge and practices over time. As strength of the study trying mixed method approach.

7. CONCLUSION AND RECOMMENDATION

7.1. Conclusion

In this study, the majority of neonates had better thermal care and cord care than in most other similar studies conducted in the area; yet, their breast feeding technique demonstrated extremely poor recognition of maternal danger signs. The problem was discovered to be caused by a lack of counselling during the ANC visit and delivery. The mode of delivery, maternal cultural birth, and the ANC visit were found to be strongly associated with the critical newborn care (NBC) practices. Therefore, there is a need to enhance women's education; promote the use of ANC services and birth preparedness; and mobilize the community to support the start of breastfeeding and continued exclusive breastfeeding for six months.

7.2 Recommendation

Based on the finding of the study the following recommendations are forwarded.

To pregnant women

- It also important to make birth preparednes activity during pregnancy period.

To health facilities

To educate mothers about newborn care during ANC visits and deliveries; to increase maternal knowledge; to promote community-oriented, essential new-born care practices, such as the use of skilled birth attendants, health extension workers, and women's involvement in matters pertaining to the health of mothers and newborns. Then, antenatal and postnatal care visits are among the most important areas for maternal and neonatal health treatments, so healthcare providers should concentrate on and encourage crucial new-born care behaviours during these visits.

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6. Annexes

Annex: English version questionnaires

Annex 1: informed consent form

Greetings, I'm Firehiwot Nigussie. As part of my requirements to earn a master's degree in neonatal nursing from St. Paulo's Millennium Medical College, I am conducting research on essential newborn care practices among postpartum moms and associated factors at public hospital Addis Ababa, Ethiopia.

Among others, you have been chosen by chance. I have a few inquiries for you regarding this research. You are free to say no to participation in this study; participation is entirely voluntary. Your provided information will be kept confidential and used to collect a general report. There will be no way to identify you as one of the data, and no names will appear in the report. The interviews might run for almost 25 minutes. Please feel free to ask me any questions you may have concerning the study.

Thank you for your cooperation!

Do you mind if we proceed? 1. Yes, Continue 2. No, stop

Respondent agreed to be interviewed Mark/circle each

Data Collector Name-----Signature-----Date-----

Supervisor Name-----Signature-----Date-----

Table 8: Socio- demographic characteristics questioner

S.No.	Question	Response
Part I: Socio- demographic Characteristics		
101	Age of the mother	/ _____ / in complete year
102	Marital status	1. Married 2. Divorced 3. Single 4. Separated
103	Educational status of mother	1. No formal education 2. Primary education

	practice during ante natal care visits?	2. No	
204	Do you have any birth preparedness activity like preparing essential items(clean cloth, funds for birth-related and emergency expenses) for clean and safe delivery before delivery	1. Yes 2. No	
205	Where you gave birth?	1. Health center 2. Hospital 3. Private institution 4. Home	If “Home” skip to Q 204 and 205
206	What was your mode of delivery?	1. Spontaneous vaginal delivery 2. Instrumental assisted delivery 3. Caesarean section	For institutional delivery only
207	Had you faced any type of complication during the delivery?	1. Yes 2. No	If “No” Skip to Q 208
208	If the above answer is “Yes” lists them?		
209	Have you counseled about optimal breast feeding practice?	1. Yes 2. No	
210	Do you know any neonatal danger signs?	1. Yes 2. No	If “ No” skip to Q 211
211	Mention neonatal danger signs?	1. Poor sucking or not able to breastfeeding 2. Difficulty of breathing 3. Lethargic or unconscious 4. Hypothermia or Hyperthermia 5. Convulsion 6. Umbilical infection/such as redness of the cord 7. Yellowish discoloration of palms/soles 8. Vomiting	

Knowledge and Practice related question			
300	Do you know about clean cord care practice?	1. Yes 2. No	
301	Did anybody apply anything on the stump or cord?	1. Yes 2. No	If “No” skip to Q301
302	What did you apply?	1. Ointment/powder 2. Butter 3. Animal dung 4. Ash 5. Other(specify)_____	
303	How long after birth was your baby bathed for the first time?	1. Before 24 hour of delivery 2. After 24 hour of delivery	
304	Was your baby wrapped in cloth or put on mother's body and covered with cloth before the placenta was delivered?	1. Yes 2. No	
305	Which types of cloth you used to wrap the baby after bath?	1. New and warm cloth 2. Clean and warm old cloth 3. Any available cloth 4. Other, Specify_____	
306	How long after birth did you first put the baby on the breast?	1. Immediately after delivery 2. Within one hour after delivery 3. After one hour of delivery	
307	Did you give the first breast milk (colostrum) for your baby?	1. Yes 2. No	
308	Did you give anything to drink other than breast milk?	1. Yes 2. No	If “No” skip to 308
310	If the above answer is “Yes”, which fluid you gave?	1. Plain water 2. Butter 3. Animal Milk 4. Other, Specify_ _____ _____	

Table 7: Health Care System related questions

400	Which health institution is found in your surrounding?	1. Hospital 2. Health center 3. Health Post 4. Other, Specify_____	
401	Is those institutions provide Essential Newborn Care and create awareness in the community?	1. Yes 2. No	
403	The health care provider in the institution who give services related to Essential Newborn Care	1. Health Extension Workers and Health Development Army 2. Nurses 3. Midwives 4. Doctors 5. Public Health officers 6. Others, Specify_____	
404	Distance to health institution from your home?	_____(Km)	

Many Thanks

!!!

Annex: 3. Informed consent form in depth interview

In-depth interview guide line

Hello, my name is Firehiwot Nigussie I am conducting a study. As part of my requirements to earn a master's degree in neonatal nursing from St. Paulo's Millennium Medical College, I am conducting research on essential newborn care practices among postpartum moms and associated factors at selected public health facility Addis Ababa, Ethiopia.

We must assure you that the information we collect from this interview will only be used for research purposes and that the privacy of your response will be maintained. You and your family are not at risk from the study, although it does share some of your time. As a result, we kindly ask for your assistance so that you can take part in this interview. Although you are free to not answer at all or to withdraw in the interim, your participation is crucial to the accomplishment of our goal.

Thank you for your cooperation!

Annex: 4. Questionnaires (English version)

In Depth Interview Guide Developed for purposely selected individual postnatal mom

Interview Questions

Part I: Socio-demographic and obstetric information

1. Age: _____
2. Residency: _____
3. Educational status: _____
4. Occupation: _____
5. Parity, age of last baby

Open ended question to explore the experience and perception regarding their essential newborn practice among postnatal mothers attending governmental institutions in Addis Ababa Ethiopia.

1. Can you describe your experience with providing thermal care to your newborn baby?
How did you feel about this practice?
 - ✓ Can you elaborate on the specific steps you took to provide thermal care to your newborn baby? How did you ensure that the thermal care was effective and beneficial for your baby?
 - ✓ How did your feelings about providing thermal care to your newborn baby evolve over time? Were there any moments that particularly stood out to you in this process?
2. How has your perception of breastfeeding evolved since giving birth? What challenges have you faced in initiating and maintaining breastfeeding?
 - ✓ How has your perception of breastfeeding changed since giving birth? What factors have influenced this evolution in your perception of breastfeeding?
 - ✓ What were the biggest challenges you faced when initiating breastfeeding, and how did you work to overcome them? Have you encountered any ongoing challenges in maintaining breastfeeding?

3. How confident do you feel in recognizing danger signs in your newborn baby? Can you share any specific instances where you had to identify and respond to a danger sign?
 - ✓ Can you share a recent incident where you successfully identified and responded to a danger sign?
 - ✓ Have there been instances where you felt unsure or lacked confidence in recognizing danger signs in your newborn? How did you handle these situations?
4. What cultural or traditional beliefs influence your approach to cord care for your newborn? How do these beliefs impact your decision-making process?
 - ✓ What specific cultural or traditional beliefs play a role in your approach to cord care for your newborn? How do these beliefs influence the decisions you make regarding cord care practices?
 - ✓ Have you encountered any situations where cultural or traditional beliefs conflicted with medical advice regarding cord care? How did you navigate these differences in beliefs?
5. In what ways do you feel supported or unsupported in practicing essential newborn care, specifically regarding thermal care, breastfeeding, danger sign recognition, and cord care?
 - ✓ In what ways do you feel supported in practicing essential newborn care, including thermal care, breastfeeding, danger sign recognition, and cord care? Can you provide examples of the support you have received in each of these areas?
 - ✓ Have there been instances where you felt unsupported or lacked guidance in practicing essential newborn care? How did this lack of support impact your confidence in caring for your newborn?
6. How have healthcare providers or community health workers influenced your understanding and implementation of essential newborn care practices?
 - ✓ How have healthcare providers or community health workers impacted your understanding and implementation of essential newborn care practices? Can you share a specific piece of advice or guidance that significantly influenced your care practices?

- ✓ Have there been times when you received conflicting advice from different healthcare providers or community health workers regarding essential newborn care? How did you navigate these conflicting recommendations?
7. What sources of information have been most helpful to you in learning about essential newborn care practices? How do you evaluate the credibility of these sources?
- ✓ Which specific sources of information have been most helpful to you in learning about essential newborn care practices? How do you discern the credibility of these sources before incorporating the information into your care routine?
 - ✓ Have you encountered any misinformation or conflicting advice from different sources while researching essential newborn care practices? How do you sift through this information to determine what is accurate and reliable?
8. Looking back on your experience with essential newborn care, what advice would you give to other postnatal mothers who are navigating these practices for the first time?
- ✓ Reflecting on your experience with essential newborn care, what key advice would you offer to other postnatal mothers who are embarking on this journey for the first time? How would you guide them through the process of essential newborn care?
 - ✓ Looking back, are there any aspects of essential newborn care that you wish you had approached differently? What specific insights or recommendations would you share with other postnatal mothers based on your experience?

Declaration

I declare that this Research proposal entitled "Essential newborn care practice and associated factors among postnatal mothers at public hospitals. Addis Ababa, Ethiopia 2024" is my own work that have not been addressed in the study area as far as my knowledge touched and all the sources I used has been indicated and acknowledged as complete reference.

Name of investigator

Signature

Date

1. Firehiwot Nigussie

Name of adviser/s

1. Mekdes Hailegbrel

2. Banchamlak Demissie

Name of invigilators

1.
