

Level of knowledge toward essential newborn care practices among postnatal mothers in governmental hospitals of Harar Town, Eastern Ethiopia

SAGE Open Medicine

Volume 10: 1–11

© The Author(s) 2022

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/20503121221076364

journals.sagepub.com/home/smoMasresha Leta 

Abstract

Objectives: Essential newborn care is a set of comprehensive recommendations designed by the World Health Organization to improve the newborn's health through intervention before conception, during pregnancy, soon after birth, and the postnatal period. Globally 4 million newborns die every year before they reach the age of 1 month. Therefore, this study assessed the level of knowledge and associated factors toward essential newborn care practices among postnatal mothers attending postnatal service in governmental hospital of Harar town, Eastern Ethiopia, 2020

Methods: Facility-based cross-sectional study was conducted in Harar Town, Jugul, and HiwotFana Specialized University Hospital. Voluntary postnatal mothers who are randomly selected were participated in the study. A total number of 266 women were included in the study. Data were collected through face-to-face interviews. The training was given for data collectors, and data evaluation was done on daily basis. Cleaned data were entered to SPSS version 20, and multiple logistic regression analysis was used for better prediction of determinants and to reduce bias due to confounders. Those variables with a p value less than 0.25 were entered into multiple logistic regression analyses. Associations with p value less than 0.05 were declared as statistically significant. Text, figures, and tables presented the result.

Result: The overall prevalence of good knowledge was 57.2%. Educational status, average monthly income, antenatal care visit, and parity had significantly associated with outcome variables.

Conclusion: More than half of mothers had inadequate newborn care knowledge. In addition, educational status, average family monthly income, frequency of antenatal care visit, and parity were independently associated with knowledge on essential newborn care. Therefore, more significant improvement in essential newborn care practices could be attained through policy implications and recommendations. Therefore, we recommend that stakeholders of the health sector have a close follow-up on maternal and newborn care services and maintain a strategy that will incorporate maternal education service on essential newborn care practice.

Keywords

Knowledge, essential newborn care, newborn care practice

Date received: 28 April 2021; accepted: 10 January 2022

Introduction

Essential newborn care is a set of comprehensive recommendations designed by the World Health Organization (WHO) to improve the newborn's health through intervention soon after birth and in the postnatal period.¹

Newborn care includes thermal care (drying and wrapping the newborn immediately after delivery and delaying the newborn's first bath for at least 6 h or several days to reduce hypothermia risk), clean delivery, and cord care (cutting and

tying off the umbilical cord with a sterilized instrument and thread). Newborn care also includes breastfeeding initiation within the first hour of birth, immunization, eye care,

Department of Nursing and Midwifery, Harar Health Science College, Harar, Ethiopia

Corresponding author:

Masresha Leta, Department of Nursing and Midwifery, Harar Health Science College, PO Box 228, Harar, Ethiopia.

Email: masreshaleta3@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

recognition of danger signs, care of the preterm/low birth weight infant, and management of newborn illnesses.²

WHO mentioned several interventions which make newborns healthy. Crucial interventions mentioned for essential newborn care practices are clean cord care, thermal protection, early and exclusive breastfeeding, delay bathing, care for the low birth weight newborn, and management of newborn.³

Cord care is among the essential newborn care performed early in less than 1 min after birth or late cord clamping (performed after 1 to 3 min after birth). Early cord clamping is not recommended unless the neonate is asphyxiated and must be moved immediately for resuscitation. Late cord clamping is recommended for all births while initiating simultaneous essential newborn care. Daily chlorhexidine (4%) application to the umbilical cord stump during the first week of life is recommended for newborns who are born at home in settings with high neonatal mortality (neonatal mortality rate >30 per 1000). Thermal protection, newborns without complications should be kept in skin-to-skin contact with their mothers during the first hour after birth to prevent hypothermia and promote breastfeeding as soon as possible after birth. Vitamin K is also another component of essential care need to provide for the newborn intramuscularly (IM) after birth.⁴

Newborn care is of immense importance for the survival and proper development and healthy life of a baby. It is strongly influenced by home care practices instituted by the mother and maternal and newborn care services at health facilities.⁵

The proportion of child deaths in the neonatal period has increased in WHO Regions over the last years. The leading cause of death is prematurity. Proper care during pregnancy and delivery is essential for the health of both the mother and the baby. Skilled care during pregnancy, childbirth, and postpartum are essential interventions in reducing maternal and neonatal morbidity and mortality.

Globally 4 million newborns die every year before they reach the age of 1 month. Out of them, 1.5 million newborns die in four countries of South Asia. Approximately 3.4 million newborns die within the first week of the life of these deaths; 66% occur during the first 24 h. Late death, that is, after 24 h, occurs in the remaining 34%, which may be prevented if mothers have good knowledge about newborn care, including danger signs of newborns.⁷ Global estimates suggest that more than two-thirds of newborns could be saved through existing maternal and child health programs.⁸

Around the world, more than three million newborns die in their first month of life every year. However, many of these deaths can be prevented using proven and cost-effective interventions. For example, the home-based newborn care (HBNC) package successfully addresses the leading causes of newborn deaths.⁹

More than half of the approximately 7.5 million neonatal deaths globally occur in the first 4 weeks after birth.

Ninety-eight percent of these neonatal deaths occur in developing regions, 28% in the least developed countries. Overall, there were 30 neonatal deaths per 1000 live births; 5 per 1000 in developed and 33 per 1000 in developing regions, and 42 per 1000 in the least developed countries. This means that in developing regions, the risk of death in the neonatal period is more than six times that of developed countries; it is more than eight times higher.¹⁰

Over a million African babies are estimated to die in the first 4 weeks of life, but most die at home, uncounted and invisible to national and regional policies and programs. As a result, the burden of neonatal death is still high in developing countries, where most of the causes could be prevented.¹¹

A large proportion of maternal and neonatal deaths occur during the first 48 h after delivery.

Thus, prompt postnatal care (PPNC) for both the mother and the child is essential to treat any complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child. In Ethiopia during the past 5-year period, neonatal mortality estimated 29 deaths per 1000 live births and 19 deaths per 1000 live births for post-neonatal mortality. Even though there has been improvement in the past 5 years, under-5 mortality rates 67 deaths per 1000 live births in 2016 and 48 deaths per 1000 live births. Thus, further intervention is needed to sustain the improvement of neonatal mortality.¹²

The promotion of essential newborn care practices is one strategy for improving newborn health outcomes.¹³

The ability to identify knowledge gaps early in the neonatal period would help healthcare workers identify and implement timely and appropriate interventions that would lead to better neonatal outcomes. Therefore, this study will investigate the mothers' level of knowledge and associated factors toward essential newborn care practice, which the researchers, policymakers, healthcare workers, community, and caregivers use as a baseline for their future interventions and activities. In addition, this study will identify knowledge of postnatal mothers on essential newborn care, which shows how far the practice will exist and what measurement should be taken to improve newborn care practice knowledge on postnatal mothers.

The ability to identify knowledge gaps early in the neonatal period would help healthcare workers identify and implement timely and appropriate interventions that would lead to better neonatal outcomes. Therefore, this study will be expected to investigate the mothers' level of knowledge and associated factors toward essential newborn care practice, and the result's finding will help the programmers/planner and other stakeholders, including the Harari region health bureau, Jugul, and HFSUH, to plan necessary and work on improving mothers' knowledge, attitude, and practice on essential newborn care practice after obtaining our significant findings.

Even though few studies were conducted on essential newborn care practice in Ethiopia, as far as our knowledge is

concerned, there is no sufficient information in our study area. Therefore, this study will try to fill the information gap that other researchers did not address.

Materials and methods

Study setting and population

Institutional-based cross-sectional study was used for study in the Harari region. Harari region is one of the 10 regional states of the Federal Democratic Republic of Ethiopia. The town is located in the eastern part at a distance of 526 km away from Addis Ababa, the capital city of Ethiopia; based on the 2007 Census result of the CSA, the Harari region is estimated to be 213,870, and this makes Harari Region the least populous region in the country. Of these, 108,646 (50.8%) and 105,114 (49.2%) were males and females, respectively. From the total population, 122,057 (54%) of them are urban dwellers, while the rest dwell in the rural part of the region.

In the region, there are six hospitals: three governmental hospitals, two private hospitals, and one fistula hospital established by NGO, with eight health centers.⁶ The study was conducted in Jegula and HiwotFana specialized hospitals. Jegula is a hospital that was established in 1902. In comparison, HiwotFana Specialized University Hospital comprises 18 departments that train medical and paramedical students. In addition, the hospital provides clinical services, laboratory services, and radiology services (X-ray and ultrasound services) for inpatient and outpatient attendances coming to the hospital. In addition, the hospital also provides different pharmacy services (inpatient pharmacy service, outpatient pharmacy service, ART pharmacy, clinical pharmacy services, and drug information services) to both inpatients and outpatients.

The study was conducted from 7 to 25 February 2020 G.C.

Sample size estimation and sampling technique

The study included the study that the investigator identified those mothers who meet the eligibility criteria and postnatal mothers of neonates born alive and who gave written informed consent. Data were collected by face-to-face interviews after having written informed consent from the study participants who filled inclusion criteria and were interviewed, and 266 postnatal mother attendants were involved in the study.

The required sample size for the study was determined using single population proportion formula:

$$n = ((1.96)^2 \cdot 0.804(1 - 0.804)) / [0.05]^2 = 242$$

where n is the desired sample required, $Z_{\alpha/2}$ is the standard normal variable at 95% confidence level = 1.96, d is the margin of error assumed to be tolerated (5%), and P is the prevalence of good knowledge toward essential newborn care which was 80.4% in a study conducted in Addis Ababa.¹⁴

By considering the 10% (24.2) non-response rate, the final sample size became 266. Two governmental health institutions were included in the study. The sample was allocated proportionately based on their annually postnatal client flow to both hospitals. Individual study participants at each health facility were selected by systematic random sampling.

Data collection tool and procedure

The data collection instrument was developed after a critical review of the literature.¹⁴⁻¹⁸ The questionnaire was first prepared in English, then translated into Afan Oromo and Amharic, and then translated back to English for consistency and simplicity during administration. The questionnaire included sociodemographic characteristics, antenatal care, and delivery history of the women and mother's knowledge of the WHO essential newborn care practices. Based on the expected content found in this tool, final adjustments were made after the pretest was carried out to fit our local situation. We used a validated questionnaire for the gathering of data.

Data quality control

Data quality assurance mechanisms were instituted at several points to ensure the quality of the data. Before the data collection, the data collection instrument was pretested by taking 5% of the total sample in Harar Federal Police Hospital to check its clarity and easily understandable response. Based on the results of pretesting, the necessary amendment was made to the data collection tools before the actual data collection period. The questionnaires were translated into Amharic and Oromiffa and back translated to English by people who have proficiency in translation to ensure consistency. Third, the data collector and supervisor were trained for 2 days on the study's objective and method of data collection and discussed thoroughly the tools prepared for data collection. Before data collection, they were allowed to fill the questionnaire, and later discussion was made in all contents of the questionnaires, and areas of difficulties were revised. Finally, the data were coded carefully in order to increase the accuracy and quality of the data.

Operational definition

Poor knowledge. Questions regarding knowledge of breast-feeding, cord care, eye care, immunization, thermal care, and identification of danger sign measures for newborn care were scored, and if the women answered below or equal to the mean value, they were considered to have poor knowledge.⁸

Good knowledge. Questions regarding knowledge of breast-feeding, cord care, eye care, immunization, thermal care, and identification of danger sign measures for newborn care were scored, and if the women answered above the mean value, they were considered to have good knowledge.⁸

Data processing and analysis

Principal investigators did data checking and cleaning daily during collection before actual analysis. Analysis was done using statistical software for social sciences (SPSS) 20.0. Data were analyzed using descriptive statistics and placed in terms of frequency and percentage. The univariate analysis such as proportions, percentages, ratios, frequency distributions, and appropriate graphic presentations and measures of central tendency and measures of dispersion were made. Multiple logistic regression analysis was used for better prediction of determinants and to reduce bias due to confounders. Those variables with p value less than 0.25 will be entered into multiple logistic regression analysis. Associations with p value less than 0.05 will be declared statistically significant at a 95% confidence level.

Eligibility criteria

Inclusion criteria. Inclusion criteria were postnatal mothers who attended postnatal service at the time of data collection, postnatal mothers who were volunteers to participate in the study, and postnatal mothers of neonates born alive.

Exclusion criteria. Exclusion criteria were those women who were seriously ill and women who were unable to communicate.

Results

Sociodemographic characteristics of the respondents

From 266 postnatal mothers, 257 women were interviewed, which makes the response rate 96.6%. Of the respondents, the majority, 123 (47.9%), were between the age group 25 and 34 years with a mean age of 27.18 and standard deviation of ± 5.922 and ranges from 18 to 40 years. Regarding marital status, the majority, 242 (94.1%), of the respondents were married, and their first age for marriage was a minimum of 18 and maximum of 35 years with a mean age of 21.68 and standard deviation of ± 2.77 . Most of the respondents were 127 (49.4%). Muslim religious followers, 175 (68.1%) Oromo ethnic group, and one-third (73; 28.4%) of respondents were unable to read and write. Regarding occupation status and living area majority, 130 (50.6%) and 174 (67.7%) were housewife and living in rural area. Average monthly income ranges from 300 up to 8500 Birrs with a mean of 2902 and standard deviation of ± 2535 (Table 1).

Antenatal care and delivery history of study participants

In this study, the majority, 222 (85.3%) and 68 (30.6%), of mothers had ANC follow-up and more than four times had

ANC visits. Regarding the initiation time of ANC, majority (68; 30.6%) start the visit at 3 months of gestational age. Their minimum and maximum month of starting ANC were at 1 and 9 months with a mean of 3.93 and standard deviation of 1.625. The majority, 93 (36.2%), of study participants had given birth once, and the maximum birth was 10 (0.4%) with a mean of 2.4 and standard deviation of ± 1.633 . The minimum and the maximum number of delivery ranges from 1 up to 10 with a mean of 2.4 delivery. During data collection time, 101 (39.3%), 69 (26.8%), and 42 (16.3%) of the study participants replied that they have one, two, and three children who are living with them. Regarding time spent to reach the hospital, the minimum and maximum duration mentioned were 2 and 300 min, respectively, with a mean of 39.1 and a standard deviation of ± 41.04 (Table 2).

Knowledge on essential newborn care

Breast feeding. The majority, 204 (79.3%), of mothers reported that their newborns were breastfed within the first hour after delivery and 53 (20.7%) squeezed out the colostrum before breastfeeding. The most common food given was formula feed 28 (58.4%), and 220 (85.6%) reported that exclusive breastfeeding for six months is recommended for the newborn (Table 3)

Immunization

Among 257 respondents majority, 206 (80.2%) of mothers child were vaccinated. More than half (185; 72%) of the respondents agreed that new born need to be vaccinated at birth, and 190 (73.9%) respondents mentioned that vaccine was important to prevent disease. And 93 (36.2%) and 144 (44%) replied that BCG and Polio protect tuberculosis and polio mellitus, respectively (Figure 1).

Thermoregulation

Among the respondents, 175 (68.1%) had replied that they know how to maintain the newborn's body temperature and 135 (52.5%) replied that they wrapped the baby in a cloth immediately and that will be essential to maintain temperature. Regarding bathing newborns, 109 (42.4%) only correctly identified the proper time of bathing, which was after 24 h of delivery (Figure 2).

Knowledge of eye and cord care

From the study participants, the majority (187; 72.8%) of mothers are aware of signs of eye infection, and 108 (49.4%) of women reported that reddening of the eye is the main symptom, followed by abnormal eye discharge, which accounts for 66 (30.1%). Regarding cord care majority, 79 (30.7%) replied that the cord should be covered with a cloth. Furthermore, 131 (49%) of the participants replied that

Table 1. Sociodemographic characteristics of postnatal mothers in Government Hospital of Harar Town, 7–25 February 2020 G.C.

S. No	Variable	Characteristics	Frequency	Percent
1	Maternal age	18–24	90	35
		25–34	123	47.9
		35–0	44	17.1
2	Marital status	Single	6	2.3
		Married	242	94.1
		Divorced/separated	7	2.7
		Widowed	2	0.8
3	Religion	Orthodox Christian	98	38.1
		Muslim	127	49.4
		Protestant	22	8.6
		Catholic	8	3.1
		Other	2	0.8
4	Ethnicity of Mother	Oromo	175	68.1
		Amhara	57	22.2
		Harari	7	2.7
		Tigray	6	2.3
		Other (specify)	12	4.7
5	Educational status	Unable to read and write	73	28.4
		Able to read and write	62	24.1
		Primary education	41	16
		Secondary education	33	12.8
		College and above	48	18.7
6	Occupation of mother	House wife	130	50.6
		Private employee	51	19.8
		Government employee	43	16.7
		Merchant	12	4.7
		Farmer	10	3.9
		Student	11	4.3
7	Living area (residence)	Rural	174	67.7
		Urban	83	32.3
8	Families monthly income (in Birr)	≤1000	106	41.2
		1001–2000	41	16.0
		≥2001	110	42.8

something needs to be applied to the cord, while 30 (22.9%) of the mothers mentioned that butter should be applied to the stump, while 74 (56.6%) of mothers know that Vaseline was applied on the cord (Table 4).

Knowledge on danger sign

Among 257 respondents, more than half (171; 66.5%) replied that they had know about danger sign on the new born; among those danger sign, majority 129 (50.2%) recognized fever as a danger sign, while few (2; 0.8%) of them recognized baby being too small/born being too early as a danger sign, and 86 (33.5%) did not have awareness on newborn danger signs. Regarding information during pregnancy, 206 (80.2%) of the participants had provided information, and the most frequently provided information was about 82 (31.9%) breast feeding participants by 113 (44%) midwives (Table 5).

Overall knowledge level

The mean score of newborn care knowledge among the total sample was 12.59 (± 3.16 SD). The maximum score obtained was 19.00, and the minimum score was 5.00. Considering the mean score of knowledge as the assigned cut-off point, 147 (57.2%) of mothers were found to have good knowledge of newborn care, and 147 (57.2%) of mothers were found to have poor knowledge of newborn care. Thus, the overall prevalence of good knowledge in this study was 57.2%. The rest of the participants (42.8%) had poor knowledge on essential newborn care practice.

Factor associated with knowledge

Bivariate logistic regression analyses showed that among sociodemographic characteristics of clients, marital status, occupational status, number of ANC visits, and age at first

Table 2. Antenatal care and delivery history of postnatal mothers in Governmental Hospital of Harar Town, 7–25 February 2020 G.C.

S. No	Variable	Characteristics	Frequency	Percent
1	Have ANC follow-up	Yes	222	85.3
		No	35	14.7
2	Frequency of ANC follow-up	One	33	14.9
		Two	56	25.2
		Three	65	29.3
		Four and above	68	30.6
3	When start ANC	Before 16 weeks	165	74.3
		≥ 16 weeks	57	25.7
4	Number of delivery (Para)	Primiparous	93	36.2
		Multipara	164	63.8
5	Number of children	1 up to 3 children	212	82.5
		4 to 10 children	45	17.5
6	Time spent to reach hospital	2 up to 60 min	197	76.7
		61 min up to 300 min	60	23.3
7	Sex of previous delivery	Male	139	54.1
		Female	118	45.9
8	Place of birth	Health facility	252	98.1
		Home	3	1.2
		Other (specify)	2	0.8
9	Last delivery attendant	Skilled health care provider	245	95.3
		Trained traditional birth attendant	7	2.7
		Traditional birth attendant	5	1.9
10	Mode of delivery	SVD	179	69.6
		Cesarean section	66	25.7
		Instrumental	12	4.7

ANC: antenatal care.

Table 3. Knowledge of postnatal mothers toward Breast Feeding in Governmental Hospital of Harar Town, 7–25 February, 2020 G.C.

S. No	Variable	Characteristics	Frequency	Percent
1	Do you know early initiation of breastfeeding	Yes	32	12.5
		No	225	87.5
2	When did you start breast feeding	Within 1 hour after delivery	204	79.4
		After 1 h up to 1 day	53	20.6
3	Have you squeezed out the colostrum	Yes	53	20.7
		No	204	79.4
4	Do you provided anything other than breast milk for new born	Yes	48	18.7
		No	209	81.3
5	First feed you gave to the baby immediately after delivery	Cow's milk	9	18.7
		Plain water	6	12.5
		Formula feed	28	58.4
		Sugar water	4	8.3
		Other (specify)	1	2.1
6	Do you know breast should be given on demand	Yes	162	63
		No	95	37
7	Do you know important of colostrum feeding	Yes	183	71.2
		No	74	28.3
8	Do you know exclusive breast feeding is recommended for 6 months	Yes	220	85.6
		No	37	14.4
9	Do you know the importance of prelacteal feeds	Yes	173	67.3
		No	84	32.7

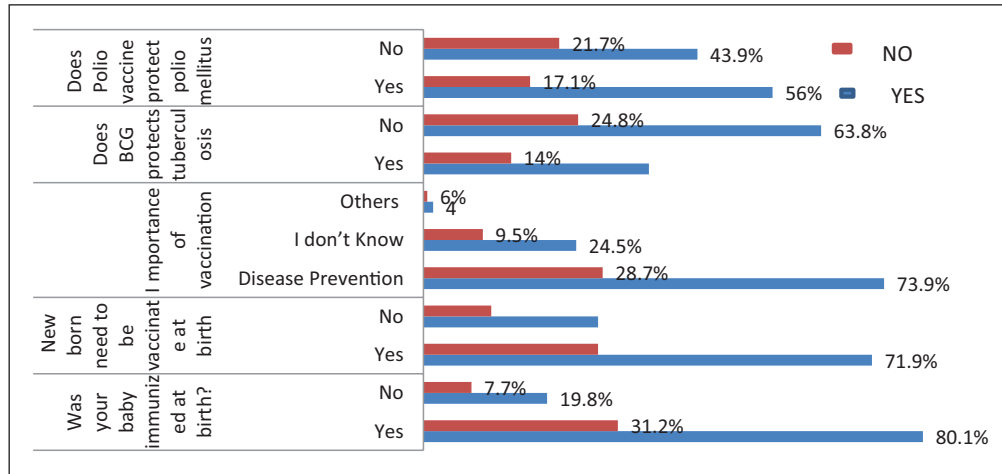


Figure 1. Knowledge of postnatal mothers toward immunization in Governmental Hospital of Harar Town, 7–25 February 2020 G.C.

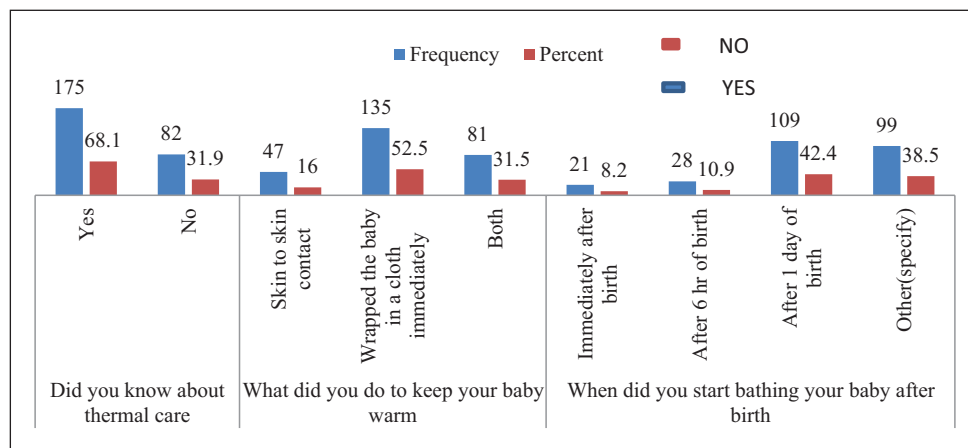


Figure 2. Knowledge of postnatal mothers on thermoregulation in Governmental Hospital of Harar Town, 7–25 February 2020 G.C.

Table 4. knowledge of postnatal mothers on eye and cord care in Governmental Hospital of Harar Town, 7–25 February 2020 G.C.

S. No	Variable	Characteristics	Frequency	Percent
1	Did you know about sign of eye infection?	Yes	187	72.8
		No	70	27.2
2	What sign of eye infection did you know?	Abnormal eye discharge	66	30.1
		Reddening of eye	108	49.4
		Swollen eye	31	14.1
		Other	14	6.4
		I do not know	120	46.7
3	What did you do to the umbilical stump after the cord is cut?	Cover with cloth	79	30.7
		Uncover, keep dry and clean	58	22.6
		I do not know	120	46.7
4	Anybody apply anything on the stump after the baby's cord was cut	Yes	131	49
		No	126	51
5	If yes, what was applied?	Butter	30	22.9
		Vaseline	74	56.5
		Other (specify)	27	20.6

Table 5. Knowledge of postnatal mothers on danger sign in Governmental Hospital of Harar Town, 7–25 February 2020, G.C.

S. No	Variable	Characteristics	Frequency	Percent
1	Did you know about new born danger sign?	Yes	171	66.5
		No	86	33.5
2	what danger sign do you	Fever	129	50.2
		Baby being too small	24	9.3
		Born too early	8	3.1
		Baby being too small and born too early	4	1.5
		Fever, baby being too small and born too early	2	0.8
		Others	4	1.5
		Do not know about danger sign	86	33.5
3	Have you got information about new born care during your ANC Visit	Yes	206	80.2
		No	51	19.8
4	What type of information do you have obtained	Breastfeeding	82	31.9
		Immunization	68	26.5
		Thermoregulation	21	8.2
		Breastfeeding and immunization	10	3.9
		Immunization and thermoregulation	4	1.5
		Breastfeeding, immunization, and thermoregulation	17	6.6
		Other	4	1.6
		Information does not obtained	51	19.8
		5	Who provide information to you?	Nurse
Midwife	113	44		
Doctor	14	5.5		
Mother	4	1.5		
Both midwife and mother	1	0.4		
Other	3	1.2		
Information does not obtained	51	19.8		

ANC: antenatal care.

marriage were not statistically associated. Their p value is >0.25 according to age, educational status, place of residence, average family monthly income, ANC follow-up, and parity. Time spent to reach the hospital was associated with the outcome variables.

A multiple logistic regression statistical model analysis was performed to identify factors associated with knowledge on essential newborn care among postnatal mothers. Those p value <0.25 in bivariate logistic regression were entered into the final multivariate analysis. After adjusting other variables, educational status, average family monthly income, frequency of visit, and parity were independently associated with knowledge on essential newborn care.

Those postnatal women whose secondary educational level was five times (AOR = 5.938; 95% CI: 1.943–18.144) more likely having knowledge than being unable to read and write. A postnatal mother whose average monthly income between 1000 and 2000 birr were 64.1% (AOR = 0.359, 95% CI: 0.146–0.887) and less likely knowledgeable than their encounter and those postnatal mothers who had three times ANC visit (69.7%; AOR = 0.303; 95% CI: 0.096–0.995) were less likely knowledgeable than those who had less than 1000 birr. Postnatal mothers who are multi-para women are

2.8 times (AOR = 2.871; 95% CI: 1.133–7.273) more likely knowledgeable than primi-para women (Table 6).

Discussion

In our study, more than half of the mothers had good knowledge; our finding was relatively lower than the study conducted in India 76.7%¹⁹ and Gulome Kada Eastern Tigray 80.4%.¹⁵ However, this difference might be due to differences in the study setting and study period.

One essential newborn care component was the early initiation of breastfeeding; in this study, majority of mothers reported that they start breastfeeding within the first hour after delivery which was slightly higher than a study conducted in Pakistan¹⁷ study, which reported 66.2% early initiation of breastfeeding. This difference might be due to variation in sociodemographic factors.

Regarding immunization in this study, 72% of mothers were aware of the need to vaccinate their newborns at birth; this finding is lower than the study conducted in Addis Ababa 96.1%,¹⁶ and in this study, 36.2% and 44% of postnatal mothers reported that BCG and OPV would be administered at birth to prevent T.B. and polio, while this finding is lower

Table 6. Association of knowledge on newborn care with sociodemographic and other factors, among postnatal mothers in Harar HiwotFana Specialized University and Jugal Hospital Harar Eastern Ethiopia 2020 (N = 257).

Characteristics	Knowledge level		Crude, OR (95%)	p Value	Adjusted OR (95%) CI
	Poor knowledge	Good knowledge			
	No. (%)	No. (%)			
<i>Age (years)</i>					
18–24	47 (42.7)	43 (29.3)	1.00	0.435	1.00
25–35	48 (43.6)	75 (51.0)	1.7 (0.986–2.960)*	0.496	0.7 (0.304–1.778)
35–40	15 (13.6)	29 (19.7)	2.1 (1.000–4.465)	0.628	1.3 (0.405–4.472)
<i>Educational status</i>					
Unable to read and write	53 (48.2)	20 (13.6)	1.00	<0.001	1.00
Able to read and write	26 (26.6)	36 (24.5)	3.6 (1.758–7.541)*	0.020	2.9 (1.185–7.400)
Primary education	18 (16.4)	23 (15.6)	3.3 (1.517–7.559)*	0.081	2.3 (0.898–6.258)
Secondary education	7 (6.4)	26 (17.7)	9.8 (3.693–26.335)*	0.002	5.9 (1.943–18.144)*
Widowed	6 (5.5)	42 (28.6)	18.5 (6.873–50.330)*	<0.001	15.0 (4.461–50.537)
<i>Place of residence</i>					
Rural	52 (47.3)	122 (83.0)	1.00		1.00
Urban	58 (52.7)	25 (17.0)	0.1 (0.104–0.325)*	0.104	0.4 (0.198–1.63)
<i>Average monthly income</i>					
Less than 1000	40 (36.4)	66 (44.9)	1.00	0.083	1.00
1001–2000	25 (22.7)	16 (10.9)	0.3 (0.185–0.813)*	0.026	0.3 (0.146–0.887)*
Greater or equal to 2001	45 (40.9)	65 (44.2)	0.8 (0.507–1.512)	0.270	0.6 (0.322–1.374)
<i>ANC follow-up</i>					
No	28 (25.5)	7 (4.8)	1.00	0.531	0.6 (0.147–2.684)
Yes	82 (74.5)	140 (95.2)	6.8 (2.856–16.332)*	0.612	0.6 (0.115–3.569)
<i>Frequency of visit</i>					
One	10 (12.3)	23 (16.3)	1.00	0.241	
Two	19 (23.5)	37 (26.2)	0.8 (0.335–2.137)	0.122	0.4 (0.129–1.273)
Three	30 (37.0)	35 (24.8)	0.5 (0.209–1.233)	0.042	0.3 (0.096–0.995)*
Four and above	22 (27.2)	46 (32.6)	0.9 (0.370–2.235)	0.173	0.4 (0.142–1.421)
<i>Parity</i>					
Primipara	50 (45.5)	43 (29.3)	1.00		
Multipara	60 (54.5)	104 (70.7)	2.0 (1.202–3.379)*	0.026	2.8 (1.133–7.273)*
<i>Time spent to reach a hospital</i>					
2–60 min	73 (66.4)	124 (84.4)	1.00		
60–300 min	37 (33.6)	23 (15.6)	0.3 (0.202–0.664)*	0.865	1.0 (0.399–2.983)

CI: confidence interval; ANC: antenatal care, *significance.

than that in the study conducted in Kenya, which reported 17.8%.¹⁴ This difference in our study area might be due to postnatal mother who were not provided sufficient information during ANC time on immunization.

Regarding thermoregulation in this study, almost half of them replied that they wrapped the baby in a cloth immediately which was necessary to maintain temperature and 42.4% only correctly identified the proper time of bathing, which was after 24 h of delivery. Thus, our finding reported lower percentage than the study conducted in Tigray 77.4% and 77.4%.¹⁵ This might be due to differences in sociodemographic factor. In addition, more emphasis was not given on providing education in our study area.

In this study, around a quarter of mothers mentioned that butter should be applied to the stump; this finding is lower

than the study conducted in Addis Ababa (60%).¹⁶ This difference might be due to participants in our study area had better knowledge of cord care.

In this study, one of the factors significantly associated with our study was educational status. This was in line with a study conducted in India¹⁹ and Tigray¹⁵ as well as Udipi district,¹⁹ Tamil Nadu,²⁰ and Bahir Dar City.²¹

In our study, parity had significantly associated with knowledge level, which was in line with a study conducted in Addis Ababa,¹⁴ while ANC visit does not have a significant association.

In our study, residence, ANC follow-up, and occupational status had no significant association with mothers' knowledge on essential newborn care. This finding was in line with a study conducted in Tigray.¹⁵

In our study, time spent to reach the hospital had no significant association with knowledge. However, in the Himalayas, mothers who reported that their nearest health facility was less than 1 h (30–59 min) walking distance had higher odds of having adequate newborn care knowledge.²²

Policy recommendations

Based on the findings from this study, the following recommendations were made.

For Harari regional health office

Better to have a close follow-up on maternal and new born care service and maintain a strategy that will incorporate maternal education service on essential newborn care. Furthermore, prepare and distribute posters that will describe essential new born care and provide short-term training on newborn care especially to Health Extension Workers (health care service providers at home level).

For health institutions

The health institutions are expected to provide maternal education on essential newborn care practice during the antenatal period and better to put posters that will describe essential new born care practice. Furthermore, empowering women mechanism needs to be established like improving educational status.

For those health professionals

The health professionals work on awareness creations need to be implemented on new born care and provide education on breast feeding, mainly importance of colostrum feeding as well as prelacteal feeding. Better to provide detailed education on the importance of each vaccine and give emphasis on cord care as it was prone for having infection. The mothers should get continuous health education on this issue of newborn care by health care providers specially Health Extension Workers. And further researches should be conducted on areas of essential newborn care to identify more gaps.

Conclusion

The overall prevalence of good knowledge in this study was more than a half. The remaining, 42.8% of participants, had poor knowledge of essential newborn care practices so that maternal education strategy need to be designed and offer during ANC visit of pregnant women. Among the components of essential newborn care, majority of finding like breastfeeding initiation time, awareness of the need to vaccinate, eye infection, and its sign were much lower than study conducted in another area. On multivariable association

Educational Status, Average monthly income, ANC visit, and Parity were significantly associated with outcome variables.

Based on the findings of this study, we recommend that stakeholders of the health sector better have a close follow-up on maternal and newborn care service, maintain a strategy that will incorporate maternal education service on essential newborn care, prepare and distribute posters that will describe essential newborn care, and provide short-term training on newborn care especially to Health Extension Workers (health care service providers at home level); furthermore, various interventions are needed to raise awareness and change current knowledge by involving women to reduce postnatal complications on newborn babies.

Strength and limitation of the study

Strength

As far as our knowledge is concerned, there is no study conducted in our setting, so this finding could generate new knowledge and serve as baseline data.

Limitation

As it was a cross-sectional study, it is impossible to make causal reference for the population under investigation.

As the study conducted in town, findings cannot be generalized to the urban area.

Acknowledgements

The author would like to thank the data collectors and study participants.

Author contributions

The author made a significant contribution to the work reported, whether that is in the conception, study design, execution, and acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work. We obtained written informed consent from the study participant before study initiation.

Data availability

The data used to support the findings of this study are available from the corresponding author upon request. The data used to support the findings of this study are included in the article. The data used to support the findings of this study were supplied by the authors under license and so cannot be made freely available. Requests for access to these data should be made by contacting the authors.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical clearance

Before beginning data collection, ethical clearance letter was obtained from Harar Health Science College Research Ethics Review Committee. It was submitted to the study organization. Consent was obtained from the hospital CEO, and permission was obtained from the study institution. All the participants have been informed of the purpose, advantages, and disadvantages, they have the right to be involved or not, and they can withdraw from the study any time they want. Written informed consent was obtained from all participants. Confidentiality was maintained by avoiding names and other personal identification.

Ethical approval

Ethical approval for this study was obtained from Harar Health Science college Research Ethics Review Committee prior to the study with an ethical approval number of CRPO/HHSC-NMBU /011/20.

Informed consent

Written informed consent was obtained from all subjects before the study.

ORCID iD

Masresha Leta  <https://orcid.org/0000-0002-5788-0737>

Supplemental material

Supplemental material for this article is available online.

References

1. *Neonatal mortality: situation trends*. World Health Organization, 2013, http://www.who.int/gho/child_health/mortality/neonatal_text/en/
2. Informed Decisions for Actions in Maternal Newborn Health. Community-based newborn care, (accessed 30 December 2013).
3. WHO, *recommendations on home-based records for maternal, newborn, and child health*. Geneva: World Health Organization, 2018.
4. World Health Organization (WHO). *Newborn health guideline*. 2nd ed. Geneva: WHO, May 2017, pp. 9–11.
5. Shahjahan M, Ahmed MR, Rahman MM, et al. Factors affecting newborn care practices in Bangladesh. *Paediatr Perinat Epidemiol* 2012; 26: 13–18.
6. Ethiopian Public Health Institute, Central Statistical Agency, Federal Ministry of Health Addis Ababa. Mini Demographic and Health Survey 2019, <https://microdata.worldbank.org/index.php/catalog/3946/related-materials>
7. Saraswati SP. Knowledge and practice of postnatal mothers on newborn care at hospital setting. *ARC J Nurs Healthc* 2016; 2(1): 25–30.
8. The Partnership. Opportunities for Africa's newborn, <http://www.who.int/pmnch/media/publications/oanfullreport.pdf> (accessed 30 December 2013).
9. The center for high-impact philanthropy. Home-based newborn care, (accessed 20 December 2013).
10. WHO. *Neonatal and perinatal mortality country, regional and global estimates*, 2006, <https://apps.who.int/iris/handle/10665/43444>
11. Monebenimp F, Enganemben Mongo M, Chelo D, et al. Mothers' knowledge and practice on essential newborn care at health facilities in Garoua City, Cameroon. *Health Sci Dis* 2013; 14(12), <https://www.hsd-fmsb.org/index.php/hsd/article/view/177>
12. Central Statistical Agency (CSA). *Ethiopia Demographic Health Survey 2016*. Addis Ababa, Ethiopia: CSA, 2016.
13. World Health Organization. *Essential newborn care: report of a technical working group* (Trieste, 25–29 April 1994). Geneva: World Health Organization, Division of Reproductive Health, 1996 (WHO/FRH/MSM/96.13).
14. Demis B and Hanna G. Level of knowledge and associated factors of postnatal mothers' towards essential newborn care practices at governmental health centres in Addis Ababa, Ethiopia. *J Adv Pub Health* 2018; 2018: 8921818.
15. Misgna G. Knowledge, practice and associated factors of essential newborn care at home among mothers in Gulomekada District, Eastern Tigray, Ethiopia, 2014. *BMC Preg Childb* 2016; 16: 144.
16. Amolo L, Irimu G and Njai D. Knowledge of postnatal mothers on essential newborn care practices at the Kenyatta National Hospital: a cross sectional study. *Pan Afr Med J* 2017; 28: 97.
17. Gul S, Khalil R, Tahir Yousafzai M, et al. newborn care knowledge and practices among mothers in Pakistan. *Int J Health Sci (Qassim)* 2014; 8(2): 167–175.
18. Sandberg J, Odberg Pettersson K, Asp G, et al. Inadequate knowledge of neonatal danger signs among recently delivered women in Southwestern Rural Uganda: a community survey. *PLoS ONE* 2014; 9(5): e97253.
19. Catalino F, Nayak BS and D'Souza A. Knowledge and practice of postnatal mothers on newborn care in tertiary care hospital of Udupi District. *Nitte Univers J Health Sci* 2014; 4(2): 98–101.
20. Rama R. Assessment of Knowledge regarding newborn care among mothers in Kancheepuram district, Tamil Nadu. *Int J Commun Med Pub Health* 2014; 1(1): 58–63.
21. Awoke K. Knowledge, practice and associated factors of newborn care among postnatal mothers at health centers, Bahir Dar City, Northwestern Ethiopia, 2016. *BMC Res Notes* 2019; 12: 483.
22. Singh DR, Harvey CM, Bohara P, et al. Factors associated with newborn care knowledge and practices in the upper Himalayas. *PLoS ONE* 2019; 14(9): e0222582.