

Knowledge, Attitude and Practice towards Essential Newborn Care among Postnatal Mothers Attending Health Facilities in a Rural District, Eastern Uganda. A Cross-Sectional Community study

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Abstract

Background: Neonatal mortality remains a public health concern in developing countries such as Uganda. Three-quarters of all newborn deaths occur in the first week of life, with 50% occurring during the first 24-hours. The World Health Organization developed essential newborn care measures to improve neonatal outcomes.

This study aimed at determining maternal knowledge attitude and practices towards essential newborn care in Mbale district, Eastern Uganda.

Methods: A hospital-based cross-sectional survey employing quantitative and qualitative methods was conducted at selected health facilities in Mbale district. 366 postnatal mothers were interviewed using a structured pretested and validated questionnaire. Knowledge was assessed using closed-ended questions; a score of 'one' was allocated for 'correct knowledge' and 'zero' for 'incorrect knowledge'. The attitude was assessed using a 5-point Likert scale. Practices were evaluated through open-ended questions and by 15 in-depth interviews. Data were analyzed using STATA version 14.0 and Nvivo version 11.0

Results: The majority, 341(93.2%) of the mothers, knew the signs of eye infection. All the mothers, 366(100%) knew about thermal care. The majority of the mothers, 315(86.1%) didn't know the disease prevented by the BCG vaccine. Most 260(71.4%) didn't know the dangers of leaving an umbilical stump wet. Most mothers, 332(91.0%) agreed that skin-to-skin contact should be ensured and warm clothing be provided to the neonate. The majority 352(96.2%) of the mothers practiced skin-to-skin contact as a thermal protective measure. A few mothers, 65(17.8%) did not bathe their babies within 24 hours of birth. Poor cord care practices like the use of gecko droppings were still in existence in the community. Mothers practised and described exclusive breastfeeding as cheap and affordable with all food values.

Conclusion: There was good knowledge and positive attitude towards WHO essential newborn care but knowledge on some aspects of cord care and immunization was still lacking. Postnatal mothers demonstrated unsatisfactory practices towards essential newborn care. There is a need to educate mothers during antenatal visits, postnatal clinics, and Young Child Clinic to improve their knowledge on immunization and cord care and practice essential newborn care measures.

Background

Essential newborn care (ENBC) is a set of recommendations designed to improve the newborn's health through interventions during pre-conception, pregnancy, and the postnatal period [1]. Care practices immediately after delivery play a significant role in preventing neonatal morbidity and mortality [2]. The first 28 days of life are crucial and vulnerable periods for newborn survival [3]. Maternal and newborn health care services are strongly influenced by the health facility and home care practices instituted by mothers and maternal social and health status (4). The World Health Organization (WHO) introduced essential newborn care (ENBC) practices to decrease neonatal morbidity and mortality [4, 5]. These essential care practices include; initiation of breastfeeding, thermal care, eye care, cord care, immunization, and recognition of danger signs [4, 5]. Neonatal mortality remains a significant public health concern estimated at 18 deaths per 1,000 live births globally [6] and 26.7 deaths per 1,000 live births in Africa [7]. In Sub-Saharan Africa, Neonatal Mortality Rate (NMR) was at 27.2 deaths per 1000 live births in 2017 [6]. West and Central Africa had the world's highest estimates of Neonatal Mortality Rate of 30.2 deaths per 1000 live births [6] in 2017. In East Africa, WHO estimates NMR between 24 and 32 per 1,000 live births [4]. In Uganda, despite many good policies in place regarding health education and integrated care of newborns provided, Neonatal mortality is decreasing at a slow pace, still high at 29 per 1000 live births [8]. The third Sustainable Development Goal (SDG) aims to reduce NMR to at least 12 per 1000 live births by 2030 [9]. However, It's thought that this SDG target on NMR may not be achieved

without effective and efficient strategies [10]. One of these strategies is improving maternal knowledge, attitude, and practices towards essential newborn care. Maternal knowledge of newborn rearing, attitude, and practices towards newborn care have been reported to be directly related to the morbidity and mortality of neonates [11]. Providing care has traditionally been the forte of mothers irrespective of education, income, and social class differences [12].

Inadequate knowledge on the part of Mothers can lead to disastrous results in caregiving to the neonates [12]. However, since newborn deaths are preventable with appropriate knowledge, attitude and practice at the health facility, family and community level, providing better care and timely education to postnatal mothers are forms of intervention that could fill these gaps in child care. Consequently, to better inform these strategies of ensuring maternal adherence to good and appropriate newborn care measures, it's imperative to understand their current state towards the WHO essential newborn care. This study, therefore, assessed the knowledge, attitude, and practice towards essential newborn care among postnatal mothers in Mbale district, Eastern Uganda.

Methods

Study design and setting

A cross-sectional survey that employed a quantitative method for knowledge and attitude and mixed-method for practices was carried out.

This was a multi-center study conducted in Mbale district. Mbale district is located on the foothills of Mount Elgon. Mbale has a landmass of 2,435 hectares and is located between latitude 1⁰ 04'55" N and longitude 34⁰10'30" E at an elevation of 3690 feet above sea level. Mbale is at a distance of 220 kilometers from Kampala, Uganda's capital and close to the border with Kenya. Mbale district has a population of 96,189 people, according to the 2014 national population census report [13]. The study was conducted in the following public health facilities, Mbale Regional Referral Hospital (MRRH), Namatala Health Centre Four (H/C IV), and Busiu H/C IV, which offer comprehensive health services including maternal, neonatal, and child health services. Mbale Regional Referral Hospital is a public hospital with a 500-bed capacity. The hospital serves 13 districts (about 4 million people in the region), and about 800 women give birth per month in this hospital. Namatala H/C IV and Busiu H/C IV serve a population of about 100,000 people in the region. Specifically, the study was carried out at the Young Child Clinic (YCC). A review of medical records capturing babies of six weeks showed that MRRH, Namatala and Busiu H/CIVs had a total number of 169, 351, and 283 babies respectively in three months periods of June, July, and August 2020. This gives a ratio of 2:4:3 for MRRH, Namatala and Busiu H/CIVs, respectively. Consequently, 81, 163, and 122 participants were chosen from MRRH, Namatala and Busiu H/CIVs, respectively.

Study population

The study targeted postnatal mothers of babies at 6 weeks attending a young child clinic in the three high volume facilities. The researchers chose 6 weeks because these mothers are directly involved in newborn care practices and therefore have experiences in newborn care. Age was cross-checked with the help of the child health card.

Inclusion and exclusion criteria

The study included postnatal mothers who consented to participate in the study with babies aged less or equal to six weeks, attending the Young child clinic in the selected health facilities in the study period. This study excluded

postnatal mothers who had preterm births, postnatal mothers with severe maternal or neonatal conditions, and those with known mental illnesses.

Sample size determination

This study employed Kish and Leslie's formula (1965) for sample determination [14] when the proportion of a given attribute in a non-defined population is known. This study considered a 31% Prevalence of postnatal mothers who practice essential newborn care [2]. This study also considered a 10% non-response rate. Calculations were done, and the final sample size required was 366 participants.

Sampling method

Mbale Regional Referral Hospital was purposively selected as it handles more mothers and children. However, a simple random sampling technique was used to select the other two public health facilities in Mbale district. Using this approach, all the Health center four facilities in the district were written on small pieces of paper. The papers were folded, put in a box, and shaken vigorously. Two pieces of paper were then chosen randomly, and these were the Health facilities taken for study. Young Child Clinic was purposively selected since this is one of the clinics that offer Maternal Child Health services (MCH). Postnatal mothers were recruited by consecutive sampling. Child Health cards were used as an entry point to determine the list of mothers who attended the YCC on a particular day. An identified baby who met the eligibility criteria and informed consent was obtained from their mothers. The sampling process was repeated until the required sample size was obtained. Purposive sampling was used to select participants for in-depth interviews.

Data collection

Quantitative data collection

Data was collected using a pretested and validated questionnaire. The interviewer administered it through face-to-face interaction. The questionnaire was administered to the mother by the investigators, who read out the questions and filled in the mother's responses. The questionnaire consisted of close and open-ended questions addressing the following: Mother's socio-demographic data, knowledge, attitude, and practice on the WHO Essential Newborn Care (ENBC) [4, 7].

Qualitative data collection for practices towards essential newborn care

Fifteen in-depth face-to-face interviews with a thematic interview guide were conducted. The interview guide had open-ended questions with follow-ups questions and ("probes") for clarification. The aim was to describe and explore participants' practice towards Essential Newborn Care. The interview guide was pretested among postnatal mothers at Mbale regional referral hospital who consented to the pilot study. Guiding Questions that were not clear and irrelevant as per the study aim were adjusted accordingly. These pilot data were not included in the final analysis. For convenience, appointments were scheduled with the prospective interviewees who met the selection criteria at the time most convenient to them, and each interview lasted between 30-45 minutes. Before the interview commencement, the interviewer explained the study's aims and scope and obtained written informed consent from every participant who accepted to take part in the study. The investigator prepared the interview guide, reviewed by co-investigators, and refined it as the final tool for data collection before the analysis. The interviews were conducted in quiet private rooms

free from any distractions and encouraging participants to speak freely. It was carried out with a trained qualitative researcher who also acted as a second observer for the non-verbal cues. The data was collected on the three aspects of essential newborn care practices: cord care, breastfeeding and thermal care practices. All mothers were interviewed in the language they preferred and best understood, Lugisu or Luganda. Carefully selected (suggested, discussed, and agreed upon) words were used to enhance understanding for those words in English which have no direct translation into the local language. Saturation was determined when the participant started to repeat whatever was mentioned earlier, with no new data emerging. This formed a basis for saturation sampling, of which full saturation was reached on a sample of 15 participants. The interviewers debriefed each other directly after the interview. All necessary translations and back-translations were done as a team. This helped to guard against bias of individual's translation. All that was ensured during the back-translation was to preserve the participants' original meaning and fully capture them. The data was audio recorded. The interviews were later transcribed verbatim. During transcription, the investigators and the experienced qualitative researcher independently transcribed the audio record and later on discussed and harmonized on the few inconsistencies. During the interview, the researchers also took notes, especially on the non-verbal cues. The data was then coded to generate meaningful themes.

Data management

Data on knowledge and attitude were cleaned and entered in the Microsoft Excel database, coded, and verified.

A scoring system was used to analyze responses to closed-ended questions on knowledge:

1 = correct response and 0 = incorrect response (inconsistent with WHO essential newborn care guidelines). Any mother who did not have the answer was considered to be the incorrect response. Responses of attitude were based on a 5-point Likert scale. These responses were later collapsed into 3 cells representing agreement, neutral, and disagreement for ease of interpretation.

Responses on practice were cleaned and entered in the Microsoft Excel database, coded, and verified.

Three composite variables, appropriate neonatal breastfeeding, cord cleaning according to standard, optimal thermal care protection, and immunization at birth were generated from a list of seven recommended essential newborn care practices. Cord cleaned according to standard was defined as no substance applied to the cord during the neonatal period. Optimal thermal care was defined as a mother having practiced two or more thermal protection practices (skin-to-skin or baby wrapped on warm clothes or first birth delayed till 24 hours). Appropriate neonatal breastfeeding was defined as initiating breastfeeding within the first one hour after birth. The above composite variables were dichotomized to Yes or No. Optimal thermal care and appropriate newborn feeding, the variables were dichotomized 'Yes' if the mother reported any two or all the recommended practices under each category or 'No' if 2 or more recommended practices were missing.

Data analysis

Quantitative data analysis

Practice data was checked for completeness, entered into an Excel spreadsheet, and exported to STATA version 14.0 for statistical analysis. Descriptive analysis was performed; Knowledge, attitude, and practice were analyzed as frequencies and percentages.

Qualitative data analysis for practices towards essential newborn care

Data collection and analysis were done concurrently. The theoretical method underpinning the data analysis was a deductive analysis that was entirely based on an iterative reading of data and preliminary analysis. The focus on the analysis was to be opened as much as possible to variations while searching for regularities, contradictions, and patterns by comparing the respondents' statements. New themes emerged from the data, and the data was analyzed using a framework analytical approach. The steps of analysis were as follows; Data familiarization, coding, and identification of a thematic framework, quote sorting, thematic categorization of quotes, and interpretation of outcomes.

In-depth interviews were recorded and subjected to careful verbatim transcription. The transcripts were read to identify the most important codes, which were combined with relevant themes. Using Nvivo version 11, thematic analysis was used, collected data was coded and meaningful themes were generated. The investigators and the experienced qualitative researcher ensured credibility carried out data analysis independently, and a later comparison showed high agreement. Conformability was further ensured by the way empirical data support the findings. Categories followed in the form of literal citations and naming of categories as close as possible to the text.

Dependability was ensured by describing the research process as clearly as possible.

Data presentation

Statistical frequency distribution tables, pie charts, and bar graphs were used for data presentation in proportions, absolute values, and percentages. Qualitative data for practices were presented narratively.

Study Variables

The dependent variables for this study are the essential newborn care practices that include; thermal protection, early initiation of breastfeeding within 1 hour, exclusive breastfeeding for the first 6 months, cord care, eye care, immunization, and recognition of newborn danger signs.

The independent variables included; Socio-demographic factors such as mother's age, marital status, religion, occupation, educational level, residence, and baby sex.

Results

Socio-demographic characteristics of the Participants

A total of 366 postnatal mothers were interviewed. Participants' mean age was 26.13 ± 5.69 , and the median age was between 20-29 years. The majority, 232(63.4%) of the mothers, were aged between 20-29 years. Most, 266(72.4%) had less than 3 children. About half 188(51.4%) of the participants were Anglicans; the majority, 334(91.3%) were married. Regarding education level, only 160(43.7%) had secondary education, and the majority, 219(59.4%) were unemployed (Table 1).

Table 1: Socio-demographic characteristics (n=366).

Variable	Frequency(n)	Percentage (%)
Age-range (years)		
<20	38	10.4
20-29	232	63.4
30-39	89	24.3
>=40	7	1.9
Parity		
≤ 3 Children	266	72.4
4-6 Children	89	24.3
> 6 Children	11	3.0
Religion		
Catholics	80	21.9
Anglicans	188	51.4
Moslems	98	26.8
Marital status		
Married	334	91.3
Single	32	8.7
Mothers' educational levels		
None	12	3.3
Primary	135	36.9
Secondary	160	43.7
Tertiary	59	16.1
Mothers' occupation		
Unemployed	219	59.8
Employed	147	40.2
Residence		
Rural	79	21.6
Urban	287	78.4
Baby sex		
Girl	209	57.1
Boy	157	42.9

Exposure to information on essential newborn care

The majority, 364(99.5%) of the mothers, received information on ENBC. About 155(42.5%) received the information from the antenatal clinic. Only 138(37.7%) attended Antenatal clinic (ANC) beyond four times, and the majority, 268(73.2%) received education from nurses/midwives (Table 2 and Figure 1).

Table 2: Education on essential newborn care (n=366).

Characteristics	Frequency (n)	Percentage (%)
Information received on Essential newborn care		
No	2	0.6
Yes	364	99.5
Number of antenatal visits		
One to four times	228	62.3
Beyond four times	138	37.7
Provider of information on Essential Newborn care		
Doctor	15	4.1
Nurse/Midwife	268	73.2
Others	83	22.7

Knowledge on selected aspects of essential newborn care

Most of the mothers, 268(73.2%) were aware of the benefits of colostrum. The majority, 363(99.2%) of the mothers, heard about the initiation of breastfeeding, 326(89.1%) knew the correct age range for exclusive breastfeeding, and most that are 360(98.4%) of the mothers knew the frequency of breastfeeding. The majority, 288(78.7%) and 341(93.2%), were aware of the importance of immunization and signs of eye infection, respectively. The majority, 260(71.4%) didn't know the dangers of leaving umbilical stump wet (figure 2 and table 3).

Table 3: Knowledge on selected aspects of essential newborn care (n=366).

Variable	Frequency(n)	Percentage (%)
Immunization		
Knows the importance of immunization		
No	78	21.3
Yes	288	78.7
Know the Vaccine received by the newborn		
No	257	70.2
Yes	109	29.8
Knows the Disease prevented by BCG vaccine		
No	315	86.1
Yes	51	13.9
Cord care		
What happens when the umbilical stump is left wet		
Don't know	260	71.4
It will get infected	106	29.6
Thermal care		
Knows Prevention of heat loss		
No	0	0
Yes	366	100
Eyecare		
Sign of eye infection		
Don't know	25	6.8
Know	341	93.2

Attitudes towards essential newborn care

The majority, 369(99.2%) of the mothers had a positive attitude towards breastfeeding day and night. Over 348(95.1%) disagreed with the practice of mixed feeding, and only 4(1.1%) had a negative attitude towards nursing the baby in the same room, skin-to-skin contact, and providing warm clothing. The majority, (332(90.7%) had a positive attitude towards skin-to-skin contact and providing warm clothing to the neonate. The majority, 356(97.8%) of the mothers had a positive attitude towards cord care, agreeing that a dirty cord could be a source of infection. Mothers had divergent attitudes on the other aspects of essential newborn care (table 4).

Table 4: Attitudes of Participants towards essential newborn care (n=366).

Variables	Agree n(%)	Neutral n(%)	Disagree n(%)
Breastfeeding			
Exclusive breastfeeding practised during both day and night	363(99.2)	0(0.0)	3(0.8)
Practice mixed feeding during the first six months of life.	6(1.6)	12(3.3)	348(95.1)
Thermal care			
Skin-to-skin contact was ensured and warm clothing was provided.	332(91.0)	30(8.2)	4(1.1)
Delay bathing newborn babies until 24 hours to prevent heat loss.	241(65.1)	114(31.2)	11(3.0)
Code care			
A dirty umbilical cord can be a source of infection for a baby.	356(97.8)	8(2.2)	2(1.0)
A previously used razor blade should be used to cut the cord.	6(1.7)	2(1.0)	358(97.8)
Immunization			
Vaccines are harmful to the baby.	3(0.8)	6(1.6)	357(97.5)
Eyecare			
Other substances can be applied to the baby's eyes (non-medical)	3(0.8)	39(10.7)	324(88.5)

Practices on essential newborn care

About 58(15.9%) of the mothers gave pre-lacteal feeds to the newborn. The majority, 335(91.5%) breastfed in the first hour and their babies received colostrum, while 352(96.2%) practised skin-to-skin. Most, 319(87.5%) practised cord care according to standard, and 297(81.2%) of the mothers immunized their babies at birth (table 5).

Table 5: Practices on essential newborn care (n=366).

Variable	Frequency (n)	Percentage (%)
Breast-feeding		
Pre-lacteal feeds (plain water or glucose)		
No	308	84.2
Yes	58	15.9
Breastfed in the first hour.		
No	31	8.5
Yes	335	91.5
Received colostrum (first watery milk) at birth.		
No	4	1.1
Yes	362	98.9
Thermal care		
Baby covered at birth to prevent heat loss.		
No	5	1.4
Yes	360	98.6
Skin-skin contact is practiced to prevent heat loss.		
No	14	3.8
Yes	352	96.2
Time of bathing baby after birth.		
Less than 24 hours	65	17.8
After 24 hours	301	82.2
Cord care		
Cord cleaned according to standard		
No	47	12.8
Yes	319	87.2
Immunization		
Baby immunized at birth.		
No	69	18.9
Yes	297	81.2

Qualitative Results

Socio-demographics of participants

A total of 15 postnatal mothers were interviewed regarding their practices of newborn care. The majority, 10(66.67%), attained education up to secondary level. The majority, 9(60%) were unemployed (Table 6).

Table 6: Socio-demographics of participants (n=15).

No. of Respondents	Code of Respondent	Age of Respondent	Level of Education	Address of Respondent	No. of children	Marital status	Employment Status
1	MRRHR 1	34	Secondary	Bugema	7	Married	Unemployed
2	MRRHR 2	28	Secondary	Munkaga	5	Married	Unemployed
3	MRRHR 3	30	Secondary	Namabasa	2	Single	Employed
4	MRRHR 4	29	Primary	Marale	4	Married	Unemployed
5	MRRHR 5	22	Primary	Maral	2	Married	Unemployed
6	MRRHR 6	26	University	Namakwekwe	1	Married	Unemployed
7	MRRHR 7	25	Secondary	Nkoma	2	Married	Unemployed
8	MRRHR 8	48	Primary	Mooni	9	Married	Unemployed
9	MRRHR 9	20	Secondary	Bulambuli	1	Married	Employed
10	MRRHR 10	25	Secondary	Nakaloke	3	Married	Employed
11	MRRHR 11	28	Secondary	Marale	2	Married	***
12	MRRHR 12	21	Tertiary	Busamaga	3	Married	Employed
13	MRRHR 13	17	Secondary	Married	1	Married	Unemployed
14	MRRHR 14	32	Secondary	Namakwekwe	4	Marred	Unemployed
15	MRRHR 15	35	Secondary	Nabumali	6	Married	Unemployed

Note: ***- Missing Data

Newborn care practices

Fifteen in-depth interviews were held among postnatal mothers to complement the quantitative findings. The major themes guiding the discussions were reported and stratified by the newborn care practices.

Cord care practices

The majority of the mothers were aware of how to care for the baby's cord. Discussions from postnatal mothers revealed that poor cord care practices were still in existence in the community. The use of gecko droppings

("embagalla"), papyrus ash ("omuyal"), and butter (ghee) to apply on the cord was identified. The following reasons were given:

".....I did it to prevent the cord from smelling and not to over bleed" [Mother MRRHR 9 Educated up to Secondary].

"Omunyaali helps the cord to heal so fast" [Mother MRRHR 4 Educated up to Primary].

Most of the mothers believed that these substances make the cord to be soft and dry faster. The majority of the mothers also believed that the various substances they chose to use would be very effective for them:

"It is effective because I have been using it for quite some time, and the babies are grown up" [Mother MRRHR 1 Educated up to Secondary].

The majority of the mothers said that when the baby has an infected cord, they are taken to the hospital, while for non-infected cord, they continue applying the substances until the cord heals.

"When the cord is not infected you do like that, but when the cord is infected, you take the child to the hospital" [Mother MRRHR 3 Educated up to Secondary].

Most of the mothers believed that if the cord is not cared for well, it might be a source of infection; hence when the cord is infected, they have to take the babies to the hospital.

Breastfeeding practices

Most of the mothers reported practising exclusive breastfeeding, and they mentioned exclusive breastfeeding as cheap, affordable, has all food values, and simple to give the baby.

"It has been good because the breast milk is cheap, affordable, has all food values, and is also simple to give to the baby" [Mother MRRHR 10 Educated up to secondary].

A few of the mothers reported that they did not exclusively breastfeed their babies within the neonatal period. According to WHO guidelines, this is an inappropriate breastfeeding practice. As an alternative, the babies were given glucose, sugar water, with some of the reasons for this practices being lack of breast milk:

"I did not have breast milk that day, but after it came. I used to give my baby glucose water but just after one day, the breast milk came" [Mother MRRHR 6 Educated up to University].

Other inappropriate breastfeeding practices include giving pre-lacteal feeds, including porridge and cow's milk, within the neonatal period. These practices are linked to beliefs that newly delivered mothers have no breastmilk, as commonly expressed by both mothers and TBAs. Meaning any woman who assists during a home birth, including trained and untrained traditional birth attendants) at home:

"Having that local belief we lack breast milk at birth, as mothers, we still follow that traditional way" [Mother MRRHR 14 Educated up to Secondary].

"We get this information from our elders, mothers-in-law, our aunties" [Mother MRRHR 1 Educated up to Secondary].

Thermal care

The majority of the mothers were aware of appropriate thermal care practices. Various methods of keeping the baby warm emerged, including; skin to skin contact (in line with WHO guidelines), use of a dry towel to clean the baby after bathing, use of different baby clothes (shawls, sweaters, socks, caps):

“As for me, when I see the baby is feeling cold, I carry her on my chest (kangaroo) and cover her, and she gets my body warmth” [Mothers MRRHR 13 Educated up to Secondary].

“After bathing the baby, I clothe her in a warm sweater or jumper then cover her with a heavy blanket to keep her warm” [Mother MRRHR 1 Educated up to Secondary].

Sources of information about thermal care practices were obtained from their aunties, mothers, and health workers during antenatal care. However, the mothers reported other community practices, such as the use of charcoal stoves (*sigiri*) to keep the room warm. Mothers had varying attitudes towards the use of *sigiri* to keep the room warm as others criticized it, that it can easily suffocate the baby, while others appreciated it and said it is very effective as stated below:

“..... to make the room warm we put some sigiri inside or cook from inside but it may suffocate the baby...” [Mother MRRHR 6 Educated up to Secondary].

While others said it was effective:

“.....they are effective because we have been able to take care of our children and they are now grown, they are not falling sick often” [Mother MRRHR 1 Educated up to Secondary].

Most mothers identified the reason for keeping the baby warm as to prevent the babies from getting diseases like pneumonia and enable them to grow healthily.

Discussion

Essential Newborn Care is a set of evidence-based guidelines established by WHO to decrease newborn morbidity and mortality through interventions during pre-conception, pregnancy, and postnatal periods [1, 15]. Overall, it has been reported that knowledge, attitudes, and practice towards newborn care were directly related to morbidity and mortality of neonates [11]. We, therefore, investigated essential newborn care knowledge, attitude, and practices among postnatal mothers in Mbale district Eastern Uganda.

Exposure to information on newborn care

The main source of information on essential newborn care in this study was from medical personnel. This demonstrates that health workers play a pertinent role in imparting knowledge about EBNC to the mothers who should further be encouraged. Though health workers are the main source of information on ENBC, there is still a reluctance to educate during antenatal visits. This was demonstrated by only a small proportion of mothers educated on essential newborn care during their antenatal visits. These findings are similar to that in a study done in Nepal [11] where only a small percentage of the participants had acquired knowledge regarding cord care, signs of illness, and newborn feeding from ANCs. The antenatal period is an important time to equip women with knowledge to prepare the future mother for the coming baby. This should especially target the prime gravidas.

The following components of EBNC were investigated regarding knowledge and attitude; breastfeeding, cord care, thermal care, immunization, and eye care.

Breastfeeding

In this study, knowledge about breastfeeding was encouraging, with the majority knowing the benefits of colostrum and hearing about breastfeeding initiation. These findings are similar to those reported in a study carried out in Kenya [16] where it was found that above 90% of postnatal mothers were aware of breastfeeding on demand and early and exclusive breastfeeding. A similar finding was also reported in the United Arab Emirates [17] where the majority were found to have good knowledge of breastfeeding. However, the finding from this study is inconsistent with that in a study carried out in the Eastern province of Rwanda [18], where a significant knowledge gap on the timing of breastfeeding was identified. This study found out that the majority of the mothers initiated breastfeeding within the first hour of life. This finding is consistent with a related study done in urban Uganda [19] where most reported initiating breastfeeding within less than one hour from birth. WHO recommends the initiation of breastfeeding within one hour from delivery. Mothers, therefore, demonstrated appropriate knowledge of breastfeeding. Regarding breastfeeding, the majority had a positive attitude towards exclusive breastfeeding during both day and night. This, therefore, demonstrates that most mothers agree with WHO-recommended guidelines on breastfeeding practices. Though most mothers strongly believed that exclusive breastfeeding should be practised, others still disagreed with such. They believe that when a mother does not have enough breast milk and the baby cries, there is a need for other feeds to complement breastmilk. This study finding is consistent with a study done in Sierra Leone [22], a mixed-method study on maternal and newborn care practices. In this Sierra Leone study [22], it was found that although many participants in the qualitative assessment indicated that early initiation of breastfeeding is the norm, participants also indicated that there are several reasons why a woman might not breastfeed. Some of them include the idea of 'bad milk' where women refuse to feed their infant on breastmilk that they consider to be 'contaminated' due to sexual intercourse or being overheated, pregnant or menstruating. Several other related studies have also reported these misconceptions in Ethiopia [23] and Uganda [8]. These misconceptions are pervasive and should be addressed by emphasizing behavioural change. These messages can be incorporated into community services available, for example during immunization outreach services and sanitation campaigns.

Regarding practice towards breastfeeding, this study revealed a good practice towards initiation of breastfeeding. The majority of the participants initiated breastfeeding within the first hour of life, a recommended practice by WHO. This finding is consistent with a related study done in Urban Uganda [16] where the majority reported initiating breastfeeding within less than one hour from birth.

Though most of the participants demonstrated a good practice towards breastfeeding initiation, poor feeding practices like feeding the baby on plain water/glucose still exist. Findings from this study are consistent with that in a study done in Southern Ethiopia [15] where the participants also reported giving pre-lacteal feeds. Introducing pre-lacteal feeds to resume work as soon as possible is the main reason that mothers gave. This finding concedes with that in a study [17] in Kenya where a similar reason was found. However, WHO recommends exclusive breastfeeding up to six months of age [4, 7]. This is because of the known nutritional benefit to the infant. Early initiation of breastfeeding averts 22% of neonatal deaths [18].

Conversely, WHO discourages the use of pre-lacteal feed unless medically indicated. This is because of its association with insufficient milk production, infection transmission, and lactation failure [16]. This, therefore, suggests that we

should not only focus on exclusive breastfeeding but also pay attention to the use of pre-lacteal feeds in the community and discourage their use.

Cord care

This study found a deficiency of knowledge of mothers towards cord care. The majority didn't know that living an umbilical cord wet predisposes to infection. Similarly, a related study in Nigeria [28] found a significantly low knowledge (100%) among participants on cord care. Other related studies [8, 21] reported similar findings. Therefore, measures need to be put in place to improve on this knowledge gap.

This study revealed a positive attitude among the mothers regarding cord care. The majority strongly agreed that a dirty umbilical cord is a potential source of infection. This means that they are likely to keep it clean. This finding is consistent with that in a study done in Calabar Metropolis Nigeria [25] where almost the entire number of nursing mothers (99.4%) agreed that umbilical cord requires special care.

In the practice of cord care, while the current guidelines recommend the application of nothing in the cord, most of the babies still had substances applied on the umbilical stump. This suggests that there may be poor dissemination of information or poor adherence to guidelines. The use of gecko droppings (*embagala*) and papyrus ash (*omuyali*) could suggest a cultural practice linked to traditional beliefs. These findings are similar to that in a study carried out in Ibanda Nigeria [19] which revealed that none of the participants followed the WHO recommendation of leaving the umbilical cord without applying anything of which the majority (87.9%) utilizing methylated spirit. A related finding in Ethiopia [20] also found no adherence to WHO cord care guidelines as about 60% of the participants applied butter or oil to the cord of their last baby. Another study in Southern Ethiopia [15] also reported the application of butter on the umbilical stump by the participants and found generally low coverage of essential newborn care.

The cord is the primary infection route; these inappropriate practices pose a significant risk in reducing neonatal death.

Thermal care

Regarding knowledge of thermal care, all the participants, demonstrated good knowledge of thermal care. This finding is consistent with that in a study done in Ethiopia [1] where a similar result was found as about 80% believed that wrapping in a warm, dry cloth prevents heat loss from the neonate and the majority (84.5%) believed that a newborn should not be nursed in a separate room from the mother.

On attitude towards thermal care, they demonstrated a positive attitude towards thermal care, with the majority agreeing with skin-to-skin contact. Regarding the delay of the baby's birth till after 24 hours from birth, the majority had a positive attitude. This finding is consistent with those in another qualitative study in rural Tanzania [30] on thermal care for newborns, where similar results were reported. This finding also agrees with that in a study done in Malawi [31].

The participants demonstrated satisfactory practice towards thermal care. The majority practised skin-to-skin contact and delayed a baby's birth till after 24 hours. These findings are consistent with that in a related study in Uganda [6] among adolescents where the majority 276(70%) were judged to practice recommended thermal care. Another related study in Ethiopia [8] also reported similar results, with the majority 2358(78.5%) reporting to have

offered the first bath after 24 hours, (66.9%) of the participants kept their newborn warm by wrapping the whole body, including the head and legs.

Immunization

This study revealed a good awareness of the existence of neonatal vaccination among mothers. However, the major gap was in the knowledge of the disease prevented by the BCG vaccine. These findings are similar to finding in Kenya [20]. The health workers, therefore, need to impart more knowledge of vaccines and their importance. These may help promote their uptake. However, this study finding contrasts that in Nigeria [28], where most respondents had good knowledge of immunization and its importance.

Generally, mothers demonstrated a good attitude towards immunization, with the majority disagreeing with the notion that vaccines are harmful.

Focusing on Immunization, though the majority 297(81.2%) had their babies immunized at birth, some mothers 69(18.9%) still had their babies not immunized at birth. This should not be overlooked. Measures, therefore, need to be put in place to mitigate this “laziness”

Eyecare

Concerning knowledge on eye care, mothers demonstrated satisfactory knowledge, with the majority reporting to know the signs of eye infections 341(93.2%). This finding is similar to that in a related study done in Ethiopia [1] where the majority 75(82.2%) reported that reddening of the newborn's eye is a sign of eye infection.

This study revealed a positive attitude toward eye care, with the majority disagreed with the application of non-medical substances to the baby's eye. However, these findings are inconsistent with that in Ethiopia [1] where the majority 301(67.1%) of the participants agreed and practiced the application of traditional substances to the baby's eyes.

Conclusion

This study generally found a good overall knowledge and positive attitude towards WHO essential newborn care but knowledge on some aspects of cord care and immunization is still lacking.

The WHO essential newborn care practice among postnatal mothers in Mbale district is still lagging. All these practices have a direct impact on neonatal health status. These gaps could be because of mothers' deep-rooted cultural and traditional beliefs and ignorance. Hence, to overcome this problem, increasing mothers' overall educational status, providing proper health education regarding newborn care practices, running baby-friendly clinics, and discouraging unhealthy traditional beliefs should be embraced.

Abbreviations

ENBC: Essential Newborn Care

NMR: Neonatal Mortality Rate

WHO: World Health Organization

SDG: Sustainable Development Goal

MRRH: Mbale Regional Referral Hospital

H/C IV: Health Centre Four

YCC: Young Child Clinic

MCH: Maternal Child Health services

ANC: Antenatal clinic

Declarations

Ethics approval and consent to participate

We obtained ethical approval for this study from Mbale Regional Referral Hospital Research Ethics Committee, reference number is MRRH-REC OUT 017/2020. We also obtained administrative clearance and permission from the in-charges of the two health facilities.

The investigators approached postnatal mothers who were eligible to participate in the study. The interviewer explained to the potential study participant the purpose of the study. Informed verbal and written consent using a predesigned consent form was then obtained from the mother.

Consent for publication

Not Applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

CA and LVNS conceptualized the idea. LVNS and RN supervised protocol writing and data collection AC, SO,EKK, JSI, RN, JN and LVNS carried out the analysis, interpreted the result, and participated in drafting the manuscript, revised the manuscript approved the final manuscript for submission. All authors read and approved the final manuscript.

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Figures

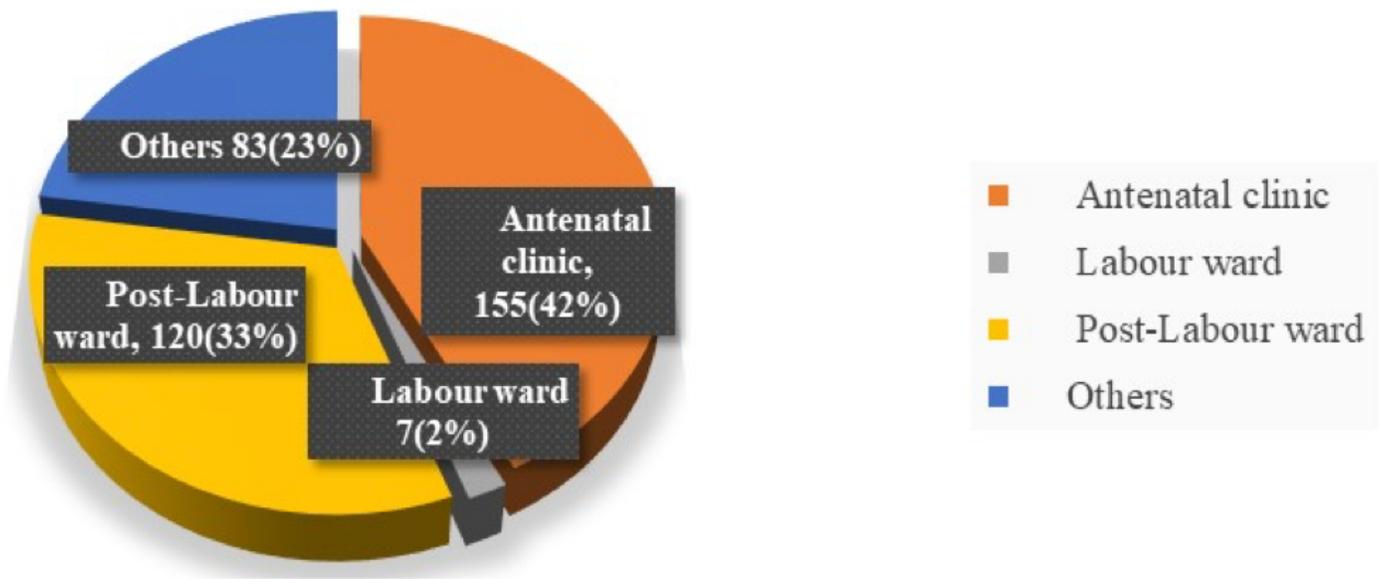


Figure 1

Source of information on ENBC

Figure 2

Participants' knowledge on Breastfeeding (n=366).