Research

Knowledge and attitude of essential newborn care among postnatal mothers in National Hospital Kandy, Sri Lanka

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Abstract

Neonatal mortality remains a critical global health concern, particularly in low- and middle-income countries. The first four weeks of life are crucial for an infant's survival, and essential newborn care practices play a significant role in reducing mortality rates.

This study assesses the knowledge and attitudes of postnatal mothers regarding essential newborn care at the National Hospital Kandy, Sri Lanka. The study also aims to highlight key gaps in maternal knowledge regarding newborn care, particularly in areas such as breastfeeding, immunization, and cord care. A structured cross-sectional descriptive study was conducted, where 384 postnatal mothers were interviewed using a pre-tested questionnaire. The findings reveal that while knowledge of breastfeeding practices was high, significant gaps existed in areas such as immunization and thermal regulation.

The study highlights the necessity of improved health education programs and enhanced healthcare provider training to ensure optimal newborn care practices. The research also explores socio-demographic factors that influence knowledge and attitudes towards newborn care and provides evidence-based recommendations for policy development and healthcare.

Key words: Essential newborn care, postnatal mothers, neonatal mortality, breastfeeding, cord care, immunization

Introduction

Newborn care is a vital aspect of maternal and child health services. According to the World Health Organization (WHO), ensuring essential newborn care practices, such as skin-to-skin contact, breastfeeding, proper cord care, and immunization, can significantly reduce neonatal morbidity and mortality [1]. Despite available guidelines, gaps in maternal knowledge and practices continue to exist [2].

The neonatal period (first 28 days of life) is a highly vulnerable time, accounting for the highest risk of death per day compared to any other time during childhood. The vast majority of neonatal deaths occur in resource-limited settings due to preventable causes such as infections, asphyxia, preterm birth complications, and inadequate thermal care [3]. Many of these deaths could be prevented with basic interventions such as timely breastfeeding, proper cord care, and ensuring hygienic delivery practices [4].

A review of global health strategies indicates that neonatal health has become a priority in international maternal and child health policies. The Sustainable Development Goals (SDGs) emphasize reducing neonatal mortality to at least as low as 12 per 1,000

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live births by 2030 [5]. This underscores the importance of effective newborn care interventions, particularly in developing countries like Sri Lanka, where disparities in healthcare access and maternal education continue to impact newborn outcomes [6].

In Sri Lanka, neonatal mortality remains a concern, with preventable deaths occurring due to inadequate newborn care knowledge [7]. While Sri Lanka has made significant strides in maternal and child healthcare, disparities in knowledge and practices persist among mothers, particularly in rural areas. Understanding postnatal mothers' knowledge and attitudes can guide policymakers in designing targeted interventions to improve neonatal survival rates [8]. Furthermore, cultural beliefs and traditional practices often influence newborn care decisions, potentially leading to suboptimal care [9].

Several studies have suggested that factors such as socio-economic status, level of maternal education, and exposure to healthcare services significantly impact maternal knowledge and attitudes toward newborn care [10]. The lack of standardized educational programs in maternity wards contributes to inconsistent knowledge among postnatal mothers. Additionally, misinformation and cultural taboos often prevent mothers from adopting evidence-based practices in newborn care [11].

Materials and methods

This study employed a cross-sectional descriptive research design to assess the knowledge and attitudes of postnatal mothers regarding essential newborn care. The study was conducted at the National Hospital Kandy, Sri Lanka, among mothers who had recently given birth. A total of 384 postnatal mothers were selected using a stratified random sampling method to ensure adequate representation of different socio-demographic backgrounds.

Data collection was carried out using a structured pre-tested questionnaire, which included sections on demographic details, knowledge on essential newborn care, and attitudes towards best practices. The questionnaire was administered in Sinhala and Tamil to accommodate linguistic diversity among participants. Ethical approval for the study was obtained from the relevant institutional review board, and informed consent was obtained from all participants before data collection.

Data analysis was conducted using SPSS version 26. Descriptive statistics such as frequencies, percentages, and means were used to summarize the demographic characteristics and knowledge levels. Chi-square tests were used to identify associations between socio-demographic factors and levels of knowledge and attitudes. A significance level of $p<0.05$ was considered statistically significant.

Results

Socio-demographic characteristics:

384 postpartum mothers were interviewed. The mean age of the mothers was between 18-35 years (n=286, 74.5%). Most women are married (n=380, 99%). 39.8% of the interviewees were unemployed women. The percentage of women with some basic education was relatively high with 57% having tertiary education, 29.4% secondary education and 1.6% primary education. 87.2% of respondents' religion was Buddhist and the remaining 12.8% was Tamil (Table 1).

4.2 Pregnancy related data of the participants

Of 384 mothers interviewed, 96.4% attended antenatal clinics. Majority of mothers were primiparous (50.3%) while 39.3% were multiparous. Vaginal deliveries accounted for 53.4% while the Cesarean section accounted for 42.4% (Table 2).

4.3 Knowledge on essential newborn care

Breastfeeding: Only 369 (96.1%) mothers reported breastfeeding their newborns in the first hour after delivery. 384 (100%) of the mothers knew about breast-feeding on demand, 155 (40.1%) reported exclusively breastfeeding for 6 months, and 384 (100%) mothers knew that they should give colostrum to their new-borns. 349 (90.9%) of mothers did not know that pre-milk should not be given to new-borns. The number of mothers who are aware of the relationship between changing food during breast-feeding is high 262 (68.2%) and this indicates that food should not be changed during breastfeeding (Table 3).

Immunization: 104 (27.1%) mothers were aware of the need to vaccinate their newborn babies at birth and 284 (72.9%) were not aware of the need to vaccinate them. 461 (90%) knew that vaccinations were given to prevent disease. 384 (100) mothers did not know that BCG vaccine is for prevention of tuberculosis and 384 (100%) mothers reported that OPV is the vaccine given at birth to protect the child from polio. Almost all mothers (99.7%) were aware

of the need to vaccinate neonates while 98.7% knew vaccines were given to contact. In the present study, almost all mothers were aware of the need to vaccinate their newborns. Interestingly, none of the mothers were aware of the hepatitis B vaccine, while more were aware of the BCG and OPV vaccine. At the Kandy National Hospital, nurses trained in immunization visit the postnatal wards daily to administer OPV and BCG vaccinations to newborns. Hepatitis B vaccine is not routinely given in the hospital, which may explain the low knowledge of mothers about this vaccine. The findings are also suggestive (Table 1).

Table 1. Socio demographic characteristic of the participations

Variable		*Number (n)*	*Percentage (%)*
1. Age			
	15-18 years	14	3.6
	18-35 years	286	74.5
	Up to 35 years	84	21.9
2. Ethnicity			
	Sinhala	335	87.2
	Tamil	49	12.8
3. Residence			
	Rural	237	61.7
	Urban	132	34.4
	Estate	15	3.9
4. Marital status			
	Single	4	1
	Married	380	99
5. Educational status			
	Never went to school	5	1.3
	Primary	6	1.6
	Completed O/L	113	29.4
	Completed A/L	219	57.0
	Graduate	30	7.8
	Postgraduate	11	2.9
6. Occupation			
	Housewife	113	39.8
	Self-employed	35	9.1
	Private sector employee	109	28.4
	Government employee	43	11.2
	Other	44	11.5
7. Family type			
	Nuclear	275	71.6
	Extended	108	28.1

Table 2. Pregnancy related data of the participants

Variables	*Number (n)*	*Percentage (%)*
1. Parity		
P1	193	50.3
P2	151	39.3
P3	16	4.2
Other	24	6.3
2. Have ANC follow-up		
Yes	370	96.4
No	14	3.6
3. Frequency of ANC follow up		
One	19	4.9
Two	31	8.1
Three	92	24
Four and above	242	63
4. Time of ANC started		
Before 16 weeks	371	96.6
16 weeks	13	3.4
5. Mode ≥ of delivery (current)		
Normal vaginal delivery	205	53.4
Cesarean section	163	42.4
Instrumental	16	4.2
6. Number of children		
Only one	308	80.2
2-3 children	55	14.3
4 and more	21	5.5
7. Place of previous deliveries		
Teaching/ general hospital	375	97.7
Rural hospital	3	0.8
Home	6	1.6
8. Last delivery attended by		
Skilled health care provider	384	100
Trained traditional birth attendant	0	0
Traditional birth attendant	0	0

Table 3. Distribution of correct responses for the questions related to knowledge essential new-born care

Questions		*Number (n)*	*Percentage (%)*
Knowledge regarding Breastfeeding			
1. Do you want to give breast milk to your baby?	Yes	384	100
2. If yes, how long are you considering breastfeeding? 6 months	Yes	384	100
3. Do you know exclusive breastfeeding is recommended for 6 months?	Yes	155	40.4
	No	229	59.6
4. Do you think that breastfeeding has health benefits for the baby?	Yes	384	100
5. When do you start breast feeding?			
• within 1 hour after delivery		369	96.1
• after 1 hour up to 1day		15	3.609
6. Do you think to provide anything other than breast milk for new-born?		349	90.9
7. Infants should be breastfed on demand		384	100
8. Should colostrum be given to the baby?		384	100
9. Do you think that during breastfeeding, you need to change your diet?	Yes	122	31.8
	No	262	68.23
10. Do you know that you can keep your expressed milk in the fridge for one day?		0	0
Knowledge on immunization			
11. New-born needs to be vaccinated at birth	Yes	104	27.1
	Don't know	284	72.9

(Continued)

Questions		*Number (n)*	*Percentage (%)*
12. Vaccines are given to new-borns to prevent communicable diseases	Yes	20	5
	No	1	0.2
	Don't know	363	89.9
13. Do you know about the disease that is prevented by the left forearm vaccine (BCG) at birth?		0	
	Known		
	Unknown	384	100
14. Do you know about diseases prevented by oral polio vaccine (OPV) at birth?			0
	Known	0	
	Unknown	384	100
Knowledge regarding cord care			
15. Umbilical stump should be left uncovered		352	89.9
		32	10.1
16. A soiled umbilical stump should be cleaned with water		102	26.6
17. The cord should be left clean and dry without applying substances		0	0
Knowledge regarding of thermoregulation			
18. The baby should be fed in the same room as the mother		221	57.6
19. Did you know that skin-to-skin contact increases your baby's warmth?		245	63.8
20. Did you know that warm clothes prevent your baby from losing heat?		384	100
21. Did you know that a warm room prevents your child from losing heat?		384	100
22. After the umbilical cord falls, the baby should be bathed		384	100
Identification of danger signs			
23. Baby not breastfeeding		1	0.3
24. Fever		0	0
25. Cries excessively		0	0
26. Abdominal distension and vomiting		0	0
27. Too small baby		0	0
28. Born being too early		0	0

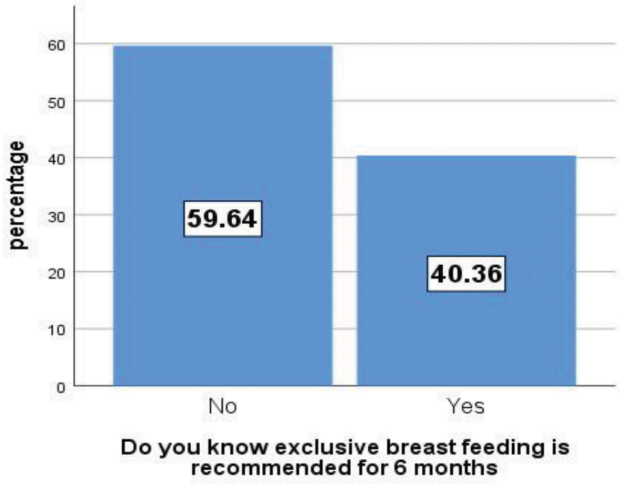

Figure 1.

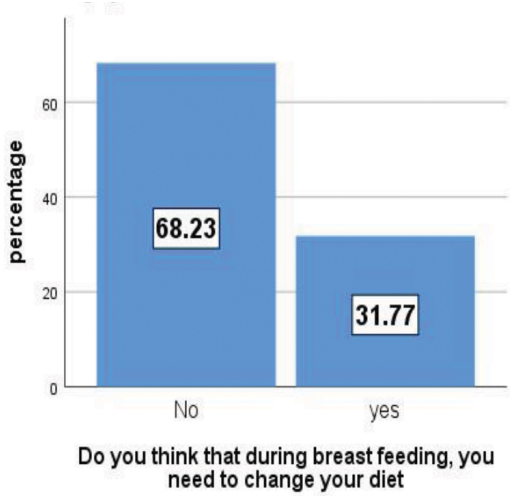

Figure 2.

Stump cord protection: 353 (89.9%) of the mothers interviewed correctly stated that the hatch should be opened. 102(26.6%) of the mothers interviewed believed that water should be used to clean the dirty umbilical cord. Many mothers thought that the surgical spirit was suitable for cleaning the dirty cord. If not adequately cared for, the rope stump is a potential source of infection.

Thermoregulation: 351 (68.6%) mothers believed that warm clothes keep newborns warm, 245 (63.8%) mothers mentioned that mother-child skin-to-skin contact prevents newborns from getting cold.

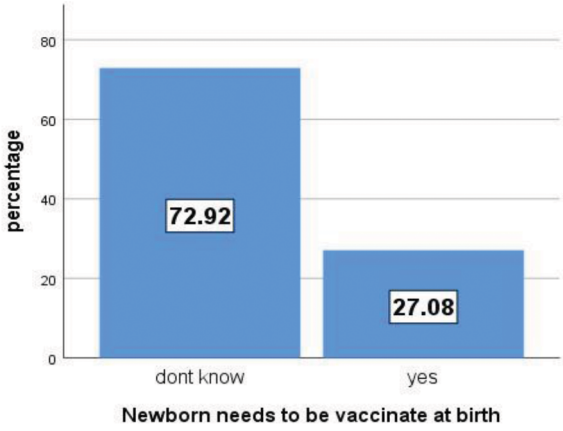

Figure 3.

4.4 Attitude towards essential newborn care

All but a few mothers agreed that breastfeeding should be done both day and night. NHK (National Hospital Kandy) is a baby-friendly certified hospital which can explain good attitude levels about breastfeeding (Table 5 and Figure 1).

Table 5 shows attitude towards various aspects of newborn care. Mothers had a positive attitude towards cord care with slightly more than 65.89% agreeing that a dirty cord could cause infection.

Regarding safety of vaccines, 65.9% believed vaccines would harm their children while 34.1% were unsure.

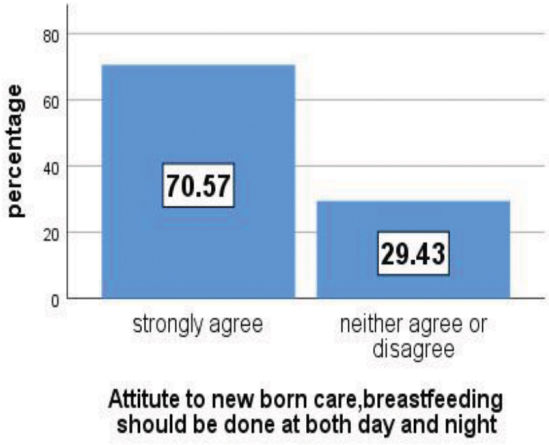

Figure 4.

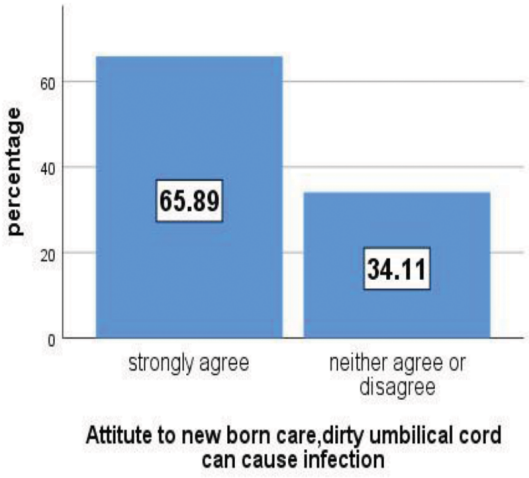

Figure 5.

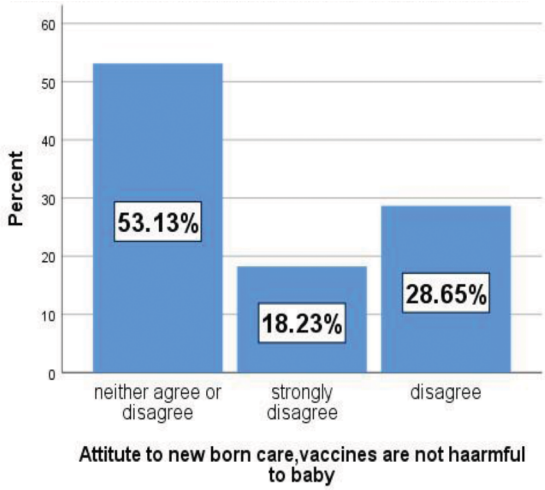

Figure 6.

Table 4. Postnatal mothers' attitudes on essential new-born care

Statements	*Strongly Agree n (%)*	*Agree n (%)*	*Neither agree nor Disagree n (%)*	*Disagree n (%)*	*Strongly disagree n (%)*
Hospital delivery is good for both baby and mother	384 (100)	0	0	0	0
Maintaining the normal body temperature is extremely important for new-born	384 (100)	0	0	0	0
Oil baths of new-borns can cause long term pulmonary dysfunction	0	67 (17.4)	224 (58.3)	0	93 (24.2)
Instillation of oil in the nostrils and ears cause long term pulmonary dysfunction	152 (39.6)	139 (36.2)	93 (24.2)	0	0
Babies should not be bathed in cold water	384 (100)	0	0	0	0
Breastfeeding should be done at both day and night	271 (70.6)	0	113 (29.4)	0	0
Dirty umbilical cord can cause infection	0	0	204 (53.1)	110 (28.6)	70 (18.2)
Vaccines are not harmful to baby	253 (65.9)	0	131 (34.1)	0	0
A baby must be given a bite of Rankiri	0	0	0	384 (100)	0
The milk present in the baby's breast should be squeezed out (hard milk)	0	0	0	384 (100)	0
The baby should be bathed only after the umbilical cord falls	0	92 (24)	144 (37.5)	65 (16.9)	83 (21.6)

Score distribution for the questions related to knowledge on essential new-born care

The score was calculated out of 28 by allocating 1 mark for each correct response. The highest score received was 14 and lowest score was 8. The mean score was 10.60 (SD=1.207).

Table 5. Score distribution for the questions related to knowledge on essential new-born care

Variable	*Mean*	*Standard deviation (SD)*	*P value*
Age			
15-18 years	10.85	0.86	0.016
18-35 years	10.68	1.24	(One-way anova test)
Up to 35	10.27	1.05	
Ethnicity			
Sinhala	10.59	1.21	0.750
Tamil	10.65	1.16	(Independent sample t-test)
Residence			
Rural	10.56	1.18	0.712
Urban	10.63	1.24	(One-way anova test)
Estate	10.80	1026	
Marital status			
Single	10.75	1.25	0.805
Married	10.60	1.20	(Independent sample t-test)
Educational status			
Never went to school	11.40	1.14	0.018
Primary	10.50	1.04	(One-way anova test)
Complete O/L	10.83	1.09	
Complete A/L	10.55	1.23	
Graduate	10.03	1.32	
Postgraduate	10.45	1.12	
Occupation			
House wife	10.88	1.20	<0.001
Self-employer	10.82	1.38	(One-way anova test)
Private sector employee	10.09	0.97	
Government employee	10.62	1.11	
Other	10.68	1.32	

(Continued)

Variable	*Mean*	*Standard deviation (SD)*	*P value*
Family type			
Nuclear	10.71	1.24	0.040
Extend	10.31	1.07	(Independent sample t-test)
Parity			
P1	10.72	1.26	0.001
P2	10.60	1.03	(One-way anova test)
P3	9.5	1.75	
Other	10.33	0.96	
ANC follow up			
Yes	10.63	1.20	0.010
No	9.78	1.21	(Independent sample t-test)
Frequency of ANC follow up			
One	11.05	1.22	0.530
Two	10.61	1.20	(One-way anova test)
Three	10.52	1.36	
4 or above	10.59	1.14	
Number of children			
Only one	10.57	1.26	0.654
2-3	10.78	0.97	(One-way anova test)
4 and more	10.50	0.88	

Discussion

Combating neonatal morbidity and mortality requires equipping mothers with correct knowledge on newborn care to ensure appropriate practices [12]. A main finding in our study was that the majority of the education on newborn care practices was provided to mothers during the antenatal period. The importance of this was shown by Weiner et al. in Laos, who demonstrated that antenatal education among expectant mothers resulted in sustained improvement in knowledge of newborn care in the postnatal period [13]. In our study, we noted a significant drop in dissemination of information on all components of essential newborn care in the postnatal period compared to the antenatal period. This could possibly be because the study was conducted in a busy referral hospital with a large number of patients compared to hospital staff who often have a large workload [14].

The components of essential newborn care that were investigated included cord care, breastfeeding, thermoregulation, and immunization in the newborn. A majority of the newborn care education received among the study participants was related to breastfeeding [15]. In our study, breastfeeding knowledge amosng mothers was encouraging, with most mothers aware of exclusive breastfeeding and breastfeeding on demand. These findings were similar to those reported by Senarath et al., who also found that the majority of Sri Lankan postnatal mothers were aware of on-demand feeding as well as early and exclusive breast-feeding [16].

A Ghanaian study suggested that all-cause neonatal mortality could be reduced by sixteen percent if all infants-initiated breastfeeding on day one of life and by twenty-two percent if initiation took place within the first hour of life [17]. Colostrum, the first breast milk, is highly nutritious and protective to the newborn. Almost all mothers in our setting knew that colostrum should be given to their babies. These findings are more encouraging than an Indian setting where strong cultural beliefs hampered the use of colostrum [18].

Attitude towards breastfeeding was also positive, with most mothers agreeing with WHO-recommended breastfeeding practices. Kloeblen-Tarver showed a direct correlation between maternal attitude and optimal breastfeeding practices [19]. KNH is a Baby Friendly certified hospital that promotes breastfeeding, which could explain the good knowledge levels and positive attitudes towards breastfeeding among postnatal mothers in our study.

There is still consensus on best cord care practices. WHO recommends hygienic practices when handling the cord, a potential source of infection. In our study, attitude was assessed by determining mothers' beliefs about cord handling [20]. All mothers agreed with the recommendation to keep the cord clean and dry without applying any substance. A lack of consensus among healthcare providers on best practice for cord care may account for these differences in opinion among postpartum mothers in our setting. A Cochrane meta-analysis showed that there was no significant advantage of using antibiotics and antiseptics over keeping the cord clean and dry [21].

In the present study, almost all mothers were aware of the need to vaccinate their newborns. All newborns are given OPV and Hepatitis B, though not regularly in the hospital, which may explain the lack of knowledge about this vaccine among mothers [22]. Mothers in our study scored poorly when asked to match the vaccine to the disease it prevented. Findings suggest poor dissemination of immunization information to mothers by healthcare providers [23].

Conclusion

Maternal education on essential newborn care was primarily acquired during pregnancy, with significant knowledge gaps in thermoregulation, immunization, and neonatal danger signs. Poor knowledge was associated with unemployment, first-time mothers, and lack of antenatal care. Breastfeeding was the most well-understood component, while gaps persisted in cord care and immunization. Although postnatal mothers had a positive attitude towards breastfeeding and cord care, their attitude towards other aspects of newborn care was less favorable. Strengthening health education during both antenatal and postnatal periods is crucial to improving maternal knowledge and newborn care practices.

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