

Assessment of Postnatal Mothers' Knowledge of Newborn Care Practices: A Cross-sectional Study

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ABSTRACT

Although Bangladesh made substantial progress in reducing neonatal mortality, practice of essential newborn care is very low resulting in neonatal deaths. This study aimed to identify postnatal mother's knowledge of newborn care practices. A hospital-based cross-sectional study among 211 postnatal mothers was conducted using purposive sampling technique. A pre-tested structured questionnaire was used for interviews and Chi-square test was done to analyze collected data. Around 38% of mothers were aged between 16 and 20 years, 28% had secondary school education, 55% were primigravida, and only 26.5% attended antenatal visit for >4 times. Nearly 36% of them had warm clothes and 8% used kangaroo method for thermoregulation. Two-thirds of the mothers strongly agreed that breastfeeding was essential for the baby, 58% strongly agreed that colostrum must be provided to the newborn, and around 60% strongly agreed that exclusive breastfeeding (EBF) should be given up to 6 months of age. Majority of mothers knew about immunization at birth. Knowledge gaps were identified about cord care, eye care, first bathing, and hygiene practices. Nonetheless, only a minority of respondents had good knowledge of newborn care. In addition, highly significant statistical association was found between knowledge level and sociodemographic characteristics of the respondents. To further increase postnatal mother's knowledge of newborn care practices, implementation of guidelines outlined in the Maternal Child Health handbook is highly recommended.

Key words: Newborn, maternal, postnatal, health, Bangladesh

INTRODUCTION

Children are considered the future of any nation. To ensure their well-being and, thus, the nation's well-being, it is vital to care for them properly during the perinatal period. "Essential newborn care" is a set of recommendations outlined by the World Health Organization (WHO)^[1] to improve the health of the newborns through interventions before pregnancy, during pregnancy, and in the postnatal period. It includes thermoregulation, clean delivery and cord care, initiation of breastfeeding, immunization, eye care, recognition of danger signs, care of the preterm/low birth weight infant, and management of newborn illnesses.

Mothers are traditionally the caregivers for children, but many lack knowledge's of newborn care, especially those with low social status, education, and income.^[2,3] A study conducted in a tertiary hospital of South India finds mothers have inadequate knowledge of umbilical cord care, thermal care, and vaccine-preventable diseases.^[4] This study also indicates gaps in the awareness of postnatal mothers, especially in those with low socioeconomic status. This lack of knowledge can have catastrophic results in terms of caregiving.

One of the UN's sustainable development goals 3 is to reduce preventable deaths of newborns and children under 5 years of age, reducing under-five mortality from 33 to 25 deaths per 1000 live births, and reducing neonatal mortality from 22 to 12 deaths per 1000 live births. Despite substantial progress in

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recent decades, neonatal mortality remains unacceptably high and contributes to 45% of all under-five deaths worldwide.^[5] The WHO estimates that the proportion of child deaths in the neonatal period has actually increased during the last couple of years. It also suggests that 98% of these neonatal deaths occur in developing regions, with 28% in the least developed countries. Most developing countries are lagging far behind the target, with an estimated 6 times higher risk of death in the neonatal period; in the least developed countries, it is >8 times higher.^[6] Prematurity is identified as the leading cause of neonatal deaths globally, and most neonatal deaths occur in the first 24 h of life.^[7] Up to two-thirds are preventable by practicing effective measures at birth and during the 1st week of life.

More neonatal deaths occur in Asia than anywhere else, largely because the area is so populous. The South Central subregion represents the most formidable challenge because over 40% of global neonatal deaths take place here.^[6] Nevertheless, the concerted global effort to reduce deaths has had some effect. Data from the Bangladesh Demographic and Health Survey indicate that Bangladesh witnessed an impressive 75% drop in under-five mortality, from 144 deaths per 1000 live births in 1990 to 38 in 2015; this is lower than the 2016 global average of 41 per 1000. This finding of improvement is backed up by other empirical data; recent work in Bangladesh suggests the neonatal mortality rate fell gradually from 93 deaths per 1000 live births in 1967^[8] to 24 deaths per 1000 live births in 2016.^[9] At the same time, however, the Bangladesh Demographic and Health Survey 2014 shows that overall, only 6% of newborns receive all the essential newborn care practices.

This study assessed the level of knowledge of the essential newborn care among postnatal mothers at Dhaka Medical College Hospital. It finds that although Bangladesh has made significant progress in reducing under-five and neonatal mortality, there is scope for improvement by providing better care and offering health education on newborn care practices to mothers during antenatal and postnatal visits. Findings should help policy-makers and health planners design interventions to sustain and strengthen the improvement in neonatal mortality.

MATERIALS AND METHODS

A cross-sectional descriptive study of postnatal mothers admitted to the postnatal ward at Dhaka Medical College Hospital was conducted from October 2014 to March 2015. A purposive sampling technique was used to select 211 informed and consenting mothers based on their sound mental status, registration in the hospital records, and willingness to participate. Those who were extremely sick, non-responsive, or had lost their baby were excluded from the study. A standard formula ($n = z^2pq/d^2$) was used to

Table 1: Distribution of general characteristics of the respondents ($n=211$)

General characteristics	Frequency (%)
Age (in years)	
≤ 15	10 (4.7)
16–20	80 (37.9)
21–25	68 (32.2)
26–30	41 (19.4)
>30	12 (5.7)
Educational status	
No institutional background	34 (16.1)
Can read or write	40 (19.0)
Up to class ten	60 (28.4)
SSC pass	39 (18.5)
HSC pass	29 (13.7)
Degree/honors	9 (4.3)
Occupation	
Housewife	189 (89.60)
Service	22 (10.40)
Residence	
Urban	151 (71.6)
Rural	60 (28.4)
Number of family members	
Up to 4	153 (72.5)
5–10	51 (24.2)
>10	7 (3.3)
Average monthly income of family (BDT) (1USD=80.54 BDT)	
Up to 5000	35 (16.6)
5001–10,000	65 (30.8)
10,001–15,000	84 (39.8)
>15,001	27 (12.8)
Type of family	
Joint family	49 (23.2)
Nuclear family	162 (76.8)
Type of living accommodation	
Building	112 (53.1)
Semi-building	70 (33.2)
Hut (non-buildup)	29 (13.7)

determine a universal sampling size.^[10] Although the desired sample size was 385 for a 95% confidence interval, only 211 patients meeting the inclusion criteria were randomly chosen due to time and resource constraints.

Information on mothers' sociodemographic status, antenatal and postnatal period, and knowledge of newborn care

practices was collected using a pretested questionnaire in a face-to-face interview. After collection, data were sorted, scrutinized by the researcher, and analyzed using SPSS statistical software version 16.0. Mothers' knowledge was measured on a 5-point Likert scale. A Chi-square test was used to identify the association between independent and dependent variables. Statistical significance for all analyses was set at $P < 0.05$ for two-tailed tests.

The study was conducted on approval of the Ethical Review Committee for Human Research, American International University of Bangladesh. Permission to conduct the study was obtained from Dhaka Medical College and Hospital authority, Bangladesh. The confidentiality of the person and the information was maintained.

RESULTS

The age of mothers ranged from 15 to 40 years, with the majority between 16 and 25 years (Table 1). About 16% had no institutional education, and only 4.3% had earned a university degree. The majority (89.60%) were housewives; 10.40% were in service work such as garment worker, cleaner, and housemaid. Less than half the mothers (39.8%) belonged to families with an average monthly family income ranging from 10,001 to 15,000 BDT (1USD = 80.54 BDT) and were from nuclear families. Majority lived in urban areas (71.60%) than rural areas (28.40%).

Table 2 gives information on the mother's antenatal and postnatal period. Some salient observations include the following: A little more than half of the mothers were primipara (55%); only about a quarter (26.5%) had made more than four antenatal visits; the majority had only a week or less of postnatal care (91.9%).

Table 3 shows the mothers' knowledge of newborn care. The majority knew about thermoregulation (70.6%), baby's first bath (71.6%), and cord care (72.5%).

Table 2: Information on antenatal and postnatal period

Parity	Frequency (%)
Primipara	116 (55.0)
Multipara	95 (45.0)
Number of antenatal visits	
≤4	155 (73.5)
>4	56 (26.5)
Number of postnatal days (weeks)	
Up to 1	194 (91.9)
2–3	15 (7.1)
4–5	2 (0.9)

However, very few (8.1%) knew the kangaroo method for thermoregulation, and just over a third (35.1%) had correct knowledge of the care of the umbilical cord. Finally, there was an obvious gap in knowledge about the right time for the baby's first bath.

About 46%, 43%, and 24% of mothers strongly agreed on the need for hand hygiene before breastfeeding, hand hygiene

Table 3: Distribution of respondents by knowledge of newborn care (n=211)

Knowledge	Frequency (%)
Knowledge of baby's body temperature	
Yes	149 (70.6)
No	62 (29.4)
Methods to keep the baby warm	
Wrap the baby with warm clothes	75 (35.5)
Kangaroo method	17 (8.1)
Wrap the baby with warm clothes and	
Keep the baby close to mother's body	57 (27.0)
Knowledge of baby's first bath	
Yes	151 (71.6)
No	60 (28.4)
Timing of the first bath	
Day 1	22 (10.4)
Day 2	18 (8.5)
Day 3	33 (15.6)
Day 4	20 (9.5)
Day 5	24 (11.4)
Day 6	4 (1.9)
Day 7	17 (7.5)
Not known	13 (6.2)
Knowledge of umbilical cord care	
Yes	153 (72.5)
No	58 (27.5)
Procedure of umbilical cord care	
Leave it as such	74 (35.1)
Apply mustard/coconut oil	23 (10.9)
Apply antibiotic cream	10 (4.7)
Apply medicated powder/solution	42 (19.9)
Hot fomentation	5 (2.4)
Newborn's eye care	
Yes	118 (55.9)
No	93 (44.1)
Knowledge of immunization at birth	
Yes	138 (65.4)
No	73 (34.6)

after diaper care, and keeping the newborn clean by giving her a whole bath, respectively.

Table 4 shows the distribution of mothers by knowledge of breastfeeding. The majority (66.4%) strongly agreed that breastfeeding was essential for the baby. Far fewer (39.3%) strongly agreed on the initiation of breastfeeding within 1 h after childbirth. A little more than half strongly agreed that colostrum must be provided to the newborn and EBF should be given up to 6 months of age (58.3% and 59.7%, respectively). Only a small proportion of the mothers knew about the immune properties of colostrum, benefits of burping following breastfeeding, and harmful effects of prelacteal feeds.

Half had a moderate level (51.7%) and about a third (37.0%) had a good level of knowledge. Still, when summed up, the majority had poor to moderate knowledge only.

A Chi-square test was used to examine the null hypothesis of no association between maternal characteristics and knowledge of newborn care. As Table 5 shows, maternal knowledge was significantly associated ($P < 0.001$) with maternal age, educational level, occupation, and average monthly income of the family.

DISCUSSION

Cultural influence and traditional understandings, combined with a lack of neonatal health knowledge, are the main factors driving mothers' lack of awareness of the essential newborn care practices. With better knowledge, a mother can formulate a more effective strategy to safeguard the health of her child. Simply stated, if neonatal morbidity and mortality are to be reduced, mothers need to be informed about essential newborn care

practices. In this study, only a small proportion of respondents (37.0%) had good knowledge of newborn care. In contrast, a study in India^[9] found that the majority of postnatal mothers had excellent knowledge of newborn care practices. The results of another study conducted in 2006^[11] were more like the present ones, in that mothers' knowledge of most of the studied items on newborn care practices was below a satisfactory level.

Breastfeeding knowledge was encouraging, with most mothers aware of the value of breastfeeding, the initiation of breastfeeding within 1 h of birth, colostrum, EBF until 6 months of age, and the avoidance of prelacteal feeding. These findings show that the emphasis placed on breastfeeding by health-care providers during antenatal care has paid off. However, the awareness of breastfeeding on demand and burping practices was poor, possibly because there were not enough postnatal visits. While all pregnant women should attend ANC as soon as possible and make more than four visits before delivery, postnatal visits are equally necessary to assure adequate newborn care. A small proportion of mothers knew the umbilical cord should be left as it is, and the first bath following birth should be delayed; the study also revealed moderate knowledge of newborn eye care and newborn hygiene; these areas need improvement.

The variations in the mothers' understanding of harmful practices suggest the influence of traditional practices and/or a lack of dissemination of information by health-care providers on best practices, especially for cord care. Awareness of the need for vaccine at birth and the benefits of vaccination was moderate, even though Bangladesh's expanded program on immunization is pushing it. Mothers were even less aware of the kangaroo method (skin-to-skin contact) to thermoregulate newborns; this gap can be explained by the inadequate dissemination of information

Table 4: Distribution of respondents by knowledge of breastfeeding ($n=211$)

Statements	Strongly agree (%)	Agree (%)	Neither agree nor disagree (%)	Disagree (%)	Strongly disagree (%)
Breastfeeding is essential for the baby	66.4	33.6	0.0	0.0	0.0
Initiation of breastfeeding within 1 h after childbirth	39.3	36.5	19.9	4.3	0.0
Colostrum must be provided to the newborn	58.3	29.9	11.8	0.0	0.0
Colostrum provides natural immunity to the baby	40.8	24.2	31.3	3.8	0.0
Burping should be applied after breastfeeding	31.3	22.3	24.2	12.3	10.0
EBF should be given up to 6 months of age	59.7	28.0	9.5	0.9	1.9
Prelacteal feeds should not be given to baby	46.0	28.4	16.1	5.7	3.8
Babies should be breastfed on demand	33.6	34.1	19.0	6.2	7.1

Table 5: Factors associated with maternal knowledge of newborn care

Independent variables	Levels of knowledge			Levels of knowledge
	Frequency (%)	Frequency (%)	Frequency (%)	
Age				
Up to 15	3 (12.5)	5 (4.6)	2 (2.6)	0.001*
16–20	4 (16.7)	41 (37.6)	35 (44.9)	
21–25	16 (66.7)	36 (33.0)	16 (20.5)	
26–30	1 (4.2)	21 (19.3)	19 (24.4)	
>30	0 (0.0)	6 (5.5)	6 (7.7)	
Educational level				
No institutional background	10 (41.7)	23 (21.1)	1 (1.3)	0.001*
Can read or write 6	6 (25.0)	25 (22.9)	9 (11.5)	
Up to class ten	6 (25.0)	41 (37.6)	13 (16.7)	
SSC pass	2 (8.3)	12 (11.0)	25 (32.1)	
HSC pass	0 (0.0)	6 (5.5)	23 (29.5)	
Degree/honors	0 (0.0)	2 (1.8)	7 (9.0)	
Occupation				
Housewife	24 (100.0)	102 (93.6)	63 (80.8)	0.004*
Service holder	0 (0.0)	7 (6.4)	15 (19.2)	
Average monthly income				
Up to 5000	10 (41.7)	24 (22.0)	1 (1.3)	0.001*
5001–10,000	8 (33.3)	33 (30.3)	24 (30.8)	
10,001–15,000	5 (20.8)	42 (38.5)	37 (47.4)	
>15,001	1 (4.2)	10 (9.2)	16 (20.5)	

*Significance level $\alpha = 0.05$

on thermoregulation by health-care providers during both antenatal and postnatal periods.

Taken together, the findings suggest that mothers should be better educated in newborn care practices by health-care providers, especially midwives and trained birth attendants.

CONCLUSIONS

This study found its sample of postnatal mothers was fairly knowledgeable about breastfeeding and hygiene practices for newborns but knew less about eye care, cord care, thermoregulation, and immunization. This may suggest a lack of education, but there was also a significant association between sociodemographic factors and inadequate maternal knowledge.

To improve the practices of care providers, information about essential newborn care should be provided to mothers during both the antenatal and the postnatal period; the guidelines outlined in the Maternal Child Health handbook, if implemented, could be highly effective in this regard. More emphasis should be given to cord care, eye care, thermoregulation, and immunization when health education

campaigns are being designed. In addition, health planners and policy-makers should target relevant demographic factors (e.g., income and education). Furthermore, nurses working in clinics or the community should be properly trained to educate expectant and postnatal mothers and their family members in the significance of newborn care. Midwives working in the outpatient department maternity department could provide information on essential newborn care and offer parent counseling to promote it. The Ministry of Health should take initiatives in organizing in-service training for nurses and midwives to keep them updated on the latest recommendations in Essential Newborn Care and encourage their participation by providing them adequate resources. Other health-care professionals should be given opportunities to update their knowledge of essential newborn care so they can disseminate adequate knowledge to mothers. Finally, individual communities should be motivated to take steps to improve the care of newborns.

ETHICAL CONSIDERATIONS

The study was carried out under the authorization and approval of the Ethical Review Committee for Human Research of

the American International University, Bangladesh, with the ethical clearance dated on October 1, 2014.

COMPETING INTEREST

The authors declare that they have no conflicts of interest.

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AUTHORS' CONTRIBUTION

Shamim conceptualized, outlined, and formulated the study. Shamim and Sharmin drafted the manuscript, analyzed, and interpreted the data. Monia designed and supervised the data collection. Shafi revised the manuscript.

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