



Knowledge and practice on essential newborn care among postnatal mothers in Bangladesh

Amina Khatun^{1*}, Ela Rani Shom², Dipali Rani Mallick², Seungmi Park³

¹National Institute of Advanced Nursing Education and Research, Dhaka, Bangladesh

²Department of Women's Health and Midwifery Nursing, National Institute of Advanced Nursing Education and Research, Dhaka

³Department of Nursing, Chungbuk National University, Cheongju, Republic of Korea

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*Corresponding Author

Amina Khatun

✉ aminakhatun971@gmail.com

ABSTRACT

Essential newborn care should be applied immediately after the baby is born and continued for at least the first 7 days after birth. Nearly all (99%) neonatal mortality occurs in developing countries. The objectives of this study were to assess the level of knowledge and practice and the relationship between knowledge and practice on essential newborn care among postnatal mothers in Bangladesh. A descriptive correlational design was conducted among 120 postnatal mothers selected by using convenient sampling method. Descriptive and inferential statistics were used for analyzing the data. Finding shows that the relationship between knowledge and practice among postnatal mothers on essential newborn care statistically significant ($r = 0.244, p < 0.007$). The mean age of the participants was 24.02 years (SD = 4.68). The results revealed that the postnatal mothers reported a moderate level of total knowledge, with the mean score was 9.99 ± 1.85 maximum and the moderate level of total practice, mean score was 3.20 ± 0.28 maximum. Older age group had higher knowledge ($p < 0.03$) and practice ($p < 0.016$) than younger age group on essential newborn care. The findings showed that mothers had moderate knowledge and practice on essential newborn care. Significant positive correlation between knowledge and practice was observed in old mothers. Younger mothers had significantly less knowledge and practice. The study suggests that nurses should educate mothers for essential newborn care, especially younger mothers during antenatal care.

INTRODUCTION

The neonatal period is the most important part in the life of a newborn for its survival and development (Kumar et al., 2015). Proper newborn care around the time of birth is critical in improving neonatal survival. Worldwide, about 4 million newborns die every year within the first four weeks of life (Bhandari et al., 2016). Nearly 99% neonatal death occurs in developing countries. About 75% neonatal deaths occur during early neonatal period, especially in the first 48 hours of life (Khan et al., 2013).

According to child mortality reports, neonatal mortality numbers from 1990 to 2015 in developed countries has dropped from 116 to 44 per 1000 live births (Child Mortality Report, 2015). In Bangladesh, estimates developed by the UN inter-

agency group found the neonatal mortality rate in 1990 and 2015 to be 63 and 23 per 1000 live births respectively (UNICEF, World bank, UN, Desa and Population Division, 2016). Infant and child mortality rates have declined significantly in many countries by reducing deaths to diarrhea, pneumonia, vaccine preventable infections, and malaria. However, most important has been due to live saved after the first four week of life (Hadush et al., 2016).

Essential Newborn Care (ENC) is care that every newborn baby needs regardless of where it is born or its size. ENC should be applied immediately after the baby is born and continued for at least the first 7 days after birth. Essential newborn care is a group of comprehensive recommendations designed by World Health Organization (WHO) to improve health of the newborn through

intervention before conception, during pregnancy, soon after birth and in postnatal period. It includes thermoregulation, clean delivery and cord care, initiation of breastfeeding, immunization, eye care, so on. Neonatal mortality is the most leading cause of death among children under the age of five (Sharafi and Esmaeeli, 2013). Studies have shown that there is an increased risk of neonatal mortality if the mother has no formal education, if she is Muslim, if she is an adolescent of age 15-19, if it's her first birth, and if she is giving birth to twin babies (Kamal et al., 2012).

In Bangladesh, the neonatal mortality rate is very high. Most neonatal deaths are preventable through cost-effective essential care and interventions (Islam et al., 2015). The health care of new born babies in Bangladesh faces many challenges in terrible condition compared to developed countries. Mothers play a major role in identifying minor developmental faults and early signs of disease because mothers are constantly monitoring her baby. Thus, it is crucial for mothers to have access to knowledge of essential newborn care. The investigator intends to assess the knowledge and practice of essential newborn care among post-natal mothers at district level hospitals.

Several studies found that maternal knowledge and practices of essential newborn care reduced neonatal mortality and morbidity. Studies showed that in the neonatal period, more than 70% of the current mortalities could be prevented through evidence-based practice such as exclusive breastfeeding and hypothermia management (Berhe et al., 2017). In Bangladesh, there is no available study with regards to neonatal care and nursing. Thus, this study will be helpful in identifying the gaps of knowledge and practice of newborn care among postnatal mothers. The findings of this study will be crucial for nurses in developing an educational and interventional program that emphasizes knowledge and practice of essential newborn care among postnatal mothers.

MATERIALS AND METHODS

Study Design

A descriptive correlational design was used to assess the level of knowledge and practice, and the relationship between knowledge and practice on essential newborn care among postnatal mothers in Bangladesh.

Study participants

The samples of this study were consisted of all postnatal mothers who admitted in Tangail 250 bedded general hospital. This is a district level hospital, there are two postnatal units where the mother and her neonate(s) stay together until they are discharged thus this hospital represented the entire district postnatal mother. The sample size of the study was estimated by using G power analysis. The estimated sample size was calculated for an acceptable medium level of significance (α) 0.05 and power of 0.80(1- β) and effect size of .30 (γ) this value would be conventional standard for most nursing studies. The estimated sample size of the study was 120. The convenient sampling method was used to recruit the sample based on the following inclusion criteria: Postnatal mothers who have normal neonate baby bellow 28 days and who had no serious illness.

Ethical clearance was obtained from Institutional Review Board, National Institute of Advanced Nursing Education and Research (NIANER) and BSMMU. Permission was obtained from the concerned authority. The researcher explained the purpose of the study and asked for volunteers to participate in this study. Verbal consent for the illiterate participants and a written consent form were obtained from the subjects without any influences. They were informed that they had freedom to ask for explanations regarding the instruments or to withdraw from the study at any time without any reason or penalty. All information and responses in connection with this study would remain confidential. A code was used, so that subjects' identity was not discovered.

Instruments

The structured questionnaires were used for face to face interview by the investigator according to literature review (Amolo, 2011). The validity of the instrument was examined by a panel of three experts. Then the investigator modified the

instrument based on experts' recommendation. Then the instrument was translated into Bengali version by bilingual translators. That comprised three parts:

Part 1: Demographic Characteristics and Pregnancy Related Questionnaire (DCPRQ).

This questionnaire consists of 13 items including demographic data (6 items) and pregnancy related (7 items). Information was requested regarding each postnatal mother's age, marital status, occupation, education level, monthly income, religion. The researcher constructed pregnancy related information regarding their baby's birth weight, mothers' parity, mode of delivery, attend antenatal clinic, received tetanus injection, received newborn care practice education.

Part 2: Knowledge on Essential Newborn Care Related Questionnaire (KENCRO)

The knowledge on essential newborn care related questionnaire consists of 12 questions. The knowledge part it was contain questions on newborn care knowledge related, it's thermoregulation (3 items), cleanliness and cord care (3 items), eye care (1item), immunization (1 item), and breastfeeding (4 items), Questionnaire was close ended and possible answer was "True", "False" and "Don't know". Score "1" was given for correct answer and "0" for incorrect answer. The total score had been ranged from 0-12 and it was then converted into a percentage. There is no gold standard method to categorize the level of knowledge. Therefore, the level of knowledge was categorized into three levels: low was $\frac{1}{3}$ (<33%), moderate from $\frac{1}{3}$ (34%) to $\frac{2}{3}$ (66%), and high was $>\frac{2}{3}$ (>66%). Based on this criterion the knowledge score was categorized into the following: low (<2), moderate (2 to 5) and high (>5). The higher scores indicated the higher level of knowledge.

Part 3: Newborn Care Practice Related Questionnaire (NCPRO)

The newborn care practice related questionnaire consists of 12 questions. The newborn care practice related questionnaire was rating scale was "Never", "Seldom", "Often", "Always". The Questionnaire evaluated thoroughly, necessary

revision and adjustment was done accordingly. All the Questionnaire were scored from 1 to 4 in items of: 1= never; 2 = seldom; 3 = often; 4 = always. The higher scores indicated the higher level of practice. The possible total score was ranged from 12 to 48 and it was then converted into percentage. The maximum score for the scale was 48 and the minimum score was 12. There is no gold standard method to categorize the level of practice. Therefore, the level of practice was categorized into three levels: low was $\frac{1}{3}$ (<33%), moderate from $\frac{1}{3}$ (34%) to $\frac{2}{3}$ (66%), and high was $>\frac{2}{3}$ (>66%).

Data collection

The data were collected by face to face interview through self-structured questionnaires, and who met the inclusion criteria. The researcher read these for the participants who were unable to read and write. However, if they were able to read and write the Bengali language, they were allowed to write the answer on the questionnaire given to them. If the participants could not understand, the researcher explained and clarified more fully. Data were collected from at 8.00 am to 2.00 pm of the official day time (6 days in a week). Each client spent no more than half an hour filling up the questionnaire. After completing the questionnaires, the researcher thanked the participants for spending their valuable time to participate in the study. Data collection period was 01. 01. 2018 to 01. 02.2018.

Data analysis

The data were analyzed using SPSS version 20. Both descriptive and inferential statistics was used for data analysis. Descriptive statistics was used to describe the subject's demographic and pregnancy related characteristics in terms of frequencies, percentages, means and standard deviations. Inferential statistics such as associations between influencing factors and knowledge, practice towards on essential newborn care were examined using independent sample t-tests and one-way analyses of variance (ANOVA), with Schéffe post-hoc tests. Pearson correlation analysis was performed to explore the relationship between continuous variables. A value of P = 0.05 was considered statistically significant.

RESULTS

Demographic and pregnancy related characteristics of participants

The sample consisted of 120 postnatal mothers who admitted in postnatal wards of 250 bedded general hospital at Tangail, in Bangladesh. The mean age of the participants was 24.02 years. The

only few percent (2.5%) were service holder and rest of them were students and others. The majority (45%) of the participant's had only primary education and 22.5% had higher education. The most (87.5%) of the mothers were Muslim and few were Hindus (11.7%). The most (50.8%) of the participants monthly family income were 10,000 taka to 19,000 taka and very few (5%) had monthly family income \geq 30,000 taka.

Table 1: Distribution of demographic characteristics of postnatal mothers (N= 120)

Characteristics	Categories	n	(%)	M(SD)
Age				24.02(4.681)
Marital status	Married	118	98.3	
	Separated	02	1.7	
Occupation	Service	03	2.5	
	House wife	109	90.8	
	Others/student	08	6.7	
Educational level	No formal education	21	17.5	
	Primary education	54	45.0	
	Secondary education	18	15.0	
	Higher Secondary	27	22.5	
Religion	Islam	104	87.5	
	Hinduism	14	11.7	
	Christianity	02	1.7	
Monthly income	<10,000 TK (BDT)	24	20.0	
	10,000-19,000 TK	61	50.8	
	20,000-29,000 TK	29	24.2	
	\geq 30,000 TK	06	5.0	

Abbreviations: M= mean; SD=standard deviation; BDT= Bangladeshi Taka (1 USD \approx 78 BDT).

Table 2: Distribution of pregnancy related characteristics of postnatal mothers (N=120)

Characteristics Categories		n (%)	M(SD)
Gestational age (weeks)			37.38 \pm 1.69
Birth weight (kg)			2.94 \pm 0.40
Mother's parity	1	49(40.8)	
	2	45(37.5)	
	3	26(21.7)	
Mode of delivery	SVD	17(14.2)	
	LSCS	103(85.8)	
Attend antenatal clinic	Yes	98(81.7)	
	No	22(18.3)	
Received T.T injection	Yes	119(99.2)	
	No	01(0.8)	
Received newborn care practices education	Yes	42(35.0)	
	No	78(65.0)	

SVD = Spontaneous Vaginal Delivery, LSCS = Lower Segment cesarean Section, T. T= Tetanus Toxoid

Table 2 showed the mean score of gestational age was 37.38 weeks (SD = 1.7). The most of the subjects (86%) was lower segment cesarean section and a few percent (14%) was spontaneous vaginal delivery. The majority of subjects were attending antenatal clinic (82%) and (18%) was not attend antenatal clinic. The ninety nine percent's postnatal mothers had received T.T injection (99.2%) and only very few (0.8%) subjects had not received T.T injection. The most of the postnatal mothers (65%) did not received health education regarding newborn care practice and only 35% postnatal mothers received newborn care practice education.

Participants had highest score of knowledge mean was 1.00 ± 0.00 (Table 3). The almost (100%) all participants were well known regarding umbilical cord that should keep clean to prevent infection. All of the participants (100%) had proper knowledge regarding immunization and mean score was 1.00 ± 0.00 . The most (98.3%) of the participants were very conscious regarding any kinds of discharge from umbilicus (such as-bleeding/ discharge/ redness/swelling around the cord), with the mean score was 0.98 ± 0.13 . The majority (95%) of subjects had adequate knowledgeable on breast milk/colostrum, with the mean score 0.96 ± 0.20 . However, very low the participants (mean 0.46 ± 0.50) had low knowledge about bath just after delivery.

Table 3: Distribution of knowledge related newborn care (N = 120)

S/N	Statement	True n (%)	M (SD)
Thermoregulation			
01.	The newborn should be kept warm after birth.	97(80.8)	$0.81 \pm .395$
02.	After delivery no need bath to the newborn.	55(45.8)	$0.47 \pm .501$
03	After delivery the newborn should be kept to the mother for 24 hours	68(56.7)	$0.57 \pm .498$
Breast Feeding			
04	The newborn has to be fed within 30 minutes of birth.	104(86.7)	0.87 ± 0.34
05	Newborn has to be fed first with Breast milk /colostrum.	115(95.7)	0.96 ± 0.20
06	The newborn no need extra fed after delivery.	102(85.0)	0.84 ± 0.37
07	The newborn should be fed with only breast milk until 6 months.	98(81.7)	$0.83 \pm .382$
Cleanliness and Cord Care			
08	The cord should be kept clean to prevent infection.	120(100.0)	1.00 ± 0.00
09	The umbilical cord should be observed for Cord bleeding/ discharge/ Redness/ Swelling around the cord.	118(98.3)	0.98 ± 0.13
10	The newborn's umbilicus should not apply any things.	84(70.0)	$0.73 \pm .448$
Eye care			
11	The eyes of a new born can be kept clean by separately with sterile swab.	115(95.8)	$0.96 \pm .201$
Immunization			
12	The newborn has to be immunized with B.C.G., hepatitis Vaccine and O.P.V as soon as possible after birth.	120(100)	$0.99 \pm .091$

Table 4: Distribution of practice related newborn care (N=120)

Statement	n (%)	n (%)	n (%)	n (%)
General Hygiene	Never (1)	Seldom (2)	Often (3)	Always (4)
Before handling the newborn hands, wash is necessary.	2(1.7)	7(5.8)	89(74.2)	22 (18.3)
Clean napkins should be use after each motion.	0(0.0)	0(0.0)	04(3.3)	116(96.7)
The napkins should dry under sunlight.	0(0.0)	0(0.0)	01(.8)	119(99.2)
The genital area should be clean after each defecation	0(0.0)	0(0.0)	07(5.8)	113(94.2)
Breastfeeding				
The breast should be clean with wet cloth before feeding.	32(26.7)	2(1.7)	62(51.7)	24 (20.0)
The newborn should be feed in sitting position/up right.	07(5.8)	0(0.0)	13(10.8)	100(83.3)
The newborn should be burped after each feed.	91(75.8)	01(.8)	17(14.2)	11 (9.2)
Bathing newborn				
The temperature of water should check before giving bath to the newborn.	03(2.5)	01(.8)	06(5.0)	110(91.7)
The genital areas should be given special attention when giving newborn bath.	2(1.7)	0(0.0)	04(3.3)	114(95.0)
The newborn should be massage with oil before giving bath for good blood circulation & keeps the skin healthy.	70(58.3)	0(0.0)	10(8.3)	40(33.3)
The newborn's ears should close while giving bath.	97(80.8)	0(0.0)	07(5.8)	16(13.3)
The newborn should be wrapped after bath with clean cloth.	01(0.8)	0(0.0)	01(.8)	118(98.3)
Total practice				

The participants had highest score in practice about the items stated in table 4. The majority of the participants (74.2%) often practiced hand washing before handling the newborn and 22% practiced always. About 96% participants always used clean napkin after each motion and 99% dried napkin under sun light after wash. The majority of the subjects (94%) always cleaned genital area after each defecation and 95% gave always special attention during bath.

The most of the subjects (98%) always used clean cloth for wrapping babies after bath. But, the almost (80.8%) of subjects never close ear of newborn babies during bath. 75.8% participants did not

burp after each feed. About 58% participants never practiced oil massage before bath for good blood circulation and healthy skin. 51% often cleaned breast with wet cloth before feeding. The newborn was fed in sitting position/up right by the 83% respondents always

Table 5: Distribution of total knowledge and practice on essential newborn care (N= 120)

Items	M (SD)	Min	Max	Range
Knowledge	9.99 ± 1.85	3	12	0-12
Practice	3.20 ± 3.36	12	48	12-48

The table 5 showed that, the mean score of the total level of knowledge on essential newborn care

was 9.99 ± 1.85 maximum. The highest score was 12 and the lowest score was 3. The mean score for the practice on essential newborn care was $3.20 \pm$

3.36 maximum. The lowest score was 12 and the highest score was 48.

Table 6: Relationship between demographic characteristics and knowledge on newborn care of postnatal mothers (N=120)

Variable	Categories	M±SD	t /f	p	Scheffe
Age	≤ 20 years(a)	9.35 ± 1.54	3.617	.030*	c > b, a
	20-29 years(b)	9.89 ± 1.99			
	≥30 years(c)	10.83 ± 1.23			
Marital status	Married	9.97 ± 1.86	-1.162	-.248	
	Separated	11.50 ± 0.70			
Occupation	Employeed	11.00 ± 1.73	0.954	.342	
	Unemployed	9.96 ± 1.85			
Education level	No formal education	10.00 ± 2.00	0.078	.925	
	Primary and secondary	9.94 ± 1.96			
	Higher secondary	10.11 ± 1.48			
Religion	Muslim	10.02 ± 1.75	0.558	0.578	
	Non-Muslim	9.75 ± 2.46			
Monthly income	<20,000TK	10.07 ± 1.89	0.725	.470	
	≥21,000 TK	9.80 ± 1.76			

a, b,c = Scheffe; NB: *p<.05, **p<.01

The postnatal mothers of older aged group had statistically higher knowledge than younger age group on essential newborn care ($F = 3.617, *p < 0.030$) (Table 6). As a result of two sample t-test, the Muslim had more knowledge than non-Muslim and the mean score was 10.02 ± 1.75 and 9.75 ± 2.46 . Similarly the postnatal mothers of older aged group had significantly higher practice than

younger age group on essential newborn care ($F = 4.309, *p < .016$) (Table 7). The employed mother had better practice than unemployed mother but the relation was statistically not significant ($p > 0.746$). The employee mothers mean score was 39.00 ± 2.00 and unemployed postnatal mothers mean was 38.36 ± 3.39 ($t = 0.325, p = 0.746$).

Table 7: Relationship between demographic characteristics and newborn care practice of postnatal mothers (N=120)

Variable	Categories	M±SD	t /f	p	Scheffe
Age	≤ 20 years (a)	36.47± 3.21	4.309	0.016*	c > b, a
	20-29 years(b)	38.45± 3.39			
	≥30 years (c)	39.52± 2.78			
Marital status	Married	38.35± 3.38	0.688	0.493	
	Separated	40.00± 1.41			
Occupation	Employed	39.00± 2.00	0.325	0.746	
	Unemployed	38.36± 3.39			
Educational level	No formal education	38.57± 3.29	0.312	0.732	
	Primary and secondary	38.18± 3.60			
	Higher secondary	38.74± 3.90			
Religion	Muslim	38.37± 3.47	0.000	1.000	
	Non-Muslim	38.37± 2.63			
Monthly income	<20,000 TK	38.34± 3.50	0-.171	0.865	
	≥20,000 TK	38.45± 2.89			

a, b,c = Scheffe; NB: *p<.05

Table 8: Relationship between knowledge and newborn care practice of postnatal mothers (N = 120)

Variables	Knowledge
practice	$r = 0.244$ $p = .007^{**}$

NB: * $p < .05$, ** $p < .01$

The table 8 showed that the Pearson correlation coefficients (r) was used to analyze the correlations between knowledge and practice. There were statistically significant positive correlations between knowledge and practice on essential newborn care ($r = .244$, * $p < .007$).

DISCUSSION

In this study subject's monthly income was analyzed more than fifty percent subject's monthly income were 10,000/- to 19,000/- taka. The only 5% had monthly income 30,000/- taka or more. This study revealed who had average family income they more visit the hospital. This study found that 22.5% had higher education and the majority (45%) of the participant's educational level had primary education. The mean score of gestational age was 37.38 weeks (SD = 1.7). In this study mean score of birth weight was 2.94 kg. Eighty six percent postnatal mothers were lower segment caesarian section and only fourteen percent was spontaneous vaginal delivery. The majority of subjects were attended antenatal clinic (82%) and (18%) was not attend antenatal clinic. The most of the postnatal mothers (65%) did not received health education regarding newborn care practice and only 35% postnatal mothers received newborn care practice education.

This study results revealed that the postnatal mother's had moderate knowledge on essential newborn care, total knowledge mean score was (9.99 ± 1.85) maximum. The majority (95%) of subjects were adequate knowledgeable on breast milk/colostrum. All of the subjects (100%) had proper knowledge about immunization. The most (98.3%) of the subjects very conscious regarding care of umbilicus (e.g.- bleeding/ any discharge/ redness/swelling around the cord). The subjects were highly aware 80.8% about thermoregulation. Similarly, several studies found that postnatal

mothers had knowledge on newborn care (Bhandari et al., 2016; Reza and Hassan, 2013 and Castalino et al., 2014). Consistently, other study found that colostrum feeding (96%), cleanliness (93.8%) and thermal protection (78.1%) of babies (Nepal and Thapa, 2017). A study found that majority of mothers had good knowledge, toward benefits of vaccination, initiation of breast milk, umbilical care (Hadush et al., 2016). Another study found that highest mean knowledge score of maintenance of body temperature was 97% and the least mean score percentage of prevention of infection 71%. The establishment of breast feeding was 83%, immunization was 90% (Upashe, 2014).

This study results revealed that postnatal mothers had moderate practice on essential newborn care, with the total practice mean was (3.20 ± 0.28) maximum. Bhandari et al. (2016) found that majority (73.3%) of the subjects were practice regarding newborn care. In contrast, other study revealed that significant number of participants conducted malpractice and lack of awareness (Hadush et al., 2016).

Postnatal mothers were older age group had statistically higher knowledge than younger age group on essential newborn care ($F = 3.617$, $p = .030$). Consistent, another study found that higher age was associated with higher scores and difference among the groups was found to be significant (Upashe, 2014). Muslim had more knowledge than other religious were mean score 10.02 ± 1.15 and 9.75 ± 2.46 . Another study found that significant association between the level of knowledge and demographic variables such as age, educational status, type of family, religion (Thenmozhi and Saraswathi, 2017).

Postnatal mothers with older age group had statistically higher practice than younger age group on essential newborn care ($F = 3.617$, $p = .030$). So, nurses should special emphasis on postnatal mothers when they will be attended at antenatal and postnatal visits.

Postnatal mothers had statistically significantly positive correlation between knowledge and practice ($r = .244$, ** $p < .007$). Inconsistently, previous study found that relationship between

knowledge and practice of the mother was not statistically significant at 0.05 level ($r = 0.276$, $p = 0.140$) (Castalino et al. 2014). Another study found that positive correlation between the level of knowledge and level of practice on essential newborn care but not statistically significant $r = 0.047$; $p = 0.273$ (Thenmozhi, & Saraswathi, 2017).

CONCLUSION

This study showed that mothers had moderate knowledge and practice on essential newborn care. Significantly positive correlation between knowledge and practice. And also, younger mothers had significantly less knowledge and practice. Nurses should educate mothers for essential newborn care, especially younger mothers during antenatal care.

RECOMMENDATION

Special training program is need to teach mother to take care prenatal and postnatal care of newborn giving emphasis on thermoregulation, breast feeding, cord care, eye care and general hygiene.

CONFLICT OF INTEREST

There is no conflict of interest.

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