Knowledge of Essential Newborn Care Among Rural Mothers

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Abstract

Background: Components of essential newborn care and neonatal resuscitation are proven interventions for reducing neonatal mortality and stillbirth.

Objective: To assess the level of knowledge of essential newborn care among the rural mothers.

Methods: This cross-sectional study was carried out during January - December 2019 in Panchagarh district of the Rangpur division in Northern Bangladesh. A total of 354 rural postnatal mothers were purposively selected for the study. Rural mothers were interviewed with a semi-structured pre-tested questionnaire.

Results: The mean age of the mothers was 22.1±3.2 years where 33.1% were illiterate and 83.3% were housewives. Majority of the mothers (76.3%) had taken antenatal care visit, 48.3% delivered their children at home, 70.9% had normal delivery and 56.5% had taken postnatal care. Only few mothers (11.0%) knew about kangaroo cares, 83.9% mothers did not know that baby should be given first bath after 24 hours of birth, 26.3% mothers knew that the umbilical stump of baby should not be covered a cloth/bandage. Majority of the mothers (57.1%) knew that one should start breast feeding immediately after birth and 62.4% mothers knew that one should start vaccination just after birth. Less than half of the mothers (41.2%) knew that one should not use any substance like Kajol to eyes. Majority of the mothers (59.3%) had inadequate knowledge regarding ENC while 40.7% had adequate knowledge. Literate mothers involved in job, family members <6 with monthly family income > 20,000 taka had significantly more adequate knowledge than others (p<0.001). Again, mothers who took ANC, delivered their babies at private hospitals, underwent cesarean section and took postnatal care had significantly more adequate knowledge than others (p<0.001).

Conclusion: Majority of the mothers had inadequate knowledge regarding essential newborn care. Health education and behavioral change communications on essential newborn care are recommended. Health workers should give special emphasis on thermal care by Kangaroo care, naval care and early breast feeding.

Keywords: Rural mothers, Newborn care, Knowledge of essential newborn care, Kangaroo mother care

Introduction

With the arrival to this world, the neonate begins highly vulnerable period in which many psychological and physiological adjustments to life-outside uterus must be made, and if they fail, it leads to mortality and morbidity.¹

Essential newborn care (ENC) is a comprehensive strategy designed to improve the health of newborns through interventions before conception, during pregnancy, at and soon after birth, and in the postnatal period.²

About 45% of under-five deaths and 60% of infant deaths are accounted for the neonatal mortality. Almost all (99%) of these neonatal deaths occur in low income and middle-income countries.³ Up to two thirds of these deaths could be prevented by practising effective measures at birth and during the first week of life. Most deaths occur in the first 24 hours of life.⁴ In Bangladesh, under-five mortality rate (U5MR) is 32 deaths per 1,000 live births and Neonatal mortality rate (NMR) is 18 deaths per 1,000 live births.⁵ There is currently a gap in knowledge of the use of ENC by place of delivery in Bangladesh.⁶ Reporting of recommended breastfeeding practices and thermal care was either low or moderate among facility deliveries in Bangladesh. The proportions of women reporting immediate breastfeeding within 1 h and immediate wiping within 10 min among facility deliveries in Bangladesh need improvement.⁷

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deliveries were 40% and 66%, respectively. The proportion of women reporting delayed bathing for at least 6 h was much higher at 98%.\textsuperscript{7} However, this measure, along with wiping within 10 min, is more lenient than the corresponding recommendations, which are wiping within 5 min and delayed bathing for at least 72 hours.\textsuperscript{8}

In settings where a majority of births take place at home without a skilled attendant and care seeking rates are low, preventive interventions including promotion of essential newborn care practices is one strategy for improving newborn health outcomes.\textsuperscript{9} If the mother is well equipped with the knowledge of ENC, it is believed that, neonatal deaths can be prevented.

The ability to identify knowledge gaps early in the neonatal period would help healthcare workers identify and implement timely and appropriate interventions that would lead to better neonatal outcomes. Therefore, the present study had been designed to assess the level of knowledge of Essential Newborn Care among rural mothers.

**Materials and Methods**

This was a cross sectional study conducted during January-December 2019 in Panchagarh district. Data were collected from several villages of Atwari and Boda Upazila of Panchagarh district of the Rangpur division in Northern Bangladesh. Sample size was calculated with the formula of $n=z^2p(1-p)/d^2$. Considering 1.96 desired confidence level, 36.1% of mothers had good knowledge and 5% desired level of precision, the calculated sample size was 354. Therefore, a total of 354 rural postnatal mothers (the first six weeks after child birth) were purposively selected for the study. Mothers having infants who were critically ill were excluded from the study. A semi-structured interviewer-administered questionnaire was used to collect data. The questionnaire had four parts. First part contained questions regarding socio-demographic status which included age, educational status, occupational status, family member, monthly family income, and religion. Second part contained questions regarding child’s particulars. Third part contained questions regarding reproductive and maternal healthcare utilisation. Fourth part contained knowledge related questions. There were total 11 questions related to knowledge. There were two questions regarding thermoregulation which had four correct answers, one question regarding naval care which had two correct answers, three questions regarding breastfeeding which had three correct answers, two questions regarding vaccination which had two correct answers, two questions regarding eye care which had five correct answers, one question regarding danger sign recognition which had ten correct answers.

The statistical analyses were performed using Statistical Package for Social Science (SPSS) version 25 statistical software. Means and standard deviations for continuous variables and frequency distributions for categorical variables were used to describe the characteristics of the total sample. Further, age, family members and monthly family income were converted into categorical variables.

Knowledge was assessed using ‘Yes/No’ questions on various aspects of newborn care. The values were coded as 1 = Correct response and 0 = Incorrect response. Knowledge was adequate for mothers who responded greater than 50% of knowledge related questions correctly whereas knowledge was inadequate for mothers who responded less than or equal to 50% of knowledge related questions.\textsuperscript{10} Associations of categorical variables were assessed using Chi square test. Here, $p<0.05$ was considered significant and all $p$-values were two sided.

At the beginning, approval was obtained from the ethical committee of NIPSOM, under the Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. Then informed written consent was obtained from participants after informing about the purpose of the study. Each respondent was interviewed separately and their privacy and confidentiality were maintained strictly.

**Results**

The mean age of rural mothers was 22.±3.2 years which ranged from 17-30 years where 53.4% of the rural mothers were from 20-24 years age group others were from up to 19 years (24.0%) and 25 to 30 years (22.6%) age group. Among the rural mothers, 33.1% were illiterate and 16.4% husbands were illiterate. Out of 354 rural mothers, 83.3% were house wives and 16.7% were service holders. Near about one fourth of the rural mothers (26.8%) had 3-4, 38.1% had 5-6 members in the family and 35.1% had >6 members in the family. Monthly family income of the rural mothers was 15906.78 ±7780.98 taka. Most (80.2%) mothers were multiparous (table I).
Table-I: Distribution of respondents by socio-demographic status and child’ particulars (n=354)

| Criteria                  | Frequency | Percentage |
|---------------------------|-----------|------------|
| **Age (in years)**        |           |            |
| Up to 19                  | 85        | 24.0       |
| 20-24                     | 189       | 53.4       |
| 25-30                     | 80        | 22.6       |
| Mean ±SD 22.14 ±3.27 years (Minimum: 17, Maximum: 30) |
| **Educational status of the respondents** | | |
| Illiterate                | 117       | 33.1       |
| Up to primary             | 67        | 18.9       |
| Up to SSC                 | 92        | 26.0       |
| HSC and above             | 78        | 22.1       |
| **Educational status of husbands** | | |
| Illiterate                | 58        | 16.4       |
| Up to primary             | 68        | 19.2       |
| Up to SSC                 | 86        | 24.3       |
| HSC and above             | 142       | 40.1       |
| **Occupational status of the respondents** | | |
| House wife                | 295       | 83.3       |
| Service holder            | 59        | 16.7       |
| **Occupational status of the husbands** | | |
| Service holder            | 111       | 31.4       |
| Businessman               | 110       | 31.1       |
| Others                    | 133       | 37.5       |
| **No. of family member**  |           |            |
| 3-4                       | 95        | 26.8       |
| 5-6                       | 135       | 38.1       |
| >6                        | 124       | 35.1       |
| **Monthly family income (in taka)** | | |
| Up to 10000               | 92        | 16.1       |
| 11000 to 20000            | 196       | 42.4       |
| > 20000                   | 66        | 25.7       |
| Mean ±SD 15906.78 ±7780.98 TK (Minimum: 4000 TK, Maximum: 40000 TK) |

Out of the 354 rural mothers, 76.3% had taken antenatal care (ANC) visit and 48.3% delivered their children at home. Mode of delivery status showed that 70.9% rural mothers had normal delivery. Postnatal care (PNC) was taken by 56.5% rural mothers (table II).

Out of the 354 mothers, 40.7% had adequate knowledge while 59.3% had inadequate knowledge regarding essential new born care (figure 1).
mothers whose husbands were illiterate, had significantly more inadequate knowledge than mothers who had literate husbands ($p<0.001$).

Housewives had significantly more inadequate knowledge than mothers who were involved in jobs ($p<0.001$). Mothers whose husbands were involved in service or in business had significantly more adequate knowledge than others ($p<0.001$). Mothers who had family members more than six had significantly more inadequate knowledge than others ($p<0.001$). Mothers who had monthly family income more than 20,000 taka had significantly more adequate knowledge than others ($p<0.001$) (table IV).

Mothers who took ANC, delivered their babies at private hospitals, underwent cesarean section and took PNC had significantly more adequate knowledge than others ($p<0.001$) (table V).

### Table III: Distribution of the respondents by knowledge regarding different components of ENC (n=354)

| Criteria                                                                 | Frequency | Percentage |
|--------------------------------------------------------------------------|-----------|------------|
| Keep baby warmth by wrapping dry cloth                                   | 306       | 86.4       |
| Baby should be nursed in same room with mother                           | 148       | 41.8       |
| Keep baby skin to skin contact immediately after delivery                | 39        | 11.0       |
| First birth after 24 hours of birth                                      | 57        | 16.1       |
| The umbilical stump of baby should not be covered by a cloth/bandage     | 93        | 26.3       |
| Umbilical stump should not be soiled                                     | 270       | 76.3       |
| One should start breast feeding immediately after birth                  | 202       | 57.1       |
| The interval of feeding the baby is every 2/3 hours per day              | 21        | 5.9        |
| The duration of exclusive breast feeding is six months                   | 314       | 88.7       |
| One should start vaccination just after birth                            | 221       | 62.4       |
| The child should be vaccinated to prevent disease                        | 333       | 94.1       |
| Reddening of eye is a sign of eye infection                              | 223       | 63.0       |
| Eye discharge is a sign of eye infection                                 | 177       | 50.0       |
| Swollen eye is a sign of eye infection                                   | 187       | 52.8       |
| Should not use any substance like Kajol to eyes                          | 146       | 41.2       |
| Should use eye ointment immediately after birth                          | 110       | 31.1       |
| Vomiting / Diarrhoea is a danger sign                                    | 325       | 91.8       |
| Yellowish discoloration of eyes, palms, and sole is a danger sign        | 274       | 77.4       |
| Abdominal distension is a danger sign                                    | 229       | 64.7       |
| Difficulty of breathing is a danger sign                                 | 143       | 40.4       |
| Unable to breast feed is a danger sign                                   | 93        | 26.3       |
| High grade fever (>37.5°C) is a danger sign                             | 86        | 24.3       |
| Abnormal jerking movement of limbs and eyes is a danger sign             | 42        | 11.9       |
| Crying excessively is a danger sign                                      | 33        | 9.3        |
| Lethargic baby is a danger sign                                          | 25        | 7.1        |
| A baby cold to touch (<35.5°C) is a danger sign                          | 15        | 4.2        |
### Table IV: Association of level of knowledge with socio-demographic variables

| Socio-demographic variables                  | Level of knowledge | p value |
|---------------------------------------------|--------------------|---------|
|                                             | Inadequate | Adequate |       |
| Educational status of the respondents       |             |          |         |
| Illiterate                                  | 96 (82.1) | 21 (17.9) | <0.001 |
| Primary                                     | 54 (80.6) | 13 (19.4) |         |
| Secondary                                   | 50 (54.3) | 42 (45.7) |         |
| Above secondary                             | 10 (12.8) | 68 (87.2) |         |
| Educational status of the husbands          |             |          |         |
| Illiterate                                  | 54 (91.3) | 4 (6.9)   | <0.001 |
| Primary                                     | 53 (77.9) | 15 (22.1) |         |
| Secondary                                   | 49 (57.0) | 37 (43.0) |         |
| Above secondary                             | 54 (38.0) | 88 (62.0) |         |
| Occupational status of the respondents      |             |          |         |
| House wives                                 | 203 (68.8) | 92 (31.2) | <0.001 |
| Others                                      | 7 (11.9)   | 79 (88.1) |         |
| Occupational status of the husbands         |             |          |         |
| Service holders                             | 36 (32.4) | 75 (67.8) | <0.001 |
| Businessmen                                 | 75 (68.2) | 35 (31.8) |         |
| Others                                      | 99 (74.4) | 34 (25.6) |         |
| No. of family members                       |             |          |         |
| 3-4                                         | 50 (52.6) | 45 (47.4) | <0.001 |
| 5-6                                         | 61 (45.2) | 74 (54.8) |         |
| >6                                          | 99 (79.8) | 25 (20.2) |         |
| Monthly family income (in taka)             |             |          |         |
| Up to 10000                                 | 72 (78.3) | 20 (21.7) | <0.001 |
| 11000-20000                                 | 127 (64.8) | 69 (35.2) |         |
| >20000                                      | 11 (16.7) | 55 (83.3) |         |

Figure within parenthesis indicates in percentage

### Table V: Association of level of knowledge and reproductive and maternal healthcare utilization (n=354)

| Reproductive and maternal healthcare utilisation | Level of knowledge | p value |
|-------------------------------------------------|--------------------|---------|
|                                                 | Inadequate | Adequate |       |
| Ante Natal Care (ANC)                           |           |          |         |
| Not taken                                       | 76 (90.5) | 8 (9.5)  | <0.001 |
| Taken                                           | 134 (49.6) | 136 (50.4) |         |
| Place of delivery                               |           |          |         |
| Home                                            | 122 (71.3) | 49 (28.7) | <0.001 |
| Government hospital                             | 66 (69.5) | 29 (30.5) |         |
| Private hospital                                | 22 (25.0) | 66 (75.0) |         |
| Mode of delivery                                |           |          |         |
| Normal delivery                                 | 176 (70.1) | 75 (29.9) | <0.001 |
| Cesarean delivery                               | 34 (33.0) | 69 (67.0) |         |
| Post natal care                                 |           |          |         |
| Not taken                                       | 112 (72.7) | 42 (27.3) | <0.001 |
| Taken                                           | 98 (49.0) | 102 (51.0) |         |
| Parity                                          |           |          |         |
| Primiparous                                     | 30 (42.9) | 40 (57.1) | 0.002   |
| Multiparous                                     | 180 (63.4) | 104 (36.6) |         |

Figure within parenthesis indicates in percentage
Discussion
Maintaining a neutral thermal environment is one of the key physiologic challenges that a newborn must face after delivery. Thermal care is central to reducing morbidity and mortality in newborns. Out of the 354 postnatal mothers, 86.4% knew that baby should be kept warm by wrapping with dry cloth. Other studies also reported that most of the mothers knew this fact. Mothers of the present study had lacking in knowledge regarding the fact that the baby should be nursed in same room with mother as 41.8% mothers knew it while 84.5% Ethiopian mothers knew this. Only 11.0% mothers knew that baby should be kept in skin to skin contact immediately after delivery to maintain thermoregulation. Others studies also reported unsatisfactory results regarding this issue. Study conducted in Bangladesh reported that only 8.1 percent knew about Kangaroo method (method of caring for a baby, holding the naked or partially dressed child against the bare skin of a parent, typically the mother, for as long as possible each day) for thermoregulation.

Newborn cord care practices may directly contribute to infections, which account for a large proportion of the 4 million annual global neonatal deaths. One fourth of the study participants (26.3%) knew that the umbilical stump of baby not be covered a cloth/ bandage. Study of Meseka et al. also reported low knowledge in this issue. Majority of the (76.3%) mothers knew that the umbilical stump should not be soiled which was consistent with other study. In this study majority of the mothers had knowledge regarding exclusive breastfeeding and when to start immunization. This result is comparable with other study.

Majority of the mothers had knowledge regarding signs of eye infection which matched other study. But mothers had knowledge gap regarding eye care as 41.2 % knew that one should not use any substance like Kajol to eyes and 31.1% had knowledge on using eye ointment immediately after birth. Study conducted in India also found low level of knowledge regarding eye care as 22.0% knew that one should not use Kajol to eyes. Most of the mothers (91.7%) knew that vomiting / diarrhea is a danger sign for child. Other mentionable danger signs were yellowish discoloration of eyes, palms, and sole, abdominal distention, difficulty in breathing, inability in feeding and fever. Consistent results were observed in other studies where mothers also mentioned vomiting / diarrhea, difficulty in breathing, inability in feeding and fever.

Out of the 354 post natal rural mothers, majority (59.3%) had inadequate knowledge regarding essential new born care. In India, majority of the mothers found to have average knowledge regarding this issue. In Pakistan, the knowledge of postnatal mothers on ENC was found poor. In Sri Lanka, majority of the mothers lack adequate knowledge. In Ethiopia, majority of the mothers also had inadequate knowledge regarding essential new born care.

Illiterate mothers had significantly more inadequate knowledge than literate mothers (p<0.001). Studies conducted in Sri Lanka and India also found significant association between knowledge on ENC and educational status of the mothers. Person who is involved in job has opportunity to communicate with many people from where they can get many information. On the other hand, housewives are confined at home and engaged themselves in house hold works. They get less opportunity to acquire knowledge. For this reason, employed mothers had significantly better knowledge than others mothers. Mothers with higher monthly family income had significantly more adequate knowledge than others. Another study also found that wealth index is associated with knowledge and practice regarding ENC. Person from high socio-economic class get more opportunity to come in contact with mass media such as TV, radio, internet. Theses media helps them to get many information. For this reason, respondent having more monthly income had better knowledge than respondent having less monthly income.

Mothers who took ANC, delivered their babies at private hospitals, underwent cesarean section and took PNC had significantly more adequate knowledge than others. During ANC and PNC visit, health extension workers or other health care providers discussed and counseled mothers regarding ENC. These enables mothers to acquire adequate knowledge and do appropriate practice.
As this study was conducted at the community level, it had the opportunity to collect data at grass root level and helps to devise mechanisms to improve the services at community level.

There were a few limitations of the study. The study was based on reported rather than observed knowledge towards new born care which could be the possible limitation of this study. In addition, due to the crosssectionalnature of the study, it could be difficult to see the causal relationship between the independent and the dependent variables. The observed associations between the independent and the dependent variables could be confounded by variables that were not measured in this study.

**Conclusion**

Majority of the mothers had inadequate knowledge regarding essential new born care while less than half had adequate knowledge. Literate mothers involved in job, family members <6 with monthly family income > 20,000 taka had significantly more adequate knowledge than others. Again, mothers who took ANC, delivered their babies at private hospitals, underwent cesarean section and took PNC had significantly more adequate knowledge than others. Health education and behavioral change communications on essential newborn care are recommended. Special emphasis should be given to improve thermal care by Kangaroo mother care for the newborn and to encourage immediate and exclusive breastfeeding.

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