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Factors Influencing Newborn Care in Bangladesh: A Statistical Study

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Abstract

The first 28 days of life is the most crucial period for a newborn baby. Newborn care refers giving care from the time after delivery through the first 28 days of life. It was essential to know the current prevalence of newborn care and to find out the associated risk factors of lacking newborn care among Bangladeshi children. The objective of this study was to determine the prevalence of properly newborn care and its associated factors in Bangladesh. In this present study, 2668 mothers who had at least one under-five child living with them. The secondary data was used for our analysis that was extracted from BDHS- 2014. Newborn care was measured by (i) instrument boiled to cut the cord, (ii) initial breastfeeding within 1hour after birth, (iii) dying newborn within 5 minutes, and (iv) bathing newborn after 24 hours. This study revealed that the prevalence of newborn care by instrument boiled to cut the cord, initial breastfeeding, and dying newborn within 5 minutes and bathing newborn after 24hours was 84.30%, 56.8%, 69% and 58% respectively. A binary logistic regression analysis provided the following main factors as the predictors of newborn care in Bangladesh: Living locations (division) (p<0.01), fathers' education (p<0.01), family member (p<0.05), clean delivery kit during delivery (p<0.01), put directly on the bare of mothers' skin (p<0.01) and receive vitamin A (p<0.01) were predictors of use boiled instrument to cut the infant cord. Living location (p<0.01), receive postnatal care (p<0.01), and receive vitamin A (p<0.01) were the predictors of initial breastfeeding. Living location (p<0.01), household wealth index (p<0.01), postnatal care (p<0.01) were the predictors of dry infant after delivery. Living location (p<0.01), type of family (p<0.01), fathers' education (p<0.05), use clean delivery kit during birth (p<0.01), postnatal care (p<0.01) were predictors of baby bath after 24hours of delivery. Hosmer and Lemeshow test showed that our selected multiple logistic model was good fitted for all cases. In this present study, we found a remarkable number of newborn in Bangladesh did not get proper care. Some modifiable factors were found as the predictors of newborn care in this country. Government should conduct some programs for making awareness among parents about the benefits of newborn care in Bangladesh.

Keywords: Newborn care, Bangladesh, Chi-square test, Multiple binary logistic regression.

AMS Classification: 62J05.

1. Introduction

Every year most of the newborns are died within the first 28 days of life. All newborns require essential newborn care (ENC) to minimize the risk of illness and the rate of mortality. So the rate of child mortality is not reduced. WHO announced a theme of World Health Day 2005 "Make Every Mother and Child Count" to make the health of women and children a higher priority (WHO, 2005). A poor number of women and newborns receive the facility of care after birth in those countries. In Bangladesh everyday approximately 8600 babies born whereas around 204 babies die within the first month of life. One of the targets of the Millennium Development Goals (MDGs) was a two-thirds reduction in infant and child mortality by 2015; it was intended to achieve by involving skill birth attendant providing the status of women through education, and enhancing women participation in the labor force. Even in Bangladesh, the newborn mortality rate is gradually increasing since seven newborns die every hour in Bangladesh (UNICEF, 2009). UNICEF, WHO, the UN Population Division, and the World Bank Group recently reported that the rate of under- five mortality in Bangladesh is 32 per 1,000 live births (UNICEF, 2009). During the newborn period babies born to mothers with no education face almost twice the risk of dying as babies born to mothers with at least a secondary education and the family's wealth and geographic location (urban/rural) also remain powerful determinants of inequities in neonatal mortality (UNICEF, 2009). Use of clean home delivery kits and a new or sterile (i.e. boiled) blade or instrument for cutting the umbilical cord have been shown to reduce the incidence of cord infection. Bangladesh Demography and Health Survey, 2014(NIPORT,2014) reported that boiled the instruments to cut the umbilical cord of newborns 83% rural areas than 85 percent urban areas (NIPORT,2014). Newborns should be dried within minutes after birth, placed on the mother's bare chest after birth, and should not be bathed in the first 24 hours in order to reduce the risk of hypothermia. Bangladesh has strengthened its emergency obstetric care (EmOC) under the Directorate General of Health Services, through national and international collaborations. In 1993, the United

Nations Population Fund (UNFPA) started supporting government initiatives to improve 64 maternal and child welfare centers for EmOC. In addition, the Obstetrical and Gynecological Society of Bangladesh with the support of UNICEF improved EmOC in 11 district hospitals on a pilot basis in 1994-1998, with a subsequent expansion to other districts. The Government of Bangladesh has achieved 8 goals under Millennium Development Goals (MDGs) among of these there is some health related goals such as child mortality, maternal health, HIV/AIDS, and malaria, and it has finished in 2015.Now the Government of Bangladesh is working toward achieving Sustainable Development Goals(SDGs) by 2030.

Prematurity, complications during childbirth and infections are mainly responsible for newborn death though these three conditions are preventable and treatable. So this study can be helpful for our Government to take necessary step for making awareness among mothers in Bangladesh about the benefits of newborn care. Our findings can help to Government of Bangladesh for achieving the goals under SDGs especially for newborn mortality and morbidity.

The aim of the study was to determine the prevalence and associated factors of properly care of newborn in Bangladesh.

2. Materials and Methods

2.1 Materials

Data source: The study design is transacted by cross-sectional dataset from the 2014 Bangladesh Demographic Health and Survey (BDHS-2014). The sampling techniques, survey design, survey instruments, measuring system and quality control have been described elsewhere (NIPORT, 2014).

Inclusion criteria: In the present study, we considered currently non-pregnant mothers in Bangladesh who gave live birth in the past three years of BDHS-2014 survey. All of our mothers were selected who did not have any serious diseases. The information of last live birth was considered if mother/s had more than one births in this period.

Sample Selection Procedure: We extracted data from the present study from BDHS-2014, and considered only Bangladeshi mothers non-pregnant married women who gave birth in the past three years of BDHS-2014 survey. The abnormal (outliers) value of data was checked by present authors using statistical techniques (Dunn & Clark, 1974), because abnormal value can able to effect the

actual results come from data (Stevens, 1996). We also found some missing values, and these values were excluded. Then after removing pregnant women, mothers who did not give birth in the past three years of BDHS-2014 survey, and also excluded incomplete data, finally the data set was reduced to 2668 for the analysis in this study (Fig.1).



Figure 1: Sample selection procedure

Outcome Variable: Outcome variable is controlled and measured by changing independent variables. Mainly outcome variable is utilized to measure the statistical analysis and to draw a conclusion from the statistical analysis. For this present, according to BDHS-2014 asked mother who conceived in the past three years and last born child was alive but delivered with unhygienic facility, the selected outcome variables are:

- (i) Did they boil the instrument which used to cut the cord of the newborn child (Yes=1, No=0)?
- (ii) Did they give initial breastfeeding within 1st hour (Yes=1, No=0)?
- (iii) Did they dry the baby after delivery within 5minutes (Yes=1, No=0)?
- (iv) Did they delay bathing their newborn child at least 24hours (Yes=1, No=0)?

The above four items was used to measure the newborn in Bangladesh.

Independent Variable: For this present study, some socio-economic, demographic, anthropometric and behavioural factors were considered as independent variables which were available in BDHS-2014; also most of the selected variables were treated on the basis of previous studies (Owor et al. 2016, Akter et al. 2016).

Statistical Analysis: To fulfil the objectives of the present study, we used the following statistical tools/models. Frequency distribution was used in this study to determine the prevalence of newborn care in Bangladesh. Chi-square test was used to find the significant association between two categories variables, and it was needed for selecting independent variables in multiple binary logistic regression models. We applied multiple binary logistic regression model to identify the effects of our selected socio-economic, demographic, anthropometric, health related and behavioural factors on newborn care in Bangladesh. SPSS (IBM, Version 23) software was utilized to analyse our data. A value of p<0.05 was considered as statistically significant in the analysis.

3. Results

Instrument boiled to cut the cord

It was found that 84.30% mothers were used boiled instrument to cut the cord of newborn (Fig.2).





The Chi-square test demonstrated that the association between living location (divisions) (p<0.01), fathers' education level (p<0.05), household members (p<0.05), clean delivery kit (p<0.01), put the newborn directly on the bare of mothers' skin (p<0.05) and providing vitamin A (p<0.05) were significant associated with boiled instrument to cut of newborn. These factors were considered as independent variables in multiple binary logistic model.

The Adjusted Odds Ratio (AOR) with 95% Confidence Interval (CI) of AOR, and p-value were used to interpret the results of logistic model. Since, it was multiple logistic regressions, there was great scope to get multicollinearity problems among independent factors, and it was checked by the magnitude value of standard error (SE). As the SE of each independent variable was positioned between the ranges 0.001 to 0.5 thus multicollinearity problem was not belonged in independent variables. After controlling the effect of other factors, the model provided that participants living in Chittagong division were more likely to use boiled instrument to cut the newborn cord by 44.4% compared with Barisal [AOR=0.556; 99% CI: 0.384-0.804; p<0.01] and 64% with Rajshahi [AOR=0.360; 99%CI: 0.284-0.522; p<0.01]. Higher educated mothers were more sensible to boil the instrument by 36.1% than primary educated mothers [AOR=0.639; 95% CI: 0.402-0.954; p<0.05]. Mothers living in middle family was

more likely to use boiled instrument 1.404 times higher than mothers living in small family [AOR=1.404; 99% CI: 1.080-1.825; p<0.05]. Infants who were not provide by clean delivery kit during delivery were more likely to get boiled instrument to cut their cord by 49.3% [AOR=0.507; 99% CI: 0.398-0.646; p<0.01]. Infants who were put directly on the bare of mothers' skin was more likely to get boiled instrument to cut the cord 1.423-fold higher than their counterpart [AOR=1.423; 99% CI: 1.093-1.852; p<0.01]. Infant who received vitamin A were more sensible to received boiled instrument by 28.3% [AOR=0.717; 99% CI: 0.570-0.902; p<0.005]. Hosmer-Lemeshow test (Chi-square =7.311, p-value= 0.504) showed that the selected binary multiple logistic model was well-fitted for the data (Table 1).

| Using boiled | В | S.E. | Wald | p-value | AOR | 95% CI for AOR | |
|--|--------------------------|------|-------|----------|--------------------------------|----------------|-------|
| instrument to cut the | | | | | | Lower | Upper |
| cord | | | | | | | |
| Division | | | 52.63 | 0.001 | | | |
| Barisal vs Chittagong ^R | -0.58 | 0.18 | 9.71 | 0.001 | 0.55 | 0.38 | 0.80 |
| Dhaka vs Chittagong ^R | -0.12 | 0.19 | 0.43 | 0.511 | 0.87 | 0.59 | 1.29 |
| Khulna vs Chittagong ^R | 0.04 | 0.24 | 0.03 | 0.844 | 1.05 | 0.64 | 1.70 |
| Rajshahi vs Chittagong ^R | -1.02 | 0.19 | 28.94 | 0.001 | 0.36 | 0.24 | 0.52 |
| Rangpur vs Chittagong ^R | 0.06 | 0.21 | 0.10 | 0.750 | 1.07 | 0.70 | 1.63 |
| Sulhet vs Chittagong ^R | -0.03 | 0.19 | 0.03 | 0.863 | 0.96 | 0.66 | 1.41 |
| Mothers education level | | | 7.95 | 0.047 | | | |
| No education vs Higher ^R | -0.23 | 0.24 | 0.91 | 0.339 | 0.79 | 0.49 | 1.27 |
| Primary vs Higher ^R | -0.44 | 0.23 | 3.57 | 0.045 | 0.63 | 0.40 | 0.95 |
| Secondary vs Higher ^R | -0.10 | 0.24 | 0.19 | 0.662 | 0.89 | 0.55 | 1.45 |
| No. of household | | | 6.48 | 0.039 | | | |
| member | | | 0.48 | 0.039 | | | |
| 5-6(Middle)vs | 0.33 | 0.13 | 6 44 | 0.011 | 1 40 | 1.08 | 1.82 |
| $\leq 4(\text{Small})^{\kappa}$ | 0.55 | 0.15 | 0.11 | 0.011 | 1.10 | 1.00 | 1.02 |
| \geq 7(Large) vs \leq 4(Small) ^R | 0.15 | 0.13 | 1.22 | 0.269 | 1.16 | 0.89 | 1.51 |
| Clean Delivery Kit Used(Yes vs No ^R) | -0.67 | 0.12 | 30.37 | 0.001 | 0.50 | 0.39 | 0.64 |
| Put directly on the bare of skin(Yes vs No ^R) | 0.35 | 0.13 | 6.88 | 0.009 | 1.42 | 1.09 | 1.85 |
| Received Vitamin A(No vs Yes ^R) | -0.33 | 0.11 | 8.05 | 0.005 | 0.71 | 0.57 | 0.90 |
| Constant | 2.34 | 0.28 | 69.95 | 0.000 | 10.41 | | |
| Goodness of Fit | Hosmer and Lemeshow test | | | Chi-squa | -square = 7.311 p-value= 0.504 | | |

Table 1: Multiple logistic regression analysis of the effect of socio-economic and demographic factors on instrument boiled to cut the cord

N.B: R=Reference case, B=Co-efficient, AOR=Adjusted Odds Ratio, CI=Confidence interval, S.E =Standard Error

Initial breastfeeding

It was observed that 56.8% mothers were more likely to feed initial breastfeeding to their child within 1st hour (Fig.3).



Figure 3 : Prevalence of newborn care by initial breastfeeding and providing initial breastfeeding within 1hour were highly significant

The chi-square test showed that living location (divisions) (p<0.01), clean delivery kit (p-value<0.01), postnatal checkup (p<0.01), providing POLIO (p<0.01) and providing vitamin A (p<0.01) were associated with providing initial breastfeeding of Bangladeshi mothers. These associated factors were taken as independent variable in logistic model.

It was noted that mothers living in Chittagong division had a 1.349,1.647,1.624 and 1.555-fold higher chance to provide initial breastfeeding to their infant than mothers living in Barisal [AOR=1.349,95% CI: 1.029-1.768; p-value=0.030], Rajshahi [AOR=1.647,95% CI: 1.226-2.212;p<0.01], Rangpur [AOR=1.624;99% CI: 1.225-2.153; p<0.01] and Sylhet [AOR=1.555; 99%CI: 1.555-1.997; p<0.01] divisions respectively. It was found that infants who received postnatal checkup were more apparently to get initial breastfeeding by 24.6% compared with who did not receive checkup [AOR=0.754; 99% CI: 0.644-0.882; p<0.01]. Infant who received vitamin A were more likely to get initial breastfeeding by 20.7% than their counterpart [AOR=0.793; 99% CI: 0.674-0.932; p<0.01].

Lemeshow test (Chi-square =8.278, p>0.05) showed that the selected binary multiple logistic model was well-fitted for the data (Table 2).

| Initial | В | S.E. | Wald | p-value | AOR | 95% CI for | |
|---|-----------------------------------|------|-------|--------------------------|------|-------------------|-------|
| breastfeeding | | | | _ | | (AOR) | |
| | | | | | | Lower | Upper |
| Division | | | 21.48 | 0.002 | | | |
| Barisal vs Chittagong ^R | 0.29 | 0.13 | 4.70 | 0.030 | 1.34 | 1.02 | 1.76 |
| Dhaka vs Chittagong ^R | 0.22 | 0.13 | 2.90 | 0.088 | 1.25 | 0.96 | 1.62 |
| Khulna vs Chittagong ^R | 0.12 | 0.16 | 0.61 | 0.433 | 1.13 | 0.82 | 1.55 |
| Rajshahi vs Chittagong ^R | 0.49 | 0.15 | 11.00 | 0.001 | 1.64 | 1.22 | 2.21 |
| Rangpur vs Chittagong ^R | 0.48 | 0.14 | 11.36 | 0.001 | 1.62 | 1.22 | 2.15 |
| Sylhet vs Chittagong ^R | 0.44 | 0.12 | 11.99 | 0.001 | 1.55 | 1.21 | 1.99 |
| Mothers' Occupation (Non- Housewife vs Housewife ^R) | 0.12 | 0.09 | 1.93 | 0.164 | 1.13 | 0.94 | 1.36 |
| Baby postnatal checkup after 2months(No vs Yes ^R) | -0.28 | 0.08 | 12.40 | 0.001 | 0.75 | 0.64 | 0.88 |
| Received POLIO (No vs Yes ^R) | 0.17 | 0.11 | 2.23 | 0.135 | 1.19 | 0.94 | 1.50 |
| Received Vitamin A (No vs Yes ^R) | -0.23 | 0.08 | 7.88 | 0.005 | 0.79 | 0.67 | 0.93 |
| Constant | 0.21 | 0.10 | 3.95 | 0.047 | 1.24 | | |
| Goodness of Fit | Hosmer and Lemeshow test | | | Chi- square =8.278 | | p-value= 0.407 | |

Table 2: Multiple logistic regression analysis of the effect of socio-economic and demographic factors on initial breastfeeding

N.B: R=Reference case, B=Co-efficient, AOR=Adjusted Odds Ratio, CI=Confidence interval, S.E =Standard error and df= Degrees of freedom.

Dried time

It was remarked from the following figure that 69% dried their newborns within 5minutes (Fig.4).





The chi-square test provided that living location (divisions) (p<0.01), household wealth index (p-value<0.05), postnatal check-up (p<0.05) and providing vitamin A (p<0.05) were significantly with dry their baby within 5 minutes. These four factors were considered as independent variables in logistic model.

The binary multiple logistic model demonstrated that respondents living in Chittagong were more likely to dry their infant 1.324 times higher than Barisal [AOR=1.324;95% CI: 1.001-1.752;p<0.05], and 34.7%, 33.1%,23.3% than Rajshahi [AOR=0.653;99% CI: 0.473-0.902;p<0.01], Rangpur [AOR=0.669;95% CI: 0.491-0.911; p<0.01], Sylhet [AOR=0.767;95% CI: 0.586-0.987;p<0.05] respectively. We observed that participants who belonged in rich family were more likely to dry their infants after delivery by 26.4% than poor family [AOR=0.736; 99% CI=0.597-0.908; p<0.05]. Also infants who were provided by postnatal check within 2months were 1.215 times higher to get dry within 5minutes after birth than who were not provided [AOR=1.215; 95% CI=1.026-1.440; p<0.05]. Hosmer-Lemeshow test (Chi-square =9.560, p-value= 0.297) demonstrated that the selected binary multiple logistic model was well-fitted for the data (Table 3).

| Time after bath | В | S.E. | Wald | р- | AOR | 95% CI for | |
|---|-------------------------------------|------|-------|--------------------------|------|-----------------------|-------|
| baby dried | | | | value | | AOR | |
| | | | | | | Lower | Upper |
| Division | | | 29.78 | 0.000 | | | |
| Barisal vs Chittagong ^R | -0.28 | 0.14 | 3.86 | 0.043 | 1.32 | 1.01 | 1.75 |
| Dhaka vs Chittagong ^R | 0.07 | 0.14 | 0.30 | 0.584 | 0.92 | 0.70 | 1.21 |
| Khulna vs Chittagong ^R | 0.31 | 0.17 | 3.11 | 0.078 | 0.73 | 0.51 | 1.03 |
| Rajshahi vs Chittagong ^R | 0.42 | 0.16 | 6.69 | 0.010 | 0.65 | 0.47 | 0.90 |
| Rangpur vs Chittagong ^R | 0.40 | 0.15 | 6.51 | 0.011 | 0.66 | 0.49 | 0.91 |
| Sylhet vs Chittagong ^R | 0.26 | 0.13 | 3.72 | 0.043 | 0.76 | 0.58 | 0.98 |
| Wealth Index | | | 8.28 | 0.016 | | | |
| Middle vs Poor ^R | 0.06 | 0.11 | 0.38 | 0.537 | 0.93 | 0.75 | 1.16 |
| Rich vs Poor ^R | 0.30 | 0.10 | 8.21 | 0.004 | 0.73 | 0.59 | 0.90 |
| Baby postnatal Checkup after 2months (No vs Yes ^R) | -0.19 | 0.08 | 5.07 | 0.024 | 1.21 | 1.02 | 1.44 |
| Received BCG (No vs Yes ^R) | -0.01 | 0.13 | 0.01 | 0.893 | 1.01 | 0.77 | 1.33 |
| Constant | 0.68 | 0.16 | 16.77 | 0.000 | 0.50 | | |
| Goodness of Fit | Hosm er and Lemesh ow test | | | Chi- square =9.560 | | p- value= 0.297 | |

Table 3: Multiple logistic regression analysis of the effect of socio-economic and demographic factors on time after bath baby dried

N.B: B=Co-efficient, AOR=Adjusted Odds Ratio, CI=Confidence interval, S.E =Standard error and df= Degrees of freedom.

Bath time after delivery

The purview of newborn care by infant first bathed timing is put up by figure-5.We could easily see from the figure that most of them (58%) delayed at least 24 hours to bath their baby after delivery.





The chi-square test demonstrated that living location (divisions) (p<0.01), fathers education level (p<0.01), mothers education level (p<0.05), clean delivery kit (p-value<0.01), postnatal checkup (p<0.05), providing BCG (p<0.05) and providing vitamin A (p<0.05) were significantly associated with newborn care by time to bath after delivery.

Multiple Binary Logistic Regressions for baby bath time

Mothers living in Chittagong had a 1.385, 1.477, 2.193, 1.399-fold higher chance to bath their infant after 24hours than Barisal[AOR=1.385; 95%CI: 1.055-1.819; p<0.05], Rajshahi [AOR=1.477; 95%CI: 1.101-1.983; p<0.01], Rangpur [AOR=2.193; 95%CI:1.626-2.956; p<0.01], Sylhet [AOR=1.399; 95%CI=1.088-1.799; p<0.01] respectively. Belonging in large family were more apparently conscious to boiled instrument 21.1% than nuclear family [AOR=0.789; 95% CI: 0.645-0.964; p<0.05]. Uneducated fathers were more likely to delayed minimum 24 hours to bath their baby than educated father by 45.6% [AOR=0.544; 99% CI: 0.385-0.769; p<0.01]. Participants who provide clean delivery kit during birth of infant had 1.204 times higher chance to bath their baby after 24 hours compared with who did not provide [AOR=1.204; 95%CI:0.996-1.455; p<0.05]. Then participants who took baby postnatal checkup were more likely to bath their baby after 24hours by 24.5% than who did not take [AOR=0.855; 95% CI:0.730-1.022;

p<0.05]. Hosmer-Lemeshow test (Chi-square =6.102, p-value=0.636) showed that the selected binary multiple logistic model was well-fitted for the data (Table 4).

| Time to bath baby | В | S.E. | Wald | p-value | AOR | 95% CI for | |
|--|-----------------------------------|------|-------|--------------------------|------|------------------------|-------------|
| | | | | | | AC Lower |)R Upper |
| Division | | | 32.44 | 0.001 | | Lower | |
| Barisal vs Chittagong ^R | -0.32 | 0.13 | 5.49 | 0.019 | 1.38 | 1.05 | 1.81 |
| Dhaka vs Chittagong ^R | -0.07 | 0.13 | 0.29 | 0.585 | 1.07 | 0.83 | 1.38 |
| Khulna vs Chittagong ^R | -0.24 | 0.16 | 2.16 | 0.142 | 1.27 | 0.92 | 1.75 |
| Rajshahi vs Chittagong ^R | -0.39 | 0.15 | 6.75 | 0.009 | 1.47 | 1.10 | 1.98 |
| Rangpur vs Chittagong ^R | -0.78 | 0.15 | 26.52 | 0.001 | 2.19 | 1.62 | 2.95 |
| Sylhet vs Chittagong ^R | -0.33 | 0.12 | 6.86 | 0.009 | 1.39 | 1.08 | 1.79 |
| No. of household member | | | 5.37 | 0.054 | | | |
| $5-6(Middle) vs \leq 4(Small)^R$ | 0.14 | 0.09 | 1.99 | 0.158 | 0.86 | 0.71 | 1.05 |
| \geq 7(Large) vs \leq 4(Small) ^R | 0.23 | 0.10 | 5.35 | 0.021 | 0.78 | 0.64 | 0.96 |
| Fathers education level | | | 12.36 | 0.006 | | | |
| No education vs Higher ^R | 0.60 | 0.17 | 11.89 | 0.001 | 0.54 | 0.38 | 0.76 |
| Primary vs Higher ^R | 0.47 | 0.17 | 7.33 | 0.007 | 0.62 | 0.44 | 0.87 |
| Secondary vs Higher ^R | 0.53 | 0.17 | 9.18 | 0.002 | 0.58 | 0.41 | 0.82 |
| Clean Delivery Kit Used (No vs Yes ^R) | -0.18 | 0.09 | 3.70 | 0.043 | 1.20 | 0.99 | 1.45 |
| Baby postnatalCheckup after2months (Yes v No ^R) | 0.15 | 0.08 | 3.74 | 0.044 | 0.85 | 0.73 | 1.00 |
| Constant | -0.71 | 0.19 | 13.01 | 0.000 | 2.03 | | |
| Goodness of Fit | Hosmer and Lemeshow test | | | Chi- square =6.102 | | p- value=0 0.636 | |

Table 4: Multiple logistic regression analysis of the effect of socio-economic and demographic factors on time to bath baby

N.B: R=Reference case, B=Co-efficient, AOR=Adjusted Odds Ratio, CI=Confidence interval, S.E =Standard error.

4. Discussion

Discussion is considered as the most important part of a research paper because it effectively helps to interpret and describe the significance of researcher's findings in light of what was already known about the research problem being investigated. This part of section always connects with introduction by way of research hypothesis which a researcher set and also with the part of literature review but it must not repeat the introduction. It also helps a reader to understand the ability or sense of a researcher about an issue. For this present study, we have selected 2668 samples on newborn care extracted BDHS-2014 dataset. And we measured the newborn care by the following four factors; (i) instrument boiled to cut the cord, (ii) initial breastfeeding, (iii) time after birth baby dried and (iv) time baby bathed after delivery. With proper care of newborn the child morbidity and mortality can be reduced. Various approaches and strategies have been implemented to improve the effectiveness of newborn care in Bangladeshi mothers. This study investigated the maternal and socio-economic factors on newborn care in Bangladesh.

Cord care is effective for an infant to lead a healthy life. Unconsciousness to cord care may cause to hazard the death of infant. To use clean kit to cut the cord, attendants should boil the instrument which she used to cut the cord. In our present study we have investigated that most of the attendants (84.30%) boiled the instrument to cut the cord of newborn infant. The prevalence of using boiled instrument to cut the cord in Bangladesh was 87.5% (Akter et al, 2016). It was found that 89.4% provided good care to their infant in rural area of Uganda (Owor et al, 2016). On the basis of public and private health care average 82.7% used clean instrument to cut the cord (Owor et al., 2016). In India 65.5% used clean instrument to cut the cord (Pati et al, 2014). We noticed that there was a variation on the percentage of used boiled instrument to cut the cord. These differences may be due to variations in sampling technique, socio cultural status of study participants, health care delivery systems, antenatal care and educational status of study participants. But if we took a look at the trend of BDHS-2014 dataset, we could observe that the rate of used boiled instrument to cut the cord has risen over the past decade (2007-62% to 2014-83%). But the rate has fallen over the past 3 years (2011-84%) though there was a trivial difference (NIPORT, 2014).

Feeding practice within 1st hour of birthplay a pivotal role in determining the optimal growth and development of infants. Poor infant feeding practices have adverse consequences for the health and nutritional status of children as well as

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their mental and physical development. It also affects mothers by physiologically suppressing the return of fertility, thereby lengthening the interval between pregnancies. In our present study we have found 56.8% mothers provided initial breastfeeding to their infant within 1st hour. In Bangladesh 49.9% mother provided initial breastfeeding to their Infant (Akter et al., 2016). If we looked over the study on abroad population then we could see that in India 21.8% (Pati et al., 2014), and in Uganda 11.5% provided exclusive breastfeeding (Owor et al., 2016), These differences may be due to variations in sampling technique, socio cultural status of study participants, health care delivery systems, antenatal care and educational status of study participants. But if we took a look at the trend of BDHS-2014 dataset, the rate of providing initial breastfeeding has risen over the past three years (2011-50% to 2014-57%) (NIPORT, 2014).

The moment of a baby birth is one of the most wondrous moments of life. After birth a baby is generally wet from the amniotic fluid and can easily become cold. So the baby needs to be dried and warmed by blankets as soon as possible within 5minutes. In our present study we have found 69% participants dried their baby within 5minutes. Then the prevalence of drying baby in another study in Bangladesh then we could see that only 28.6% dried their baby within 5minutes (Akter et al., 2016). Then the study on the abroad population, in India was 85.5% (Pati et al, 2014). Actually there are a lot of firsts when a baby is born and one of those is bath time. WHO recommended for waiting minimum 24hours to give a baby its first bath. Because delaying to bath a newborn is associated with stabilizing its blood sugar, improving temperature control, improving maternalinfant bonding and improving exclusive breastfeeding. In our present study we have found 58% mothers delayed 24hours to bath their baby after birth. Another study on Bangladesh only 28% mother bathed their baby after 72hours (Akter et al, 2016), in India only 5.4% delayed 24h to bath the newborn baby (Pati et al, 2014), in Uganda of private health center 84.4% and public health center 87.2% bathed the newborn after 6h (Owor et al., 2016).

After analyzing the population extracted from BDHS-2014, we investigated that living location, wealth index, household member, mothers' education, using clean delivery kit, put the newborn directly on the bare of mothers' skin, providing vitamin A were the main factors for lacking of knowledge to use hygienic instrument to cut the cord after delivery in Bangladesh. We found that people who lived in Chittagong were more likely to use boiled instrument to cut the cord than

Barisal and Rajshahi, then higher educated mothers were more sensible to use boiled instrument to cut the cord, belonging in middle family were more likely to use boiled instrument to cut the cord, then participant who did not provide clan delivery kit, put directly on the bare of mothers' skin and provided vitamin A were also more likely to use boiled instrument to cut the cord. The study on specific cord care in Bangladesh also found that education has the effect on cord care as well as delivery at health care centre.

We found that living locations, using clean delivery kit and providing vitamin A were the significant factors for providing initial breastfeeding. We observed that living in Chittagong division had a higher chance to provide initial breastfeeding, then infant who received postnatal check-up and vitamin A were more apparently to get initial breastfeeding within 1 hour. In fact others previous study also mentioned that education, ANC care, Delivery mood were the fact of initial breastfeeding within 1st hour of birth(Akter et al., 2016; Pati et al, 2014).

In our present study we investigated that living location, family background, postnatal check-up within 2months was the main fact of dried the baby within 5minutes. We found that respondents who lived in Chittagong division had a higher chance to dry their infant within 5 minutes than Barisal, Rajshahi, Rangpur, Sylhet respectively. Then belonging in rich family and providing postnatal check-up within 2 months were more likely to dry their infant within 5minutes. In fact others previous study also mentioned that education, ANC care, Delivery mood were the fact of dried the baby within 5minutes (Akter et al., 2016; Pati et al, 2014).

In our present study we investigated that living location, family members, fathers' education, use clean delivery kit and provide baby postnatal check-up were the main cause of bath the baby after 24 hours. We observed that participant who lived in Chittagong had a higher chance to bath their baby after 24 hours than Barisal, Rajshahi, Rangpur, Sylhet respectively. Then uneducated father, provide baby postnatal check-up were more likely to bath their baby after 24 hours. Also participants who used clean delivery kit had a higher chance to bath their baby after 24 hours. In fact others previous study also mentioned that education, ANC care, delivery mood were the fact of bathing baby after 24hours (Akter et al., 2016; Pati et al, 2014; Owor et al., 2014).

Strength of the study: This study investigated the prevalence of newborn care measuring by four factors (instrument boiled to cut the cord, initial breastfeeding,

dry baby within 5minutes, delay at least 24hours to bath baby) in Bangladesh. This study also found the associated and effective factors of newborn care. There were a few studies on newborn care in Bangladesh. Our current study provides data about maternal and socioeconomic factors on newborn care after birth to 28 days of life. This is an important strength of our study. Our analysis is accounted for study design and sampling procedure, which is more likely to yield accurate estimates. May be this is the first time we have tried to apply appropriate statistical models such as multiple logistic regression analysis for finding the risk factors of who did not receive proper newborn care in Bangladesh.

Limitation of the study: The strength of this study has been discussed in above, however there were many limitations in this study. First, the secondary data was used in this study which was extracted from BDHS-2014, and we were bounded in limitation for those data. Second, in this study we consider only the women who conceived within past three years and last born child was alive, we did not investigate why last child died after delivery. Due to BDHS-2014 this data are not available. Third, we considered some socioeconomic demographic and anthropometric which was only present in BDHS-2014 data. But some variable might be most important factor for maternal and socioeconomic factors on newborn care. We did not consider those variables because our data was secondary data. Forth, since we used secondary data for analysis this study we have found some missing value. Further investigation is, therefore, needed to examine these issues. Fifth, the study also has limitations that should be considered while interpreting the findings. Sixth, Language barriers might also be a disadvantage during data collection, although all research assistants played a role as an interpreter for the interviewer or respondents'. Nevertheless, the validity of the study's results is unlikely to be affected by those issues. It is required more study on these issues.

5. Conclusions

In our present study we investigated maternal and socioeconomic factors on newborn care in Bangladesh. We selected 2668 married women at their reproductive age (15-49 years) as sample for our study which was extracted from BDHS-2014. The rate of instrument boiled to cut the cord, initial breastfeeding within 1hour, dying newborn within 5minutes and bathing newborn after 24hours among Bangladeshi mothers were 84.30%, 56.8%, 69% and 58% respectively.

Some modifiable factors such as living location, wealth index, household member, mothers education, using clean delivery kit, put the newborn directly on the bare of mothers' skin, providing vitamin A were found as predictors of newborn care in Bangladesh. These findings can help to our health authorities for improving their policy to ensure proper newborn care in Bangladesh.

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