Newborn care and breastfeeding practices in Bangladesh.

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Abstract

Newborn care and breastfeeding practices are important to reduce neonatal morbidity and mortality for every country. Newborn care practices are related with some demographic and socioeconomic characteristics. In Bangladesh still seventy-one percent of births are delivered at home. Health facility is also increasing day by day and that factors are related with safe newborn care practices. So, it is important to investigate the correlates of safe newborn care practices among women in Bangladesh. This study used data structured from BDHS, 2011 where number of children 3290 who born last three years preceding the survey. Bivariate analysis is used to examine the differentials in safe newborn care practices by number of selected background variables. The study also used simple logistic regression model and multinomial logistic regression model to identify the important determinants of different component of safe newborn care practices. This study focuses mother's education has positive and significant impact on safe newborn care practices. There are also some factors region, wealth index, assistance at delivery, place of residence and birth order that have significant impact on safe newborn care practices.

Keywords: Newborn care, Breastfeeding, Logistic regression, Multinomial logistic regression.

Introduction

Newborn care is of immense importance for the proper development and healthy life of a baby. Newborn primary care focuses on the use of clean instruments to cut the umbilical cord, cord care, bathing delay, prevention of hypothermia and keeping the newborn warm. Early initiation of breastfeeding part of newborn care is important for both the mother and the child. There are a number of reasons to encourage early breastfeeding.

Newborn are vulnerable group and therefore need more attention and care. Bangladesh is a developing country. The newborn care practices are related with various demographic and socio-demographic factors. According to World Health Organization (WHO), poor newborn care practices are the major contributions of neonatal morbidity and mortality in developing countries. Newborn care is very important to reduce maternal mortality in Bangladesh. Bangladesh has made remarkable progress towards child heath to the past decade and is currently on target to meet Millennium Development Goal (MDG) 4 for child survival [1].

It is very important to focus on maternal and newborn health to reduce morbidity and mortality with a view to ensure a developed health care system. In Bangladesh, newborn care practices are not commonly used in proper way. Most of the people in this country do not know the recommended practices of newborns. The National Neonatal Health Strategy and Guidelines for Bangladesh recommend a set of essential newborns care practices: the use of a boiled instrument to cut the cord, applying nothing to the cord, immediate (within 5 min) drying and wrapping of the infant, delaying bathing to 72 h after birth and initiating breastfeeding within 1 h [2]. Newborn care and breastfeeding in Bangladesh is very important for every neonatal. In this study we try to identify which demographic and socioeconomic factors are related with newborn care to improve newborn health. To realize newborn care practices, Bangladesh Demographic and Health Survey (BDHS) collected information from 2007, women who gave birth in the post three years, but who did not deliver their last-born child in a health facility, were asked about newborn care practices.

Data and Variables

The BDHS 2011 data in a nationally representative survey of 18,222 women ages 15-49 and 4,343 men aged 15-54 from 17,946 household covering 600 sample units throughout Bangladesh, 207 in urban-area 393 in rural areas. The sample for the BDHS 2011 data covered the entire population residing in private dwelling units in the country. The survey used the sampling frame provided by the list of census enumeration areas (CEAs) with population and household information from the 2011 population census. The 2011 BDHS is the second DHS survey in Bangladesh to collect information on newborn care. Women who gave birth in the past three years, but who

did not deliver last-born child in a health facility, were asked about newborn care practices, including cord cutting, drying and wrapping bathing and initial breastfeeding of the newborn following birth.

Essential newborn care and initial breastfeeding are response variables of this study. Essential newborn care has three categories: all newborn care practices (safe cord cutting, drying and wrapping and delayed bathing) and initial breastfeeding has two categories (breastfeeding within 1 h and <1 h). Here safe cord cutting means women using boiled instrument after delivery for cutting umbilical cord, drying and wrapping means newborn for wrapping and drying within 0-4 min and delayed bathing means newborn who are bathed 72 h or more and bathed before 72 h. Essential newborn care and initial breastfeeding have significant effect on demographic and socioeconomic variables.

Methodology

In this study, at first bivariate analysis were performed and then multivariate analysis. Two models were considered logistic model and Multinomial logistic regression model. Since initial breastfeeding has two categories, logistic regression model was performed. Let y1 denoted the binary response recorded for its individual (i=1, 2, 3, ... , n) and $x_i=(x_{i1}, ... , x_{ip})'$ be the p dimensional vector of covariates associated with each xi. Let $\beta=(\beta_1, \beta_2, ... \beta_p)'$ be the parameter of interest. Then the binary legit model can be written as:

$$\text{Logit } [\pi_i]=\alpha+\beta' x_i$$

$$=\alpha+\beta_i x_{i1}+. . . . .+\beta_p x_{ip}$$

$$\text{Logit } [P(Y=j|X)]=\log [\frac{\pi i(x)}{\pi J(x)}]=\alpha+\beta jx$$

j=1, 2, 3, ... , J-1.

Essential newborn care has three categories so multinomial logistic regression model was performed. Suppose that Y has J categories and the probabilities of category j is given by $p (y=j| X)=\pi_j(x)$ for j=1, 2, 3, . . . , J. then the j generalized logits are defined as:

The means that generalized logits relate the probabilities πj for the categories j=1, 2, 3, ... , J-1 to reference category π_j.

For I=1, 2, 3, ... , n, Let $yi=(y_{i1}, ... , y_{ij})'$, represents the multinomial trial for subject i and $x_i=(x_{i1}, ... , x_{ip})'$ denote explanatory variables values for subject i. Let $\beta_i=(\beta_{i1}, ... , \beta_{ip})'$ denotes parameter for the jth logits. Then general multinomial logits model becomes,

$$\text{Logits } [P(Yi=jIXi)]=\log \left[\frac{\pi i(x)}{\pi J(xi)}\right]$$

$$=\alpha_j+\beta_j{}'{}_jX,$$

$$=\alpha_j+\beta_{i1}X_{i1}+. . . .+\beta_{jp}X_{ip}; \quad j=1, 2, 3, ... , J-1.$$

Results and Discussion

Bivariate analysis

Table 1 shows the prevalence of essential newborn care practice by background characteristics. To examine the strength of association of essential newborn care practices with the background variable χ^2 test also described and presented in Table 1. Table 1 displays that for essential newborn care practices only 8 percent responded practiced all newborn care practices (safe cord cutting, drying and wrapping and delayed bathing) of their newborn babies and 19 percent are practiced two newborn care practices after delivery and overall 48 percent of children are breastfed within one hour after birth.

*Table 1. Percentage of most recently born child in last three year preceding the survey of essential newborn care and initial breastfeeding by demographic and socioeconomic characteristics (Significance level: ***p<0.001, **p<0.05 and *p<0.10 TBA: Traditional Birth Attendant).*

Variables	Categories	Essential newborn care		Initial breastfeeding	
		All newborn care practices	Two newborn practices	Within first hour	p-value
Age of mothers	Age below 20	7.3	18.2	49.5	
	Age 20-30	7.9	19	48.4	0.21
	age above 30	8.3	18.5	45.5	
Mother's education	No education	8.5	13.8	48.9	
	Primary	6.8	19.2	50.6	0.00***
	Secondary incomplete	8.2	20	48.2	
	Secondary/Higher	12.3	24.7	41.3	
Wealth index	Poor	7.4	18.6	49.9	
	Middle	7	17.2	50.2	0.02**
	Rich	9.9	19.9	46.1	

Sex of child	Male	9.3	18.6	46.6	0.03**
	Female	6.7	18.8	49.1	
Region	Barisal	5.6	15.1	43.8	
	Chittagong	5.5	15.3	46.9	
	Dhaka	8.8	22.9	42.6	
	Khulna	5.7	17.2	44.4	0.00***
	Rajshahi	11.1	16.9	53.1	
	Rangpur	14.3	28.2	52.9	
	Sylhet	7.4	18.3	54	
Place of residence	Urban	10.2	17.3	46.6	0.01**
	Rural	7.4	19.1	49.1	
Birth order	1	8.7	20.6	46.4	
	02-03	7.8	17.8	51	0.00***
	3+	7.7	18	45.7	
Assistance at delivery	Health professional	14.4	20	38.9	
	TBA	8	18.4	52.4	0.00***
	Others	7	21.4	54.2	
Place of delivery	Health facility	-	-	39.2	0.00***
	At home			51.3	
Total		8	19	48	

The prevalence of essential newborn care practices increases with the increases of level of mother's education. All newborn care practices for rich class 9.9%, poor class 7.4%. For regional variation 14.3% from Rangpur, 8.8% from Dhaka, 5.5% from Chittagong, 5.6% from Barisal, 11.1% from Rajshahi, 5.7% from Khulna, and 7.4% from Sylhet with 10.2% from urban areas and 7.4% from rural areas were practices all newborn care practices after delivery. The proportion of using all newborn care practices is higher for health professional (14.4 percent) compared to traditional birth attendant (8 percent) and others (7 percent). Table 1 also displays that the proportion of first birth is higher compared to others birth order.

For initial breastfeeding Table 1 also displays that the timing of initiation of breastfeeding within one hour is 41.3% for secondary/higher, 50.6% for primary educated mother. Similarly 46.1% for rich class 50.2% for middle class. For regional 54.0% from Sylhet, 53.1% from Rajshahi and lowest 42.6% from Dhaka and for place of residence 49.1% from rural areas and 46.6% from urban areas were breastfed their children within 1 h after birth.

The proportion is higher for birth order 2-3 than other birth order of children breastfed within 1 h of birth. Place of delivery is only variables for initial breastfeeding because BDHS 2011 conducted to collect information on newborn care women who did not deliver their last born child in a health facility. The prevalence of breastfeeding within first hour of birth increases at home advantage compared to health facility. Initiation of breastfeeding and essential newborn care are significantly associated with all demographic and socioeconomic variables considered in this study expect age of mothers.

Multivariate analysis

Before performing multinomial logistic regression model, bivariate analysis (Table 1) showed significant association with demographic and socioeconomic variables. All the significant variables in the bivariate analysis are included in the model. For comparison purpose, other insignificant variables are also included in regression model. From Table 2 it can be seen that for mother's education primary, secondary incomplete and secondary/higher, the comparison will be compared to no educated mother. For practicing "all newborn care practice" compared to "no practices", secondary/higher educated mothers compared to no educated mother are more likely to practice all newborn care. Similarly "two newborn care practices" compared to "no practices" primary, secondary incomplete and secondary/higher educated mother compared to no educated mother are more likely to practice" two newborn care practices (exp (β)=1.5, exp (β)=1.6 and exp (β)=2.4,

respectively), given the other variables in the model are held constant.

*Table 2. Multinomial logistic regression model of essential newborn care practices, Significance level: ***p<0.001, **p<0.05 and *p<0.10 No practices (base outcome).*

Background characteristics	All newborn care practices		Two newborn care practices	
	Coef. (β)	exp (β)	Coef.(β)	exp(β)
Age of mothers				
Age below 20 [3]	-		-	
Age 20-30	-0.04	0.95	-0.05	1.05
age above 30	-0.1	0.9	0.02	1.02
Mother's education				
No education [4]				
Primary	-0.17*	0.84	0.38**	1.46
Secondary incomplete	0.1	1.1	0.48***	1.62
Secondary/Higher	0.55***	1.73	0.89***	2.44
Wealth index				
Poor [3]	-		-	
Middle	-0.08	0.93	-0.1	0.9
Rich	0.34**	1.41	0.20*	1.22
Sex of child				
Female [2]	-		-	
Male	0.36***	1.43	0.04	1.04
Region				
Barisal	-		-	
Chittagong	-0.62***	0.54	-0.55***	0.58
Dhaka	0.60***	1.82	0.57***	1.77
Khulna	-0.23*	0.79	-0.41**	0.66
Rajshahi	0.18	1.2	-0.36*	0.7
Rangpur	0.66**	1.93	0.77***	2.16
Sylhet	0.26	1.3	0.21*	1.23
Place of residence				
Urban [2]	-		-	
Rural	-0.34**	0.71	0.09	1.09
Birth order				
1 [6]			-	
02-03	-0.16*	0.85	-0.23**	0.79
3+	-0.17*	0.84	-0.25**	0.78
Assistance at delivery				
Health professional [6]	-		-	
Traditional birth attendant	-0.71***	0.49	-0.20*	0.82
Others	-0.81***	0.45	-0.02	0.98

"All newborn care practices" compared to no practices" rich class compared to poor class, male group compared to female group, for regional variation Dhaka and Rangpur compared to Barisal are more likely to be practices "all newborn care" given the other variables in the model are held constant. Again from model "all newborn care" practices compared to "no practices" Chittagong and Khulna compared to Barisal, rural areas compared to urban areas and traditional birth attendant compare to health professional are less likely to practice all newborn care after delivery of newborn baby.

*Table 3. Logistic regression estimates of coefficient (β) and odds ratio for initial breastfeeding of newborns within first hour of delivery, Significance level: ***p<0.001, **p<0.05 and *p<0.10.*

Variables	Categories	β	Odds ratio	p-value
Age of mothers	Age below 20 [2]	-	1	
	Age 20-30	-0.05	0.96	0.23
	age above 30	-0.22	0.8	0.08*
Mother's education	No education [7]	-	1	
	Primary	-0.02	0.98	0.26
	Secondary incomplete	-0.13	0.88	0.19
	Secondary/Higher	-0.51	0.6	0.00***
Wealth index	Poor [6]	-	1	
	Middle	0.01	1.01	0.91
	Rich	-0.15	0.86	0.05*
Sex of child	Female [2]	-	1	
	Male	0.16	1.17	0.10*
Region	Barisal [3]	-	1	
	Chittagong	0.04	1.04	0.67
	Dhaka	-0.14	0.87	0.10*
	Khulna	-0.06	0.94	0.51
	Rajshahi	0.29	1.34	0.04**
	Rangpur	0.28	1.32	0.05*
	Sylhet	0.32	1.38	0.02**
Place of residence	Urban [3]	-	1	
	Rural	0.18	1.2	0.01**
Birth order	1 [3]	-	1	
	02-03	0.18	1.2	0.02**
	3+	-0.03	0.97	0.78
Assistance at delivery	Health professional [3]	-	1	
	TBA	0.55	1.73	0.00***

	Others	0.62	1.86	0.00***
Place of delivery	Health facility [5]	-	1	
	At home	0.52	1.68	0.00***

Initial breastfeeding has two categories, so logistic regression model can be considered. From Table 3, secondary/higher educated women were 60 times decrease in the odds of breastfeeding newborns within the first hour of delivery compared to no educated mother. In case of division Dhaka is 87 times decrease compared to Barisal in the odds of breastfeeding newborns within the first hour of delivery.

Newborn from Rajshahi, Rangpur and Sylhet are 1.34, 1.32 1.38 times increase compared to Barisal, traditional birth attendant is 1.73 times compared to health professional and for place of delivery the babies who are delivered at home care 1.68 times increase compared to health facility respectively in the odds of breastfeeding newborns within first hour of delivery.

Conclusion

This paper indicates that newborn care and breastfeeding practices are related with demographic and socioeconomic characteristics. Receiving newborn care on the day of birth would reduce the risk of neonatal mortality by two-thirds among neonates who survived the first day of life, and receiving the care on the second day reduce the risk of mortality by sixty four percent [4]. Newborns lacking appropriate care are at high risk of lower educated mother and poor health and reduced productivity in children and later life. Education gives mothers more decision making power and increase the knowledge about the health facility that impact on newborn care practices. This paper also reinforces that economic status, assistance at delivery, regional variation, place of residence and place of delivery are important to improve newborn health and reduce neonatal morbidity and mortality of newborn baby after delivery in Bangladesh.

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