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A Statistical Study on Initial Breastfeeding among Mothers in Patuakhali District, Bangladesh

Ummay Ayesha, Md. Nurul Islam, Md. Ripter Hossain, Samme Amena Tasmia and Md. Golam Hossain*

Health Research Group, Department of Statistics, University of Rajshahi, Rajshahi-6205, Bangladesh

*Correspondence should be addressed to Md. Golam Hossain (hossain95@yahoo.com)

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Abstract

Provision of breast milk to the newborn infant within one hour of birth ensures that the infant receives the colostrums which is referred as early initiation of breastfeeding (EIBF). The aim of this study was to identify the risk factors associated with initial breastfeeding among mothers in Patuakhali district, Bangladesh. The data was collected from mothers in Patuakhali district who had at least one child aged 6-24 months from January to March, 2019. The prevalence of initial breastfeeding was 76.3%. Binary logistic model demonstrated that mothers who delivered by vaginal were more likely to provide initial breast milk (AOR=0.317) than mothers delivered by c-section. It was noted that mothers delivered at public hospital had more chance to give their initial breast milk (AOR=2.754) than mothers delivered at home. We found that secondary and higher educated husband's wives were more interested to provide initial breast milk (AOR=2.421) than primary or uneducated husband's wives (AOR=2.421).We also observed that secondary educated mothers were more likely to provide their initial breast milk (AOR=2.319) than primary or uneducated mothers. This study identified several socio economic factors that were associated with initial breastfeeding, and hope that this information will help the government and other policy makers to take proper initiative for promoting the awareness of initial breastfeeding in Bangladesh.

Keywords: Initial breastfeeding, Logistic regression, Patuakhali.

AMS Classification: 91B82, 92D50, 91D20.

1. Introduction

Breastfeeding is one of the most effective ways for growth and development of infants and to ensure child health and survival. World Health Organization defined breastfeeding as the normal way of providing young infants with the nutrients they for healthy growth and development. Breast milk is the best source of nutrition for newborn which is uniquely tailored to meet all the nutritional needs of human babies for the first six months of life (Al Ghwass et al., 2016). The nutrient of the breast milk possesses remarkable immunological and anti-inflammatory properties that protect both mothers and children against various infections and diseases (Al Ketbi et al., 2018; Alamirew et al., 2017; Aliyu et al., 2016). Of late, it was noted that mothers who did not breastfeed their newborn within one hour after their birth, the odds of neonatal deaths were increased by nearly threefold in comparison with those neonates who were breastfed within one hour of birth in India (Phukan et al., 2018). Early initiation of breastfeeding or timely initiation of breastfeeding is referred as providing the breast milk to the newborn infant within one hour of birth which ensures that the infant receives the colostrums (Al-Kohji et al., 2012). Colostrums, the "first milk" produced by the mothers during the first postpartum days, endowed swith protective antibodies that inevitably act as the first immunization for the infants, fortify their immune defense system and eventually reduce the mortality rate of the neonates (Alzaheb, 2017). It also contains at least ninety known components including amino acids, minerals and vitamins essential for the growth and development of the newborns (Amin et al., 2014). Early initiation of breastfeeding ensures skin-to-skin contact between the mothers and the infants which helps in preventing hypothermia of the new-born baby, establishes the bond between mothers and child, and most importantly boosts the chances of increasing exclusive breastfeeding practice (Arage & Gedamu, 2016). EIBF also shows a significant protective role to mothers by reducing the risk of postpartum hemorrhage which is a leading cause of maternal mortality. A nationwide cross-sectional study investigated that skilled delivery assistants, multiparity, and postpartum skin to skin contact between mother and newborn babies immediately after birth were associated to EIBF (Mukora-Mutseyekwa et al., 2019).

Prevalence of EIBF is the measure of children born who were put to the breast within one hour of birth (Asare et al., 2018). The effective initial breastfeeding coverage has been estimated to avert 13%-15% of deaths among children under five years of age especially in middle and low earnings settings (Asfaw et al., 2015). Some researchers reported that children who received initial breastfeeding are at lower risk of having acute respiratory and gastrointestinal infections compared to children who didn't receive initial breastfeeding (Ayed, 2014). On the other hand, late initiation of breastfeeding increases the risk of morbidity and mortality such as the incident of diarrheal diseases increase by fivefold (Boccolini et al., 2015). Infectious diseases and malnutrition due to poor breastfeeding practice are major causes of infant death in developing countries (Boccolini et al. 2015; Camp, 2001).

There are a lot of studies pursued with the early initiation of breastfeeding worldwide (Woldeamanuel, 2020; Ezeh et al., 2019; Dwinanda et al., 2018; González-Pascual1 et al., 2018; Haghighi & Taheri, 2015). In Bangladesh, the trend of practicing initial breastfeeding among the lactating mothers remained mostly unchanged for a long time (NIPORT, 2014). It is essential to identify the factors which are related to child mortality. Initial breastfeeding contains colostrums, which is highly nutritious and has antibodies that protect the newborn from disease; it can reduce the child mortality rate. Therefore, it is important to sort out the local factors that influence the early initiation of breastfeeding in order to implement strategies and interventions that could speed up the government efforts in improving early initiation of breastfeeding trend among mothers. More recently, Islam et al. (2019) investigated the prevalence and factors associated with early initiation of breastfeeding among Bangladeshi mother using nationally representative sample collected by Bangladesh Demographic and Health Survey-2014 (BDHS-2014). They extracted data from the dataset BDHS-2014, it was passed already 6 years, and some indicators related to initial breastfeeding has been changed in Bangladesh. It is essential to study on initial breastfeeding among Bangladeshi mothers in order to know the current prevalence and associated factors of this issue. Due to our limitation, we considered only Patuakhali district as our study area. Bangladesh is a small country, and most of the characteristics

among mothers are homogeneous except tribal. The findings will come from the study might be focused all over Bangladesh. The objective of this study was to investigate socio-economic and demographic factors which are related to initial breastfeeding among mothers in Patuakhali district, Bangladesh.

2. Materials and Methodology

2.1 Data Source

Patuakhali district was the target area of the present study and all mothers who had at least one child (age, 6-24 months) were considered as target population. This was a cross sectional study. Data was collected from for the present study from January to March, 2019.

2.2 Sampling

An appropriate mathematical formula was used for calculating sample size for this study; in this formula 80% power of study and 5% level of significance were considered. The formula provided that 410 mothers would be the adequate sample size for the present study. However, 475 mothers (15% extra) were considered for the study for allowing some failure cases. Multistage random sampling was utilized for this study. In the first stage, 2 Upazilas were selected randomly from 9 Upazilas in Patuakhali district. In the second stage, 2 unions were selected from each selected Upazilas randomly. In the third and final stage, 80 mothers were selected from each selected unions randomly. There is a Rakhain Palli in Patuakhali district. From here, 130 mothers were selected by randomly. All necessary information was collected from respective ward councilor's office/union parishad. Before, collecting data, we discussed about our research with selected mothers and their husbands/guardians, and written consent had been taken from each mother. Unfortunately, 75 selected mothers did not agree to provide their information, finally 400 mothers' information was analyzed in this study. A partially structured questionnaire was used to collect data from the respondents. First of all a mini data collection was done from mothers to observe whether there was any lacking or drawback in the questionnaire. After proper modification, questionnaire was finalized and made ready for data collection. This questionnaire was pre-tested by some experts.

2.3 Measurement of variables

2.3.1 Outcome variable

Early initiation of breastfeeding (EIBF) was considered as the outcome variable in this study. It was measured by a question; did you provide your breast milk to your infant within one hour after delivered? Initiation of breastfeeding was expressed as a dichotomous variable with category1 for initiation of breastfeeding within one hour (early initiation) and category 0 for initiation of breastfeeding after one hour (late initiation).

2.3.2 Independent Variables

Independent variables were considered in this study which was selected from the previous studies (Gartner et al., 2005; Thapa, 2005; Victora et al., 2016). All selected variables were: socio-economic (such as, income, occupation, education, religion, family types, antenatal care, postnatal care, residence, etc), demographic (children age, children sex, parents age, mother's age at birth, birth interval (months), child birth order, total number of children ever born, total household members, children birth weight, gestational age),anthropometric (mothers' height, weight, body mass index, children height, weight) were considered as independent variables in this study.

2.3.3 Statistical Analysis

Frequency distribution (percentage) was used to determine the prevalence of EIBF among mothers in Patuakhali district, Bangladesh. Chi-square tests were conducted to assess the association between independent variables and the EIBF. Binary logistic regression analysis was used to detect the impact of socio-economic, demographic and behavioral factors on EIBF among mothers in Patuakhali district. A value of $p<0.05$ was considered as statistically significant in the analysis. All statistical analyses were performed using SPSS (IBM Version 21).

3. Results

A total number of 400 samples were selected from mothers having at least one child (age, 6-24 months) in Patuakhali district, Bangladesh to determine the prevalence and associated factors of initial breastfeeding. We found that 76.30%

mothers provided their breast milk to their newborns within one hour after delivery.

Out of the total sample population 400 mothers, 31.5% mothers delivered their child by c-section and others by vaginal (68.5%). More than half of the mothers (65.5%) delivered their child at home where 10.5 % and 24% delivered at public and private hospital respectively. The higher number of mother's (75%) monthly income was below15000 Taka where 6.5% above 25000 Taka and 18.2% income level was between 15000 Taka and 25000 Taka. By education, 57.8% were primary or uneducated, 26.2% got secondary education and the remaining 16% had higher education. On the other hand, 53.5% husbands were primary or uneducated, 28% were secondary educated and rest of all 18.5% got higher education. Out of samples, 65.8% mother's age at first birth was below 20 years and others 34.2% age were equal or above 20 years. Most of the mothers 58.5% were healthy (normal weight) where 32% mothers were under nourished and the remaining 8.5% were over nourished (Table 1).

Chi-square test provided that mode of delivery, place of delivery, respondents' and their husbands' education level, monthly family incomes were significantly associated factors of initial breastfeeding among Patuakhali mothers. These factors were considered as independent variables in binary logistic regression models.

Table 2 shows the effect of socio-economic and demographic factors on initial breastfeeding among mothers in Patuakhali district, Bangladesh. For this purpose we used multiple binary logistic regression, the standard error (SE) was utilized for checking the multicollinearity problems among the independent variables, SE showed that there was no evidence of this problems. The results of this model were interpreted using p-value, adjusted odds ratio (AOR) with 95% confidence interval (CI) for AOR. After adjusting the effect of other variables, logistic model demonstrated that mothers who delivered by vaginal were more likely to provide initial breast milk than mothers delivered by c-section[AOR=0.317,95% CI:0.197-0.511; $p<0.01$].It was noted that mothers delivered at public hospital had more chance to give their initial breast milk than mothers delivered at home [AOR=2.754,95% CI:1.629-4.657;$p<0.01$].We found that secondary and higher educated husband's wives were more interested to provide initial breast milk than primary or uneducated husband's wives[AOR=2.421,95% CI:1.360-

4.309;p<0.01, AOR=2.232,95% CI:1.163-4.282;p<0.01].We also observed that secondary educated mothers were more likely to provide their initial breast milk than primary or uneducated mothers.[AOR=2.319,95% CI:1.265-4.249;p<0.01] (Table 2). Our selected model provided that mode of delivery, place of delivery, respondent and husbands' education level were the most important predictors of initial breastfeeding among mothers in Patuakhali district, Bangladesh.

4. Discussion

EIBF practices have been demonstrated to affect mother and infant's health, development, growth and survival. It was noted that the prevalence of initial breastfeeding among mothers in Patuakhali district, Bangladesh was 76.30% which was higher than 51.4% published in the BDHS survey in 2014 and 47% reported in the survey conducted in 2011 (NIPORT, 2014). Our nationally representative data showed that the practices to provide initial breast milk to new born increased with increasing the literacy rate with awareness on the benefit of initial breastfeeding especially among rural women in Bangladesh (NIPORT, 2014). This was also higher than that for the neighboring country of Nepal (66.4%), south Asian countries like India (21%), Pakistan (8.5%) and other developing countries like Nigeria (34.7%), Iran (32.2%) an South Sudan(48%) (Phukan et al., 2018; Hanif, 2011; Berde & Yalcin, 2013; Zarshenas et al., 2018; Bruno Tongun et al., 2018). This rate was close to the developing countries Ethiopia which is 83.7% (Beyene et al., 2017).

Mode of delivery and place of delivery was the vital indicator for EIBF among Patuakhali mothers. Mothers delivered by vaginal were more likely to provide initial breast milk than mothers delivered by c-section. This finding is in agreement with the previous studies reported in Alberta, 13 Economic Community of West African States (ECOWAS), Western Nepal and in Bangladesh (Hobbs et al., 2016; Ezeh et al., 2019; Khanal et al., 2015; Islam et al., 2019). There are some reasons for lower breastfeeding rate among caesarean births such as the effect of anesthesia, caesarean procedure, maternal tiredness, reduced maternal alertness and inadequate maternal skills (Patel et al.,2013). Even in case of regional or spinal anesthesia, most operating theatres do not have facilities for early breastfeeding. Mothers who delivered at public hospital were more likely to provide their initial breast milk to their infant than mothers delivered at home

which went against the BDHS survey conducted in 2014 showing no significant association between EIBF and place of delivery. But this finding is consistent with previous studies conducted in Economic Community of West African States (ECOWAS), Madhya Pradesh, India and in Ethiopia (Ezeh et al., 2019;Sharma et al.,2016; Alebel et al., 2017 ;Woldeamanuel, 2020).This is because of trained breastfeeding and delivery assistants are immediately present to provide postpartum counseling and inform the mother on appropriate feeding practices and hence support them for feeding colostrums to her baby.(Barry and sylvia,2013 and Duong et al.,2004). We found that secondary educated mothers had more chance to give their initial breast milk to their infants than primary or uneducated mothers. This result is comparable with studies from Madhya Pradesh, India, Goba Woreda, South East Ethiopia and in india (Sharma et al.,2016; Setegn et al., 2011; Sandor,M.and Dalal, K. 2013 ; Patel et al., 2013).Similarly we observed that secondary or higher educated husband's wives were more interested to give their initial breast milk to their infants than primary or uneducated husband's wives. To the best of our knowledge, there were no comparable studies available that document the association between husband's education and EIBF; consequently, these findings cannot be compared to other studies.

5. Conclusion and Recommendations

This study showed that more than 70% mothers in Patuakhali district practice EIBF. Mothers delivered by C-scetion and at home were more likely to delay initiation of breastfeeding beyond one hour after birth to their infant. It was also noted that secondary and higher educated mothers and husbands' wives had more chance to give their initial breast milk to their infants. Therefore, medical practitioner and health care personnel should provide postnatal counseling to increase timely initiation of breastfeeding. Providing health education for mothers during and after pregnancy are vitally important to encourage mothers to deliver at health centers and by vaginal with a special focus on uneducated and primary educated mothers.

Our present study can help to health authorities in Bangladesh for making awareness among mothers about the benefits of breastfeeding in time such as (i) breastfeeding reduces the risk of non-communicable diseases and decreases the prevalence of overweight and/or obesity later in life. (ii) Nearly half of all diarrhea

episodes and one-third of respiratory infections would be prevented with improved breastfeeding practices in low-and middle-income countries. (iii) Breastfeeding also brings benefits to women, including prevention of breast and ovarian cancer and diabetes. (iv) Longer breastfeeding durations are associated with higher scores on intelligence tests—that translates into stronger economic success through improved academic performance, higher earning potential and productivity.

6. Limitations

There are several limitations of our present project. Firstly, in this study we considered only Patuakhali district as our study area which is very small part of Bangladesh. Secondly, we used quantitative study which can determine only risk factors but cannot do research in-depth. For complete study, mixed research (qualitative and quantitative) is all-important. Thirdly, we selected some socio-economic, demographic and anthropometric factors as independent variables but other important factors were not considered in this study. On the basis on our limitation, we may proclaim further many more research will be required on breastfeeding among Bangladeshi mothers.

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Table 1: Frequency distribution of mothers by their different characteristics

Variable	**N (%)**	**Variable**	**N (%)**
Mode of delivery		Husbands' education level	
Caesarean	126(31.5)	Uneducated or primary	214(53.5)
Vaginal	274(68.5)	Secondary	112(28)
Place of delivery		Higher	74(18.5)
Home	262(65.5)	Age at first birth (year)	
Public	42(10.5)	<20yrs	263(65.8)
Private	96(24)	≥20yrs	137(34.2)
Monthly family income (Taka)		Mothers' nutritional status	
<15000	300(75)	Under nutrition	128(32)
15000-25000	73(18.2)	Healthy (normal weight)	234(58.5)
>25000	26(6.5)	Over nutrition	34(8.5)
Respondents' education level			
Uneducated or primary	231(57.8)		
Secondary	105(26.2)		
Higher	64(16)		

Table 2: Effect of socio-economic and demographic factors on initial breastfeeding among mothers in Patuakhali district, Bangladesh

Variable with groups	B	SE	Wald	p-value	AOR	95% CI for AOR	
						Lower	Upper
Mode of delivery (Caesarean Vs Vaginal^R)	-1.149	0.244	22.170	0.000	0.317	0.197	0.511
Place of delivery			17.299	0.000			
Public Hospital Vs Home^R	1.013	0.268	14.291	0.000	2.754	1.629	4.657
Private Hospital Vs Home^R	0.032	0.386	0.007	0.933	1.033	0.485	2.199
Monthly family income (Taka)			13.620	0.001			
15000-25000 Vs ≤15000^R	0.618	0.449	1.889	0.169	1.854	0.769	4.474
≥25000 Vs ≤15000^R	-0.394	0.488	0.653	0.419	0.674	0.259	1.754
Husbands' education level			9.674	0.008			
Secondary Vs Primary or Uneducated^R	0.884	0.294	9.029	0.003	2.421	1.360	4.309
Higher Vs Primary or Uneducated^R	0.803	0.332	5.834	0.016	2.232	1.163	4.282
Respondents'education level			7.599	0.022			
Secondary Vs Primary or Uneducated^R	0.841	0.309	7.409	0.006	2.319	1.265	4.249
Higher Vs Primary or Uneducated^R	0.483	0.343	1.980	0.159	1.621	0.827	3.175
Respondents' age at first birth (year) (>20 Vs ≥20^R)	0.444	0.241	3.387	0.066	1.560	0.972	2.503
Respondents' nutritional status			1.403	0.496			
Healthy Vs under nutrition^R	-0.201	0.450	0.200	0.655	0.818	0.338	1.976
Over nutrition Vs under nutrition^R	0.099	0.434	0.052	0.820	1.104	0.471	2.586
Constant	1.179	0.404	8.499	0.004	3.250		