

Associated factors of early initiation of breastfeeding among mothers in Rajshahi district, Bangladesh: A cross-sectional study

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Abstract

Background: Early initiation of breastfeeding (EIBF) provides the first immunization for the newborns, fortify their immune defense system and eventually reduce the mortality rate. This study aimed to identify the factors associated with EIBF among mothers in Rajshahi district, Bangladesh.

Methods: A total number of 421 mothers living in Rajshahi district who had at least one child aged 6-24 months were considered as sample. Mothers were selected using multistage random sampling. This study was conducted from January to March, 2019. The EIBF was measured by a principal question, "Did you provide your breast milk to your newborn within one hour after delivery?" Frequency distribution, Chi-square test and multivariable binary logistic regression model were utilized in this study for getting prevalence and associated factors of EIBF respectively.

Results: This study revealed that the prevalence of EIBF among mothers in Rajshahi district was 88.4%. Multivariable logistic model provided eight factors associated with EIBF: (i) husbands' education level, (ii) husbands' occupation, (iii) family monthly income, (iv) mothers' age, (v) mothers' BMI, (vi) place of delivery, (vii) planned pregnancy and (viii) mothers taking advice regarding the benefit of breastfeeding during their pregnancy.

Conclusions: This study identified several modifiable factors associated with EIBF. The customs, culture and other characteristics are almost same across the country. These factors could be considered to increase the rate of EIBF among mothers in Bangladesh.

Background

Breastfeeding is considered one of the most important factors for the growth and development of newborns [1]. Breast milk is the best source of nutrition for the newborn which is uniquely tailored to meet all the nutritional needs of human babies for the first six months of life [1]. Early initiation of breastfeeding or timely initiation of breastfeeding is referred to as providing the breast milk to the newborn within one hour of birth which ensures that they receives the colostrum [2]. Colostrum, the "first milk" produced by the mothers during the first postpartum days, endowed with protective antibodies that inevitably work as the first immunization for the newborns. It contains at least ninety known components including amino acids, minerals and vitamins essential for the growth and development of the newborns [3]. Early initiation of breastfeeding ensures skin-to-skin contact between the mothers and the newborns which helps in preventing hypothermia of the new-born baby, establishes the bond between mothers and children, and most importantly boosts the chances of increasing exclusive breastfeeding practice [2].

EIBF also shows a significant protective role to mothers by reducing the risk of postpartum hemorrhage which is a leading cause of maternal mortality in low income countries [4]. Child mortality is comparatively higher in those low and middle income countries where the prevalence of EIBF is low [5]. Recently, South Asia has made more progress in improving the rate of EIBF than any other region of the world. However, still more than 20 million newborns are not being breastfed within the first hour of

birth [6]. Among South Asian countries, Pakistan (18%) was the lowest EIBF [7] followed by Afghanistan (41%), Nepal (41.8%) [8] and India (42%) [9]. According to BDHS-2014, prevalence of EIBF was 51% in Bangladesh. The prevalence of EIBF was 90%, 78% and 64% in Sri Lanka, Bhutan and Maldives respectively [6]. There were some socio-economic, health-related and individual barriers to EIBF in South Asian countries found by Sharma and Byrne. They also found the limited evidence on the health care system in relation to EIBF [10].

In Bangladesh, the trend of practicing EIBF among the lactating mothers has been increasing during the last one decade [11]. It is important to sort out the factors that associated with EIBF to implement strategies and interventions that could speed up the government efforts in improving EIBF trends among mothers in Bangladesh. More recently, Islam et al. [12] investigated the prevalence and factors associated with early initiation of breastfeeding among Bangladeshi mothers using a nationally representative samples collected by BDHS-2014. BDHS collected data in 2014, 6 years have already passed, and some indicators related to EIBF could have been changed in Bangladesh. They found the prevalence of EIBF among mothers in Bangladesh was 51%, and they also reported that 89% of newborns are breastfed within one day after delivery. The household wealth quintile, medical facilities and women education level have been increasing in Bangladesh during the last two decades; these factors are directly or indirectly related to EIBF [11]. However, BDHS-2014 data set did not consider two factors; getting pregnant with planning and mothers taking advice regarding the benefit of breastfeeding during their pregnancy. In this study, these two factors were considered in order to find its association with EIBF. Bangladesh Government is trying to achieve 17 goals under SDGs by 2030. One of the important goals of SDGs is to reduce maternal and under-five child mortality, and EIBF is one of the important factors for reducing maternal and under-five child mortality. It is necessary to determine the current prevalence and associated factors of EIBF among Bangladeshi mothers. Rajshahi district is a part of the northern region of Bangladesh. BDHS-2014 did not find a significantly variation in the rate of EIBF among geographical locations (divisions) in Bangladesh [11]. To the best of our knowledge, no research has been conducted in Rajshahi district regarding this issue. The present study may help to identify the risk populations for program/policy planning.

The aim of this study was to determine the prevalence and associated factors of early initiation of breastfeeding among mothers in Rajshahi district, Bangladesh.

Methods

Study area and population: This was a cross-sectional study, and Rajshahi district was the target area of the present study. It is one of the oldest districts of Bangladesh that belongs to the Northern region of the country under Rajshahi division. The area of Rajshahi district is 2407.01 sq km [13]. A total number of population living in Rajshahi district is 22, 868,74 including 11,844,48 males and 11,024,26 females [14]. All mothers who had at least one child (age, 6-24 months) were considered as the study population.

Sample size determination: The required sample size for this study was estimated using the formula given by Cochran [15]:

$$n = \frac{z^2 p(1-p)}{d^2},$$

where n = the required sample size, p is the proportion of prevalence of early initiation of breastfeeding (here, $p = 0.514$) and $z = 1.96$ at 95% confidence interval, and d is the margin of error, we considered $d = 0.05$. The prevalence of initiation of breastfeeding (p -value) was taken from a previous publication [12]. This formula provided that 384 sample was adequate for our present study. However, 440 samples (15% extra) were considered for this study for allowing some failure cases.

Sampling: Multistage random sampling was utilized for this study. In the first stage, 2 Upazilas were selected randomly from 9 Upazilas in Rajshahi district. In the second stage, 2 unions were selected from each selected Upazila randomly. Similarly, 1 ward was selected randomly from 30 wards of Rajshahi City Corporation. In the third and final stage, 80 mothers were selected from each selected union and 120 mothers were selected from the selected ward randomly. In each stage, a simple random sampling method (by lottery) was used.

Data collection procedures: A self-administered questionnaire was used for collecting information from selected mothers during the period January to March, 2019. However, data collectors filled up the questionnaire on behalf of illiterate women. The questionnaire was draft and sent to five experts in health sciences for taking their opinions/suggestions to improve it. It was revised according to experts' comments/suggestions. The original questionnaire was in English, and the revised questionnaire was translated into Bangla (mother tongue of Bangladesh), and the Bangla questionnaire was checked by present authors. Before, collecting data, we discussed with selected mothers and their husbands/guardians about our present study. Unfortunately, 19 selected mothers did not agree to provide their information. Finally, 421 mothers provided their information which was analyzed in this study. All necessary information of our respondents was collected from the respective ward councilor's office/union parishad. A pilot survey had been done for observing whether there was any lacking or drawback in the questionnaire. We did not get lacking or drawbacks.

Measurement of anthropometric data: Digital scales and a portable stadiometer was used to measure weight and height of our samples respectively. Measurement of individuals was taken without shoes and wearing light clothes using the techniques of Martin and Saller [16]. Height and weight were measured to the nearest 1 cm and 0.1 kg, respectively, and body mass index (BMI) was calculated using the formula, $BMI = \text{weight (kg)} / \{\text{height (m)}\}^2$. BMI was classified into three classes: (i) underweight ($18.5 \text{ kg/m}^2 < BMI$), (ii) normal weight ($18.5 \leq BMI < 25 \text{ kg/m}^2$) and (iii) overweight ($BMI \geq 25 \text{ kg/m}^2$) [12]. In addition, mothers'

age was calculated by the difference between the date of interview and their date of birth, and we considered the nearest higher integer.

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 newborn within one hour after delivered? EIBF was expressed as a dichotomous variable with category 1 for initiation of breastfeeding within one hour (early initiation) and category 0 for initiation of breastfeeding after one hour (late initiation).

Independent variables: Some socio-economic, demographic and anthropometric factors were considered as independent variables for this study on the basis of previous studies [12, 17-18].

Statistical analysis: Frequency distribution (percentage) was used to determine the prevalence of EIBF among mothers living in Rajshahi district, Bangladesh. Chi-square test was conducted to assess the association between independent variables and the EIBF, the significant associated factors were considered as independent variable in multivariable binary logistic regression model. Binary multivariable logistic regression analysis was used to find the effect of socio-economic, demographic, anthropometric and behavioral factors on EIBF among mothers in Rajshahi district.

The underlying multivariable binary logistic regression can be described as follows:

$$\text{Log}[P/1-P] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_K X_K$$

where P = Probability of early initiation of breastfeeding (coded as 1)

1-P = Probability of late initiation of breastfeeding (coded as 0)

X_i s are respective independent variables ($i=1,2,\dots,k$), and β_i s are the regression coefficients. We used the magnitude of the standard error (SE) for detecting the multicollinearity problem among the independent variables, if the magnitude of the SE lies between 0.001 and 0.5, it was judged that there was no evidence of multicollinearity [19]. A value of $p < 0.05$ was considered statistically significant in the analysis. All statistical analyses were performed using SPSS (IBM Version 21).

Results

A total number of 421 samples were selected from mothers having at least one child (age, 6-24 months) in Rajshahi district, Bangladesh to determine the prevalence and associated factors of EIBF.

We found that 88.40% of mothers provided their breast milk to their newborns within one hour after delivery (Table 1). Out of the total 421 samples, 7.6% of mothers were uneducated while 11.2% were higher educated and 7.8% of their husbands was uneducated and 14.7% of got higher education. Most of the mothers (98.57%) were housewife. More than 68% of mothers were living in low-income families (below 15000 Taka) and living in rural areas (71%). Around 50% mothers' age at first birth was below 20

years. More than 67% were normal weight while 25.7% mothers were underweight. Among the respondent, 42% of mothers delivered their child by C-section. Near half of the mothers (47.5%) delivered their child in public hospitals. More the 83% mothers planned for pregnancy. About 95% of mothers took advice during pregnancy regarding the benefit of breastfeeding from health providers and about 75% mother received postnatal care services. (Table 1). Chi-square test provided that mothers' and their husbands' education level, mothers' and their husbands' occupation, monthly family income, type of residence, mothers' age, mothers' BMI, respondents' age at first birth, mode of delivery, place of delivery, planned pregnancy and taking advice regarding the benefit of breastfeeding during pregnancy were significantly associated factors of initial breastfeeding among mothers in Rajshahi district (Table 1). These factors were considered as independent variables in multivariable binary logistic regression models.

Table 2 shows the effect of socio-economic and demographic factors on EIBF among mothers in Rajshahi district, Bangladesh. Results of multivariable binary logistic model were interpreted using p-value, adjusted odds ratio (AOR) with 95% confidence interval (CI) for AOR. Standard error (SE) showed that there was no evidence of multicollinearity problem among independent variables except the type of residence due to all rural mothers provided EIFB. Following adjustment for other variables, the logistic model demonstrated that educated mother's was likely to decrease the odds of EIBF by 76% (AOR=0.076, 95% CI: 0.009 -0.613; p<0.05) compared to uneducated mother's. Similarly, educated husbands' wives was likely to decrease the odds of EIBF by 48% (AOR=0.048, 95% CI: 0.006 -0.376; p<0.05) compared to uneducated husbands' wives. Farmers' wives provided their initial breast milk to their newborns had 13.568 times (AOR=13.568, 95% CI: 5.237-35.154; p<0.01) higher than others professional husbands' wives. The odds of EIBF was decreased by 90.3% and 87.0% among mothers who were living in middle-income families (AOR=0.097, 95% CI: 0.030 -0.315; p<0.01) and rich families (AOR=0.130, 95% CI: 0.039-0.437; p<0.01) compared to mothers living in poor income families respectively. It was also found that the odds of EIBF was 7.133, 3.069 and 7.385 fold higher among mothers aged 20-24 years (AOR=7.133, 95% CI: 2.273-22.381; p<0.01), 25-29 years [AOR=3.069, 95% CI: 1.047-8.997; p<0.05), 30-34 years (AOR=7.385, 95% CI: 1.623-33.607; p<0.01) than mothers aged 35 years and above. The BMI of mothers was an important predictor of initial breastfeeding, and it was observed that the odds of EIBF was diminished by 89.2% and 92.8% among normal weight (AOR=0.108, 95% CI: 0.013-0.867; p<0.05) and overweight mothers (AOR=0.072, 95% CI: 0.008-0.692; p<0.05) compared to underweight mothers. It was found that caesarean delivery and delivery in private hospitals were associated with a 31% and 90 % decreased in the odds of EIBF respectively (AOR=0.090, 95% CI: 0.010-0.794; p<0.05). Planed pregnancy had a-5.941 fold higher to provide EIBF (AOR=5.941, 95% CI: 2.237-15.780; p<0.01) than those who did not do it. Mothers who took advice regarding the benefit of breastfeeding during their pregnancy had 7.502 times (AOR=7.502, 95% CI: 2.877-19.559; p<0.01) higher to provide EIBF than mothers who did not get it. Hosmer and Lemeshow test demonstrated that our selected model was good fitted, and the model can able to explain the variation of outcome variable by 57.50% (Nagelkerke R²- value =0.575) (Table 2).

Discussion

In the present study, we tried to determine the prevalence of EIBF and investigate the associated factors of EIBF among mothers living in Rajshahi district, Bangladesh. It was noted that the prevalence of EIBF among mothers was 88.40%. The national survey of Bangladesh (BDHS-2014) showed that 51.0% of newborns were breastfed within one hour after birth (EIBF) and 89% within one day after delivery, and 55.0% of newborns under the age of 6 months were exclusively breastfed [11]. However, more recently published key indicators of BDHS 2017-2018 showed that 65% of infants under the age of 6 months were exclusively breastfed (EB) in 2017, a level markedly higher than that found in BDHS-2014 [20]. The prevalence of EIBF is not available in the report of BDHS 2017-2018 [20]. BDHS-2014 found that 98% of children born during the two years of their survey were breastfed at some point in their life in Bangladesh where breastfeeding was almost universal [11]. The rate of breastfeeding for every stage has been increasing with increasing medical facilities in Bangladesh. Mothers can easily get advice about the benefit of breastfeeding from health providers and family planning workers. Also, the practice of providing EIBF was increasing with increasing literacy rate among women which enhanced the awareness regarding the benefit of EIBF especially among rural women in Bangladesh [11]. BDHS-2014 conducted their survey about 6 years ago; some indicators such as mother education level, medical facilities, household wealth quintile have continued to increase during the last two decades in Bangladesh which is ultimately helping to increase the rate of EIBF.

The prevalence of EIBF among mothers in Rajshahi district was also higher than nationally representative sample in Bangladesh [11] because in this study it was found that most of the mothers in Rajshahi district were housewives and housewives spent more time for their child, and some South Asian countries like India (42.0 %) [9], Pakistan (18.0 %) [7], Nepal (41.8) [8], Afghanistan (41.0%) [7], and others developing countries like Nigeria (34.7%) [21], Iran (32.2%) [22] and South Sudan (48%) [23]. The prevalence of EIBF in Ethiopia [24] was close (83.7%) to our finding.

Mothers who delivered at home were more likely to provide EIBF to their newborn than mothers delivered at private hospitals. A Bangladeshi study found that mothers undergoing vaginal delivery were more likely to provide EIBF to their newborns than mothers having cesarean delivery [12]. The present finding coincided with a Chinese study [25]. It was noted that mothers living in poor-income families were more interested to provide initial breast milk to their newborns than those of middle- and high-income families, and the rate of EIBF was decreasing with increasing family income. The same results had been found in another Bangladeshi study that used BDHS-2014 data [12].

This study found that uneducated mother had more chance to give initial breast milk to their newborns than higher educated mothers. Same results had been found in another Bangladeshi study that used BDHS-2014 data [12]. Similarly, we found that uneducated husbands' wives were more likely to provide their breast milk to their newborns than higher educated husbands' wives. Sharma et al. (2016) disagreed with our present findings. They reported that husbands who had some schooling their wives were more likely to provide their breast milk to their newborns than no schooling husband's wives [26]. This discrepancy may happen due to the category of husband's educational level.

The BMI of mothers was an important predictor of initial breastfeeding, and it was observed that underweight mothers were more likely to provide their breast milk to their newborns than normal weight and overweight mothers. A similar observation was also mentioned by several studies [25, 27-30]. This study found that mothers aged 20-34 years were more likely to provide EIBF to their children than mothers aged 35 years and above. In 2015, almost similar result was found from a study in Nepal. They reported that infants who were born to mothers of older age *i.e.*, 30–45 years were less likely to be breastfed within one hour of birth [31]. Again, in this study, it was found that husband's occupation is an important factor for EIBF, *i.e.* farmers' wives had a higher chance to give EIBF to their children than other professional husbands' wives. Recently, Hassan et al. (2018) found that employed husband's wives had a higher chance to give EIBF to their children than unemployed husband's wives [32]. However, our results disagreed with a study in Sudan [33].

In this study, we have found that, husbands' education level, family income, mothers' BMI and place of delivery are important factors for providing initial breast milk to newborn among mothers in Rajshahi district. These four factors are very much related to each other in developing countries like Bangladesh. Most of the home delivered mothers are living in poor families. In Bangladesh, the wife is dominated by her husband, and most of the females are dependent on their husbands' income, and income is dependent on education level. Usually, uneducated or primary educated husbands are farmers or day labors living in rural or slum areas, their income is not sufficient to maintain their family. Therefore, they cannot provide sufficient food to their family members, consequently, they become underweight. Mothers living in poor families cannot go to hospitals/clinics for delivery, and most of them deliver at home in the presence their close relatives without proper nursing. Traditional customs and culture in the society of Bangladesh are that, after delivery, the mother immediately provides her breast milk to the newborn, especially for mothers having vaginal delivery. It is also mentionable that all home deliveries are vaginal. On the other hand, mothers living in middle or rich families usually deliver at hospitals/clinics under proper nursing. But now a days most of the hospital/clinic deliveries are caesarian, and after the delivery, mothers stay at the operation theatre for more than one hour, and cannot provide breast milk to them in time (within one hour of delivery). Normal weight and overweight mothers usually live in rich families, and most of them underwent caesarean section. It might create a higher risk of cephalo-pelvic disproportion and relatively poor progress due to maternal fatigue [34]. This is one of the most important reasons for the differences seen in the practice of EIBF between underweight and overweight mothers. Normal weight and overweight mothers should be the focus of education on the potential benefits of EIBF. We found that mothers getting pregnant with proper planning and taking advice regarding the benefit of EIBF were more likely to provide EIBF than their counterparts. Family planning workers closely working with pregnant mothers and healthcare providers can play a good role to increase the rate of EIBF and exclusive breastfeeding in Bangladesh.

This study may recommend health authorities to take necessary steps for making awareness of mothers about benefit of initial breastfeeding. The findings of our study can help Bangladesh Ministry of Health and Family Welfare to enhance their programmes on appropriate breastfeeding practices at the community level.

Strength and limitations of this study: Perhaps, this was the first time we attempted to investigate the early initiation of breastfeeding and its association with socioeconomic and demographic factors among mothers in Rajshahi district, Bangladesh. We considered two new factors; (i) getting pregnant with planning and (ii) mothers taking advice regarding the benefit of breastfeeding during their pregnancy, which were not considered in our national survey. However, there are several limitations of our present project. Firstly, in this study, we considered only Rajshahi district as our study area which is a small part of Bangladesh. Secondly, we used a quantitative cross sectional study which can determine only associated factors but cannot do research in-depth. Mixed research both qualitative and quantitative is required for doing in-depth study. Thirdly, we selected some socio-economic, demographic, anthropometric and behavioral factors as independent variables but other important factors such as parity, gestational age at delivery, maternal obstetric complications, and newborn status were not considered in this study. Fourth, we did not consider the pre-lacteal feeding for calculating the prevalence of EIBF, and mothers were asked about providing EIBF using recall bias method. On the basis of our limitations, we may proclaim that further researches are required on breastfeeding among Bangladeshi mothers.

Conclusions

In this study, we considered 421 mothers living in Rajshahi district, Bangladesh having at least one child aged 6-24 months as samples to determine of EIBF and its related factors. Our selected statistical models provided that the rate of EIBF among mothers in Rajshahi district was 88.40%; the predictors of EIBF were: husbands' education level and occupation, family monthly income, mothers' age, mothers' BMI, place of delivery, planned pregnancy and taking advice regarding the benefit of EIBF. These findings would help the health authorities of Bangladesh government and non-government organizations working with mothers and children health and nutrition for improving their strategies to increase the rate of EIBF.

Abbreviations

AOR- Adjusted Odds Ratio; BDHS- Bangladesh Demographic and Health Survey; EB- Exclusively breastfed; EIBF-Early initiation of breastfeeding; IBM- International Business Machines; SE- Standard error; SPSS- Statistical Package for the Social Sciences.

Declarations

Ethics approval and consent to participate: We followed all rules and regulations of Institute of Biological Science (IBSc), University of Rajshahi, Bangladesh, and IBSc approved this study and provided an ethical clearance letter (Memo No: 69/320/IAMEBBC/IBSc). Written consent was taken from each participant. The information was kept in confidential. The consent was taken from the husband or guardian for participants under 16 years old.

Consent for publication: Not applicable to this study.

Availability of data and materials: The study was based on the primary data. The data will be provided when necessary.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: UA and GH created the concept; ASMAM, MNI, MRH and GH created the design of the study; ASMAM and SAT performed the statistical analysis; UA, ASMA, MIN, RH and GH drafted the manuscript. GH, ASMAM, and SAT made revision of the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Association between early initial breastfeeding and socio-economic, demographic and anthropometric factors

Variable	Group, N(%)	Early initiation of breastfeeding status		Chi-square/ Fisher's exact value	p-value
		No (11.60%), N(%)	Yes (88.40%), N(%)		
Mothers' educational level	Uneducated, 32(7.60)	2(6.20)	30(93.80)	53.336	p<0.001
	Primary, 169(40.14)	26(15.4)	143(84.6)		
	Secondary, 173(41.09)	56(32.4)	117(67.6)		
	Higher, 47(11.17)	30(63.8)	17(36.2)		
Husbands' educational level	Uneducated, 33(7.8)	2(6.1)	31(93.9)	74.013	p<0.001
	Primary, 167(39.7)	25(15.0)	142(85.0)		
	Secondary, 159(37.8)	44(27.7)	115(72.3)		
	Higher, 62(14.7)	42(68.9)	19(31.1)		
Mothers' occupation	House wife, 415(98.57)	46(11.1)	369(88.9)	8.709	0.023
	Others, 6(1.43)	3(50.0)	3(50.0)		
Husbands' occupation	Farmer, 235(55.82)	5(2.1)	230(97.9)	46.789	p<0.001
Monthly family income (Taka)	<15000, 287(68.2)	6(2.1)	280(97.9)	85.918	p<0.001
	15000-25000, 58(13.8)	14(24.1)	44(75.9)		
	>25000, 76(18.0)	29(38.2)	47(61.8)		
Type of residence	Urban, 122(28.98)	49(40.2)	73(59.8)	135.908	p<0.001
	Rural, 299(71.02)	0(0)	299(100)		
Mothers' age (year)	15-19, 17(4.04)	9(52.9)	8(47.1)	42.936	p<0.001
	20-24, 181(42.99)	11(6.1)	170(93.9)		
	25-29, 153(36.34)	20(13.1)	133(86.9)		
	30-34, 51(12.11)	3(5.9)	48(94.1)		
	35 and above, 19(4.52)	6(31.6)	13(68.4)		
Mothers' BMI	Underweight, 08(25.7)	1(0.9)	107(99.1)	28.629	p<0.001
	Normal weight, 85(67.7)	38(13.3)	247(86.7)		
	Overweight, 28(6.6)	10(35.7)	18(64.3)		
Age at first birth	<20, 199(47.3)	14(7.0)	185(93.0)	7.777	0.005

(year)	≥20, 222(52.7)	35(15.8)	187(84.2)		
Type of family	Nuclear, 346(82.19)	36(10.4)	310(89.6)	2.877	0.090
	Joint, 75(17.81)	13(17.3)	62(82.7)		
Gender of children	Boy, 212(50.36)	21(9.9)	191(90.1)	1.248	0.264
	Girl, 209(49.64)	28(13.4)	181(86.6)		
	Others, 186(44.18)	44(23.7)	142(76.3)		
Number of children	One, 233 (55.34)	22(9.4)	211(90.6)	2.449	0.118
	More than one, 188(44.66)	27(14.4)	161(85.6)		
Mode of delivery	Cesarean, 177(42)	33(18.6)	144(81.4)	14.572	p<0.001
	Vaginal, 244(58)	16(6.6)	228(93.4)		
Place of delivery	Home, 45(10.7)	1(2.2)	44(97.8)	31.936	p<0.001
	Public, 200(47.5)	9(4.5)	191(95.5)		
	Private, 176(41.8)	39(22.2)	137(77.8)		
Planned pregnancy	Yes, 352(83.60)	37(10.5)	315(89.5)	2.655	p<0.0001
	No, 69(16.40)	12(17.4)	57(82.6)		
Taking advice during pregnancy	Yes, 399 (94.77)	39(9.8)	360(90.2)	25.810	p<0.0001
	No, 22(5.23)	10(45.5)	12(54.5)		
Postnatal care	Yes, 317(75.48)	287(90.54)	30(9.46)	3.890	0.356
	No, 103(24.52)	85(82.52)	18(17.48)		

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

Variable with groups	B	SE	Wald	p-value	AOR	95% CI for AOR	
						Lower	Upper
Mothers, education level			21.204	0.001			
Primary Vs Uneducated ^R	-0.556	1.072	0.269	0.604	0.573	0.070	4.690
Secondary Vs Uneducated ^R	-1.656	1.039	2.540	0.111	0.191	0.025	1.463
Higher Vs Uneducated ^R	-2.577	1.065	5.854	0.016	0.076	0.009	0.613
Husbands' education level			43.556	0.001			
Primary Vs Uneducated ^R	-0.336	1.086	0.096	0.757	0.714	0.085	6.007
Secondary Vs Uneducated ^R	-1.275	1.049	1.478	0.224	0.279	0.036	2.183
Higher Vs Uneducated ^R	-3.033	1.049	8.363	0.004	0.048	0.006	0.376
Mothers' occupation, (House wife Vs Others ^R)	1.221	.836	2.135	0.144	3.390	0.659	17.438
Husbands' occupation, Farmer Vs Others ^R	2.608	0.486	28.823	p<0.001	13.568	5.237	35.154
Monthly family income (Taka)			16.443	0.001			
15000-25000 Vs ≤15000 ^R	-2.340	0.600	15.074	0.000	0.097	0.030	0.315
≥25000 Vs ≤15000 ^R	-2.042	0.620	10.864	0.001	0.130	0.039	0.437
Mothers' age (year)			31.742	p<0.001			
15-19 Vs 35 and above ^R	-0.891	0.693	1.655	0.198	0.410	0.106	1.594
20-24 Vs 35 and above ^R	1.975	0.583	11.342	p<0.001	7.133	2.273	22.381
25-29 Vs 35 and above ^R	1.121	0.549	4.177	0.041	3.069	1.047	8.997
30-34 Vs 35 and above ^R	1.999	0.773	6.688	0.010	7.385	1.623	33.607
Mothers' BMI			5.208	0.074			
Normal Vs Under weight ^R	-2.227	1.064	4.381	0.036	0.108	0.013	0.867
Overweight Vs Underweight ^R	-2.630	1.154	5.193	0.023	0.072	0.008	0.692
Mothers' age at first birth (year) (>20 Vs ≥20 ^R)	0.262	0.448	0.341	0.559	1.299	0.540	3.125
Mode of delivery (Caesarean Vs Vaginal ^R)	-1.183	0.323	13.451	0.001	0.306	0.163	0.576
Place of delivery			10.031	0.007			
Public Hospital Vs Home ^R	-1.024	1.126	0.827	0.363	0.359	0.040	3.263
Private Hospital Vs Home ^R	-2.405	1.109	4.698	0.030	0.090	0.010	0.794
Planned pregnancy, Yes Vs No ^R	1.782	0.498	12.780	p<0.001	5.941	2.237	15.780
Taking advice during pregnancy, Yes Vs No ^R	2.015	0.489	16.986	p<0.001	7.502	2.877	19.559
Constant	7.601	1.548	24.110	p<0.001	2000.883		
Nagelkerke R²- value =0.575							
Hosmer and Lemeshow Test Chi-sauare value=5.568 p-value=0.696							

N.B: R=Reference Category, B=Co-efficient, SE=Standard Error, AOR=Adjusted Odds ratio, CI=Confidence Interval.

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