Investigation of the Prevalence of Exclusive Breastfeeding in Bangladesh and Association with Paternal Characteristics

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Abbreviation

IUB: Independent University

WHO: World Health Organization

UNICEF: United Nations Children's Fund

EBF: Exclusive Breastfeeding

BDHS: Bangladesh Demographic and Health Survey

ANC: Antenatal Care

OR: Odds Ratio

CI: Confidence Intervals

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Abstract

Introduction: Exclusive breastfeeding (EBF) means feeding infants only breast milk for the first six months not even water and other liquids. Proper EBF practice can reduce infant's mortality and morbidity. The practice of EBF differ worldwide and this different depends on different factors.

Aim: The aim of the study is to determine the prevalence of EBF and association of EBF with paternal characteristics for first 6 months of infant life in Bangladesh.

Method: The data was used for this study collected from Bangladesh Demographic and Health Survey 2017-18 (BDHS 2017-18). This is a nationally representative descriptive study. Data from 791 infants less than six months was used in this study after considering missing values and weighted. Bivariate analysis was done to find association between dependent and independent variables and logistic regression analysis was carried out to find determinants of exclusive breastfeeding (EBF). In this study, Statistical Package for the Social Sciences (SPSS), version 22 was used to analyze the data.

Results: In this study, the prevalence of EBF was found 66.2%. Bivariate analysis revealed that division (p-value= <0.001) had significant association with EBF practice. Results from Logistic regression analysis showed that respondent health decision (95% CI= 1.185-4.510) significantly associate with EBF practice. In addition, ANC visits at least 4 times (95% CI= 1.008-3.926), mother with rich wealth (95% CI= 1.270-3.271), mothers from Rajshahi (95% CI= 1.083-4.682) and Rangpur (95% CI= 1.001-3.738) divisions and mother place of residence (95% CI= 0.480-0.998) found as significant predictors for EBF practice.

Conclusion: Proper EBF practice for had very important and beneficial impact on infant's early life as well as for future life. Though mother and father were very important person for infants but mostly mother's characteristics greatly influence EBF practice. Government, health

worker and NGO worker should take suitable step for increasing ANC visits and to increase knowledge about infants feeding. Also, proper environment for EBF should be promoted in every sector to improve the better EBF practice.

Key words: Prevalence, Exclusive breastfeeding, Infant feeding, Bangladesh, paternal characteristics

Chapter-I

1. Introduction

1.1 Background

Exclusive breastfeeding (EBF) is the best feeding method for newborns over the last couple of decades and its interest is increasing day by day [1]. According to the definition of World Health Organization (WHO) and United Nations Children's Fund (UNICEF), exclusive breastfeeding (EBF) means feeding the infant only and only breast milk for the first six months or more, not even water or other liquids or solids are given except oral rehydration solution or drops/syrups of vitamins, minerals or medicines [2,3]. It is proven from the study that exclusive EBF is beneficial for infants as well as for mother health. Breast milk contains all the nutrients and mineral that an infant needed for optimal growth and also reduces costs for health facilities, families, and governments. In addition, breast milk carries antibodies from the mother that protects newborn babies from the death risk due to diarrhea and other infections like acute respiratory syndrome (ARI) which ultimately reduces infant mortality and morbidity [4-6]. In later life breastfed children become more intelligent than others and also reduce the risk of obesity and diabetes. Women who breastfed also reduce the risk of breast and ovarian cancer, reducing bleeding, preventing anemia by helping the uterus to return to its normal size and decreasing risks of new pregnancies by delaying the return of fertility [7,8].

Infants aged 0 to 6 months are exclusively breastfed by only 44% worldwide in 2015-2020 and under 6 months of age only two in five infants are exclusively breastfed [9,10]. It is proven from the other researches that insufficient breastfeeding as well as non-exclusive breastfeeding can caused 11.6% of death of under five children in 2011 but up to 90% coverage of breastfeeding can prevent around 13% under five child death in low- and middle-income countries [11]. In upper-middle-income countries, EBF rates were 23.9 % (lowest) which is

declined from 28.7% in 2012. Highest EBF rate has found in Eastern and Southern Africa (55%), South Asia (54%) and lower in the Middle East (30%) and North Africa (29%) [12]. On the other hand, Southern Asia shows highest percentage (54%) of EBF compared to South-Eastern (44%) and Eastern Asia (22%, 30%). Moreover, the prevalence of exclusive breastfeeding among South Asian countries was: 54.9% in India, 1.4% in China, 65.2% in Nepal, 37.7% in Pakistan, and 82.3% in Sri Lanka (WHO 2018) [13]. Out of the world the highest rates 86.9% were found in Rwanda and in Asia region Sri Lanka shows highest 82% and also shows that infants in rural areas have higher levels of exclusive breastfeeding than urban babies [14,15]. In Bangladesh the rate of EBF has increased from 55.3% in 2014 to 62.6% in 2019. According to Bangladesh Demographic and Health Surveys in 2004, 2007, 2011 and 2014 the rate was 42%, 43%, 64%, and 55% respectively [16-19]. In 2012, the World Health Assembly approved a plan on maternal, infant and young child nutrition, which sets six global nutrition targets and one of the targets aims to increase the rate of EBF in the first six months up to at least 50% by 2025 [20]. EBF is plays an effective role for preventing infant morbidity and mortality and worldwide, it can prevent 1.4 million deaths among children every year [21]. So, neonatal and infant mortality can be reduced by increasing EBF practices [22].

In lower middle-income country like Bangladesh, practicing EBF for six months seems to be difficult for mothers. There are many factors that influences mothers in EBF [23]. Studies from Nigeria, Myanmar and Morocco found mother education as a significant factor for EBF but not in Saudi Arabia and China [24-28]. Sex of infant found significant for EBF from the study in Malawi and Brazil [29,30]. Ethiopia found birth order has association with EBF [8]. Evidence suggests that a partner who is living with a woman can be one of the most influential persons or supporters to the mother for EBF. A father can provide the practical and emotional support needed for successful EBF and influence decisions on the duration of breastfeeding [31]. A study in Brazil and Sweden found paternal education as associate factors for EBF but not in

Pakistan [32-34]. In addition, Ethiopia found father occupation and Sweden found paternal age is likely associate with EBF [8,33]. More or less antenatal care visit as a strong factor for EBF [27,29,34-36]. Also, mother age, place of residence, economic status, religion has found as predictors for EBF in different studies [29,30,37]. Awareness and Knowledge of EBF among mothers is very important for ensuring ideal feeding of infant.

However, studies on EBF in different country as well as in Bangladesh have mainly focused on maternal characteristics, child characteristics, different household and community level characteristics but paternal information has great influence in EBF. During the continuation of EBF mothers faced different problems. In this situation most powerful support can comes from partners. In that difficult period fathers positive support can help mothers to ensure EBF. Also, several researches showed that mothers who have husband and also support mothers positively to breastfeed have higher success in EBF [38]. So, it is important to study about mother's, child's characteristics as well as father's individual level characteristics.

1.2 Objective of the study

General objective

This study aimed to determine the prevalence of EBF and association of EBF with paternal characteristics for first 6 months of infant life in Bangladesh.

Specific objectives:

The specific objective of the study are as follows:

- To show the magnitude of exclusive breastfeeding in Bangladesh.
- To know the effect of maternal and paternal characteristics on exclusive breastfeeding.
- To know the effect of sociodemographic characteristics on exclusive breastfeeding.
- To address the barriers of exclusive breastfeeding.

1.3 Hypothesis of the study

There is an association of parent's characteristics with proper continuation of EBF practice among infants aged 0-6 months.

Chapter-II

2. Methodology

2.1 Source of data

The study was done by using data from Bangladesh Demographic and Health Survey 2017-18 (BDHS 2017-18). This survey was the eighth national survey and nationally representative report on the demographic and health status of women and children. The survey was conducted by the National Institute of Population Research and Training (NIPORT), Ministry of Health and Family Welfare in Bangladesh and implemented by a Bangladeshi research firm called Mitra and Associates. Technical and financial supports were provided by the ICF International of Calverton, Maryland, USA, and the USAID respectively. The survey used a list of enumeration areas (EAs) provided by the Bangladesh Bureau of Statistics (BBS) and EAs cover 120 households on the average. Two stage cluster random sampling technique was used to done the survey. On the first stage, EAs were selected and a list of households were made from selected EAs for completing second stage. In the seconds stage, from each EAs households were selected to provide key demographic and health variables that can represent whole country as well as urban and rural areas separately, and each of the eight divisions. Details of EAs, sampling design, sampling frame, list of questionnaires were described in publicly available reports of the mentioned BDHS survey [39].

2.2 Sample size

BDHS 2017-18 had sample of 1002 infants aged 0-5 months and after considering missing values and sample weighting, current study was conducted using the data of 791 infants less than six months.

Selection criteria

Women who had at least one child aged 2 years were include in this study. Both male and female child were included.

2.3 Variables

Dependent variable: Alive infants whom were exclusively breastfed for six months was considered as dependent variable. The variable was created based on answered that were given by the respondent on the following questions: (i) whether the baby was still being breastfed (ii) the duration of breastfeeding and (iii) did any other foods and drinks were given during the last 24 hours at the time survey. These questions were asked to women's having children under 2 years and living with their mother. The variable was categorized as if exclusively breastfed mothers continued breastfeeding with no other foods and drinks were considered as "Yes=1" and whom don't fulfill the condition means not practicing EBF as "No=0".

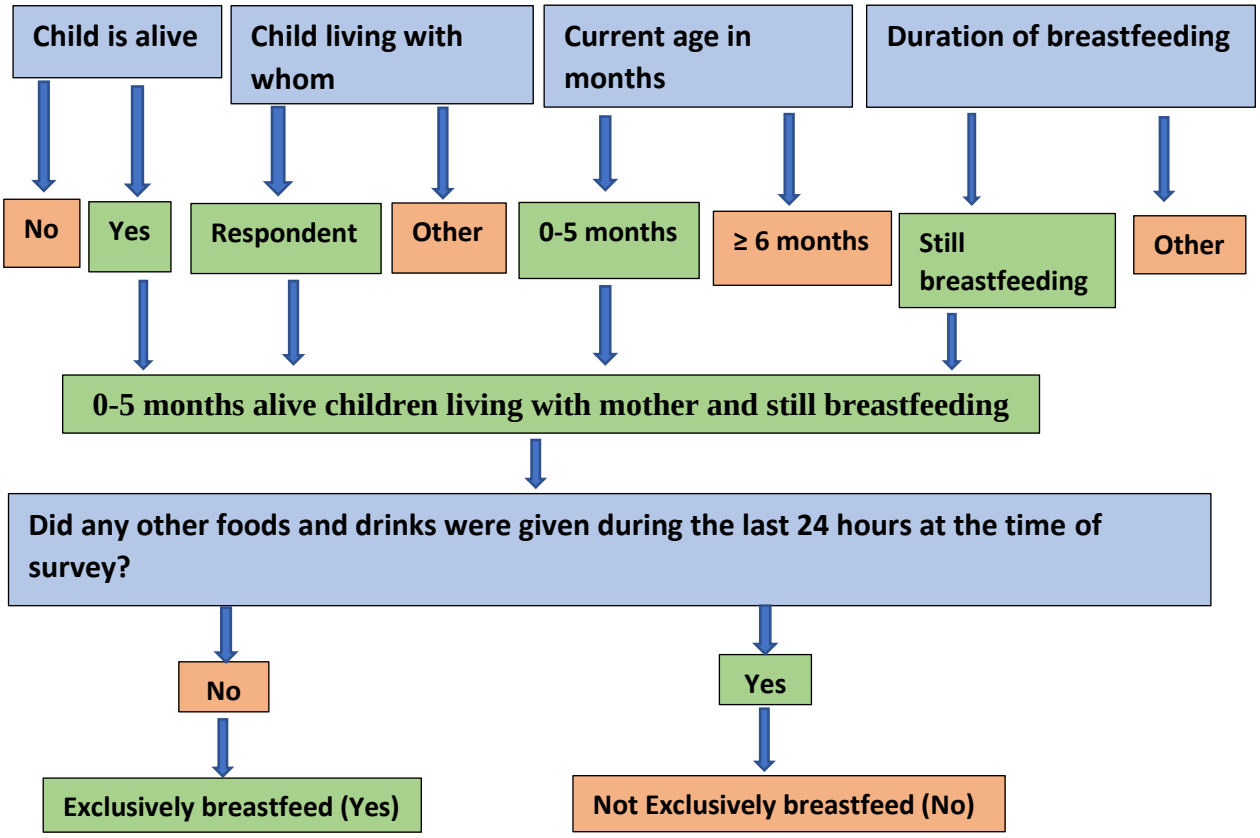

Figure 1: Selection criteria of dependent variable

Independent variables: Different individual, household and community level characteristics of respondents and their partners were considered as covariates for this study. The variables were selected based the review of the literature reviews and were found to influence EBF. Individual level characteristics include mother's age, mother's educational level, mother's religion, mother's type of schooling, partner's age, partner's education level, partner's occupation, partner's type of schooling, husband desire for children. Other health care services level individual health care factors were number of ANC visits and place of delivery. Household level characteristics include wealth index, media exposure, number of children ever born, person who usually decides on respondent's health care, justification of beating. Sex of child and birth order were considered as children characteristics. Division and place of residence were considered as community level characteristics. Quantitative variables like ages, birth order, children ever born etc. were categorized as needed for this study. Other categorical variables were recoded from the original ones such as place of delivery, wealth index, husband desire for children and so on. On the other hand, media exposure and justification of beating were not available in the original dataset. Both of the variables were constructed by combining three or more variables for making this study easily understandable.

Table 1: List of selected independent variables

SI	Name of variables	SI	Name of variables
Respondent's/ mother's characteristics		Children's characteristics	
1	Mother's age 1. 15-24 2. 25-34 3. 35+	12	Sex of child 1. Male 2. Female
2	Mother's educational level 1. Primary	13	Birth order 1. 1/2

	2. Secondary 3. Higher		2. Other
3	Mother's religion 1. Islam 2. Hinduism 3. Other	Individual health care services characteristics	
4	Mother's type of schooling 1. School 2. Madrasah	14	Taking ANC 1. No visit 2. 1-3 visits 3. 4 and more visits
5	Person who usually decides on respondent's health care 1. Respondent alone 2. Husband alone 3. Respondent and other	15	Place of delivery 1. Home 2. Health care institution
6	Justification of beating 1. Unfavorable 2. Favorable	Household level characteristics	
Husband's/ partner's characteristics		16	Wealth index 1. Poor 2. Middle 3. Rich
7	Partner's age 1. 18-27 2. 28-37	17	Media exposure 1. No 2. Yes

	3. 38+		
8	Partner's education level 1. No education 2. Primary 3. Secondary 4. Higher	18	Number of children ever born 1. 1-2 2. 3-4 3. 5+
9	Partner's type of schooling 1. School 2. Madrasah	Community level characteristics	
10	Partner's occupation 1. Unemployed 2. Professionals 3. Agricultural 4. Sales and services 5. Other	19	Division 1. Barisal 2. Chittagong 3. Dhaka 4. Khulna 5. Mymensingh 6. Rajshahi 7. Rangpur 8. Sylhet
11	Husband desire for children 1. Husband wants fewer 2. Husband wants more 3. Both wants same	20	Place of residence 1. Rural 2. Urban

2.4 Statistical analysis

For this study all the data were analyzed using Statistical Package for the Social Sciences (SPSS), version 22. For better statistical representation the data were weighted using recommended statistical software. Descriptive statistics were used to describe the characteristics of all variables. Bivariate analysis was done to represent the percentage of EBF practice across selected variables and also found the association between them. Whereas dependent variable was binary (YES, NO) a binary logistic regression was done in this study. The Odds ratio (OR) with a 95% confidence interval were estimated to assess the association between EBF and selected independent variables. Variables with p-value less than 0.05 in the logistic regression analysis were considered as significant and independent predictors of EBF. Finally, all the results were summarized and presented on the table.

2.4 Ethical consideration

The study was done by using secondary data collected from Bangladesh Demographic and Health Survey 2017-18, so no ethical approval was needed for this study.

Chapter-III

3. Results

3.1 Section 1: Frequency distribution

The table 2 represented the results of descriptive study that showed the frequency distribution of dependent and independent variables. It revealed that the prevalence of EBF is 66.2%. Most of the mother were belongs to 15-24 age group (60.5%). The percentage of secondary education (54.5%) completed mother were higher than primary (25.8%) and higher education (19.7%). Among the respondents most of them are Muslim (92.6%) and maximum mother had chosen school (93.4%) over madrasah (6.6%) for their early schooling. The decision on the issue of respondent health care, mostly other persons were involved with respondent (74.5%) over respondent alone decision (5.5%). About 83% respondents were beaten unfavorably in their house. Highest percentage of partners (53.2%) were from 28-37 age group. Illiteracy among partners were very less (0.20%) and most of them were secondary educated (41.7%). Also, partners were school (93.4%) person in their early school life. The percentage of unemployment among partners were very less (2%) whereas, 16.7% were engaged with agriculture and 30.4% were in sales and service and maximum were from other profession (41.8%). Husband expectation for children mostly same as respondent desire (84.4%). Among the children characteristics the percentage of male child (51.8%) were high than female (48.2%) and mostly were first or second child (74.7) of their parents. Maximum mothers had chosen to take ANC (1-3 visits and ≥ 4 visits were 45.7% and 47.7% respectively) during pregnancy over no visits (6.6%). Approximately 47% children were delivered in home facility and 53.4% were delivered in health care facility. 37% of mother were from poor wealth group and 40.1% were from rich wealth group. Maximum respondents were exposed to media (63.3%) and approximately 75% couple had 1/2 child. Among the eight administrative regions

respondents were mostly from Dhaka (24.8%) and Chittagong (23.3%), least were from Barisal and Sylhet (6.9% and 7.4% respectively) and around 10% each from other divisions. Among the respondents about 74% were rural mothers.

Table 2: Percentage distribution of selected variables

Variable	Total (n)	Percentage (%)
Dependent variable		
Exclusive Breastfeeding		
Yes	524	66.2
No	268	33.8
Respondent's/ mother's characteristics		
Mother age		
15-24	479	60.5
25-34	291	36.8
35+	22	2.8
Mother education level		
Primary	204	25.8
Secondary	432	54.5
Higher	156	19.7
Religion of Mother		
Islam	733	92.6
Hinduism	52	6.5
Others	7	0.9
Type of schooling of mother		
School	709	93.4

Madrasah	52	6.6
Person who usually decides on respondent's health care		
Respondent alone	44	5.5
Husband alone	159	20.0
Respondent and others	590	74.5
Justification of beating		
Favorable	138	17.4
Unfavorable	654	82.6
Husband's/ partner's characteristics		
Husband/partner's age		
18-27	243	30.7
28-37	422	53.2
38+	127	16.0
Husband/partner's education level		
No education	1	0.20
Primary	284	35.9
Secondary	330	41.7
Higher	176	22.2
Type of schooling of partner		
School	740	93.4
Madrasah	52	6.6
Husband/partner's occupation		
Unemployed	16	2.0
Professional	71	9.0

Agricultural	132	16.7
Sales and service	241	30.4
Others	331	41.8
Husband/partner's desire for children		
Husband wants fewer	38	4.9
Husband wants more	85	10.7
Both want same	668	84.4
Children's characteristics		
Sex of child		
Male	410	51.8
Female	382	48.2
Birth order		
Others	201	25.3
First/second	591	74.7
Individual health care services characteristics		
Taking ANC		
No visits	52	6.6
1-3 visits	362	45.7
4 and more visits	378	47.7
Place of delivery		
Home	369	46.6
Health care institution	423	53.4
Household level characteristics		
Wealth index		
Poor	293	37.0

Middle	181	22.8
Rich	318	40.1
Media exposure		
No	290	36.7
Yes	502	63.3
Children ever born		
1-2	591	74.7
3-4	171	21.6
5+	29	3.7
Community level characteristics		
Division		
Barisal	54	6.9
Chittagong	185	23.3
Dhaka	196	24.8
Khulna	82	10.3
Mymensingh	65	8.2
Rajshahi	74	9.3
Rangpur	77	9.7
Sylhet	59	7.4
Type of place of residence		
Rural	583	73.6
Urban	209	26.4

3.2 Section 2: Bivariate analysis

Table 3 showed that the practice of exclusive breastfeeding is maximum among 15-24 age group (67.4%) mother than the other group (64.9% and 54.5%). Higher prevalence of EBF is found among higher educated mothers than the primary educated mother (68.6% versus 62.7%). So, less education can be the risk factor for less EBF. Mothers from other religion (85.7%) show more prevalence of EBF than Islam (65.9%) and Hinduism (66.7%). Mothers who went to school in early life are more positive to EBF than who went to madrasah (66.7% versus 61.4). The prevalence of EBF is higher when respondent involved other family person for her health decision (66.9%) than when she decides alone (53.5%). Respondents who are unfavorably beaten (67.4%) at home, the practice of EBF is higher than favorable situation (60.1%). Partner/ husband from 18-27 age group (69.1%) show higher prevalence of EBF practice than the other age groups. Higher educated partners (59.3%) are more supportive to EBF than illiterate (50%). Regarding education type, among the partners who went to school show positive view to EBF than madrasah choosers (66.6% versus 59.6%). Interestingly, mothers with unemployed partners (75%) were more positive to EBF than professionals (73.2%), agricultural (66.2%), sales and service (61.4%) and others (67.7%). Husband who wants more children (71.8%) were show maximum percentage of EBF than husbands who wants fewer and same child (63.2% and 65.7%). It can be also observed that the maximum prevalence of EBF is seen more for female (66.3%) child than male (65.9%) and who are first/ second child (66.3%) of their parents are more exclusively breastfed than other child (65.7%). It indicates that the sex of child and birth order can considered as risk factors for lower EBF. In this analysis, the high prevalence of EBF is found among the mothers who went for 4 and more ANC (67.4%) than no visitors (59.6%). So, taking more ANC can be considered as protective factor for EBF. Child who delivered at home (67.2%) are more exposed to EBF than who are born in health care institution (65.2%). Table 2 also reveals that rich mother (68.9%)

are more habited to EBF than poor (63.3%). Among the mothers who exposed to media, the prevalence of EBF is lower than the mother who do not exposed to media (65.3% versus 67.7%). Parents who have 1-2/ 3-4 children (66.3% and 66.1%), among them the tendency of EBF is higher than more child (63.3%). Now, it can be said that more child in family can less the practice of EBF. The prevalence of EBF is higher in Rajshahi (79.9%) followed by Chittagong (77.3%), Khulna (50.6%) and Dhaka (55.6%). The high tendency of EBF is seen among rural (67.8%) mothers than urban mothers (61.7%). So, division and place of residence can take account as risk factors for less EBF practice.

Table 3: Bivariate analysis of exclusive breastfeeding practice by selected variables

Covariate	n	EBF		p-value
		Yes	No	
Respondent's/ mother's characteristics				
Mother age				0.402
15-24	478	67.4	32.6	
25-34	291	64.9	35.1	
35+	22	54.5	45.5	
Mother education level				0.454
Primary	204	62.7	37.3	
Secondary	432	66.9	33.1	
Higher	156	68.6	31.4	
Religion of Mother				0.544
Islam	734	65.9	34.1	
Hinduism	51	66.7	33.3	
Others	7	85.7	14.3	

Type of schooling of mother				0.337
School	709	66.7	33.3	
Madrasah	83	61.4	38.6	
Person who usually decides on respondent's health care				0.195
Respondent alone	43	53.5	46.5	
Husband alone	159	66.7	33.3	
Respondent and others	590	66.9	33.1	
Justification of beating				0.100
Favorable	138	60.1	39.9	
Unfavorable	654	67.4	32.6	
Husband's/ partner's characteristics				
Husband/partner's age				0.441
18-27	243	69.1	30.9	
28-37	422	64.4	34.6	
38+	127	63.0	37.0	
Husband/partner's education level				0.639
No education	2	50.0	50.0	
Primary	284	66.5	33.5	
Secondary	331	64.0	36.0	
Higher	176	69.3	30.7	
Type of schooling of partner				0.302
School	740	66.6	33.4	
Madrasah	52	59.6	40.4	
Husband/partner's occupation				0.296

Unemployed	16	75.0	25.0	
Professional	71	73.2	26.8	
Agricultural	133	66.2	33.8	
Sales and service	241	61.4	38.6	
Others	331	67.7	32.3	
Husband/partner's desire for children				0.496
Husband wants fewer	38	63.2	36.8	
Husband wants more	85	71.8	28.2	
Both want same	668	65.7	34.3	
Children's characteristics				
Sex of child				0.849
Male	410	65.9	34.1	
Female	382	66.5	33.5	
Birth order				0.865
Other	201	65.7	34.3	
First/second	591	66.3	33.7	
Individual health care services characteristics				
Taking ANC				0.537
No visits	52	59.6	40.4	
1-3 visits	362	66.0	34.0	
4 and more visits	377	67.4	32.6	
Place of delivery				0.561
Home	369	67.2	32.8	
Health care institution	423	65.2	34.8	
Household level characteristics				

Wealth index				0.341
Poor	294	63.3	36.7	
Middle	181	65.7	34.3	
Rich	318	68.9	31.1	
Media exposure				0.486
No	291	67.7	32.3	
Yes	501	65.3	34.7	
Children ever born				0.944
1-2	591	66.3	33.7	
3-4	171	66.1	33.9	
5+	30	63.3	36.7	
Community level characteristics				
Division				<0.001**
Barisal	54	59.3	40.7	
Chittagong	185	77.3	22.7	
Dhaka	196	55.6	44.4	
Khulna	81	50.6	49.4	
Mymensingh	66	56.1	43.9	
Rajshahi	74	79.7	20.3	
Rangpur	77	74.0	26.0	
Sylhet	59	76.3	23.7	
Type of place of residence				0.114
Rural	583	67.8	32.2	
Urban	209	61.7	38.3	

**p-value<0.001

3.3 Section 3: Logistic regression

According to table 4, there is a negative relation between age group of mother and exclusive breastfeeding. So, the odds of EBF practice are 5.9% less among 25-34 age group than 15-24 age group. Also, 35+ age group mothers show 67.7% lower EBF practice than 15-24 age grouped mother. Mother education level also showed negative relation with EBF. Among the mother who are secondary passed, the odds of EBF practice are 4.7% lower compared to primary passed mother and for higher educated mother the odds of EBF are 5.7% lower than primary completed mother. It implies that educated mothers are less likely to EBF. Mother's religion and EBF showed positive relation according to this analysis. Mothers from Hinduism and other religion show 1.06 and 3.46 times higher odds compared to Muslim mother respectively. Mothers who received madrasah's education are 1.05 times more likely to EBF practice than who received school's education. Mothers whose husband alone decides for her health show 1.79 times higher odds of EBF than mothers who decides alone for her own health. In addition, when mother and other person decides for mother's health were 2.31 times more likely to EBF compared to when mothers decide alone. Among the mothers who are unfavorably beaten in her family are 1.09% more likely to EBF trends in comparison with mothers who are not beaten.

According to the analysis, among the mothers whose partners/ husbands from 28-37 age group, the odds of positive to EBF are 7.7% lower compared to 18-27 age group partner. On the other hand, mothers whose partners from 38+ age group are 1.06 times more likely to EBF practice than partners from 18-27 age group. Mothers whose partners completed primary education are 2.5 times more likely to support EBF practice compared to illiterate partner of mother. Also, secondary and higher educated partners of mothers are 2.94 and 2.81 times more likely to EBF than mothers whose partner is not educated respectively. Mothers whose partners went to madrasah for education are show 22.8% lower odds than mothers whose partners went school

for education. Among the mothers whose husbands want more child than mother desire is 1.28 times more likely to EBF culture compared to mothers whose husbands wants fewer child. On the other hand, mothers whose partners child desire is same show 25.6% lower odds than partner who want fewer child.

It can be seen from table 4 that mothers whose child is female, the odds of practicing EBF by the mothers are 3.2% lower compared to mothers who have male child. The odds of EBF practice by mothers to first/ second child is 17.1% less than other child of mothers. Mothers who went 1-3 time for taking ANC are 1.90 times more likely to EBF than the mothers who don't went for ANC visit. Also, 4 and more time ANC visited mother are about 2 times more likely to EBF culture than no visit mother. So, increase in ANC visit increases the practice of EBF among mothers. Among the mothers who are delivered their child in health care institution showed 9.4% lower odds of EBF practice in comparison to mothers who born their child at home.

Since, wealth index of mother show positive relation with EBF, 1.35 times higher odds for EBF practice is seen among mother who are from middle class family than mother from poor family. Also, rich mother are 2.04 times more likely to EBF compared to poor mothers. Among the mothers who are exposed to media, the odds of EBF practice seen lower in comparison with mothers who are not exposed to media. Mothers who have 3-4 and 5 and more children show 1.03 and 1.21 times higher odds of EBF practice than mothers who have 1-2 child respectively.

Region wise, Dhaka, Khulna and Mymensingh divisions has showed variation with the practice of EBF. Mother from Dhaka, Khulna and Mymensingh divisions are 38%, 36.1% and 19% lower odds respectively in practicing EBF compared to mothers from Barisal division. Mothers from Chittagong, Rahshahi, Rangpur and Sylhet divisions are 2.02 2.25, 1.94 and 1.72 times more likely to practice of EBF than mothers from Barisal division respectively. Finally,

residence of mother shows negative association with EBF practice. Results show that, odds of practicing EBF is 30.8% lower in the mothers from urban areas in comparison with mothers from rural areas.

Table 4: Multiple logistic regression model for EBF

Covariate	Regression Coefficient	p-value	Odds Ratio (OR)	95% CI for OR
Constant	-1.294	0.504	0.274	
Respondent's/ mother's characteristics				
Mother age				
15-24 (ref)	-	-	-	-
25-34	-0.016	0.941	0.984	(0.645, 1.501)
35+	-0.499	0.323	0.607	(0.223, 1.635)
Mother education level				
Primary (ref)	-	-	-	-
Secondary	-0.048	0.811	0.953	(0.645, 1.409)
Higher	-0.058	0.836	0.943	(90.541, 1.643)
Religion of Mother				
Islam (ref)	-	-	-	-
Hinduism	0.055	0.867	1.056	(0.558, 2.001)
Others	1.242	0.273	3.462	(0.376, 31.888)
Type of schooling of mother				
School (ref)	-	-	-	-
Madrasah	0.044	0.869	1.045	(0.619, 1.764)

Decision on mother health				
Respondent alone (ref)	-	-	-	-
Husband alone	0.583	0.110	1.791	(0.877, 3.658)
Respondent and others	0.838	0.014**	2.312	(1.185, 4.510)
Justification of beating				
Favorable (ref)	-	-	-	-
Unfavorable	0.089	0.675	1.093	(0.720, 1.660)
Husband's/ partner's characteristics				
Husband/partner's age				
18-27 (ref)	-	-	-	-
28-37	-0.080	0.687	0.923	(0.626, 1.362)
38+	0.056	0.864	1.057	(0.559, 1.999)
Husband/partner's education level				
No education (ref)	-	-	-	-
Primary	0.916	0.568	2.500	(0.108, 58.070)
Secondary	0.871	0.587	2.390	(0.103, 55.569)
Higher	1.031	0.521	2.805	(0.120, 65.467)
Type of schooling of partner				
School (ref)	-	-	-	-
Madrasah	-0.258	0.430	0.772	(0.407, 1.467)
Husband/partner's occupation				
Unemployed (ref)	-	-	-	-
Professional	0.238	0.731	1.269	(0.327, 4.930)
Agricultural	-0.084	0.902	0.920	(0.243, 3.481)
Sales and service	-0.286	0.663	0.751	(0.207, 2.721)

Others	0.031	0.962	1.031	(0.287, 3.709)
Husband/partner's desire for children				
Husband wants fewer (ref)	-	-	-	-
Husband wants more	0.244	0.590	1.277	(0.525, 3.102)
Both want same	-0.296	0.432	0.744	(0.356, 1.556)
Children's characteristics				
Sex of child				
Male (ref)	-	-	-	-
Female	-0.032	0.814	0.968	(0.708, 1.324)
Birth order				
Other (ref)	-	-	-	-
First/second	-0.188	0.717	0.829	(0.300, 2.290)
Individual health care services characteristics				
Taking ANC				
No visit (ref)	-	-	-	-
1-3 visits	0.644	0.055	1.904	(0.987, 3.674)
4 and more visits	0.688	0.047**	1.989	(1.008, 3.926)
Place of delivery				
Home (ref)	-	-	-	-
Health care institution	-0.099	0.590	0.906	(0.633, 1.297)
Household level characteristics				

Wealth index				
Poor (ref)	-	-	-	-
Middle	0.300	0.182	1.350	(0.869, 2.096)
Rich	0.712	0.003**	2.038	(1.270, 3.271)
Media exposure				
No (ref)	-	-	-	-
Yes	-0.210	0.267	0.810	(0.559, 1.174)
Children ever born				
1-2 (ref)	-	-	-	-
3-4	0.037	0.877	1.038	(0.647, 1.664)
5+	0.188	0.717	1.207	(0.437, 3.334)
Community level characteristics				
Division				
Barisal (ref)	-	-	-	-
Chittagong	0.704	0.021	2.023	(1.114, 3.671)
Dhaka	-0.479	0.114	0.620	(0.342, 1.122)
Khulna	-0.448	0.150	0.639	(0.347, 1.176)
Mymensingh	-0.211	0.490	0.810	(0.445, 1.474)
Rajshahi	0.812	0.030**	2.252	(1.083, 4.682)
Rangpur	0.660	0.050**	1.934	(1.001, 3.738)
Sylhet	0.542	0.089	1.720	(0.920, 3.215)
Type of place of residence				
Rural (ref)	-	-	-	-
Urban	-0.368	0.049**	0.692	(0.480, 0.998)

CI= Confidence Interval, ref= Reference group **p-value≤0.05

Chapter-IV

4. Discussion

The study was done to assess the magnitude of EBF and explore the association of parent's characteristics with EBF. Successful practice of EBF for first six months is not only related to the awareness of mother but also the support of family members importantly her partner. The prevalence of EBF was 66.2%. The study finding was little higher compared to the finding from Bangladesh Demographic and Health Survey 2017-18 [BDHS] that was 65% which was a national level survey [39]. Also, the study found prevalence was higher than our neighbor countries like India (54.9%) and Nepal (65.2%) but lower than Sri Lanka (82.3%) [13]. The reason for the difference in result could be different sample size and difference in way of analysis.

Regarding factors that could affect EBF, mother individual characteristics were analyzed. According to the analysis we found that mother age was negatively associate with EBF which means with the increase in age of mother the tendency of EBF become lower. This might be because mother realize that breast milk alone was not sufficient for the proper growing of child. This result collaborative with the study done in Malawi but not in Brazil [29,30]. But our study showed insignificant association with mother's age which was similar with Ethiopian and Nigerian mothers [8, 36]. Our study found mother's education negatively and insignificantly associate with EBF. This study was in contrast to other countries study [27,34,40]. Also, other studies in Bangladesh were found mother education has inverse relation with EBF [23,41]. The reason for this could be educated mothers have more job opportunity so they sometimes unable to manage time to continue EBF practice parallelly with work. But in others studies done in Morocco, Myanmar, Brazil and Nigeria found maternal education as a positively significant predictor for EBF [15, 26, 30, 37]. This study found religion insignificant for EBF but a study

in Nigeria found significant association of religion with EBF [37]. Moreover, schooling of mother, beating justified also insignificantly associate with EBF practice which was similar to the study done in Ghana [31]. On the other hand, this study identified that decision on mother health has significant association with EBF. Our result showed when mother and other person decided for mother health were 2.3 times higher than when mother decided alone. It might be due to the fact that when other person influence in decision making, others can influence mother for EBF practice and also create awareness about benefit and importance of EBF. But this was not consistent with the finding from Ghana [31].

Father or partner is a very important person for the family and his positive support for EBF practice can ensure a healthy life for infant. In our study, fathers different characteristics: age, education, schooling type, occupation, desire for children were analyzed to explore the association with EBF practice. Fathers from 28-37 age group show negative but fathers whose age is over 38 years show positive relation with EBF. Which indicates that increase in father age increase EBF practice among mothers but in this study, the association was not significant. Whereas study in Sweden found partner age as a significant predictor for EBF [33]. Education of father could be very important factor for EBF. In our study found education positively but not significantly associate with EBF practice that implies educated partner more supportive for continuing EBF for recommended period. This was supported by findings from study done in Pakistan but Ethiopia found negatively significant with EBF which means illiterate partner more positive to EBF than educated one [34,42]. But other studies in Sweden and Brazil found partner education had significant association with EBF [32,33]. EBF was found statistically insignificant with partner occupation in this study which was not consistent with the results found in the Ethiopian study and another study in Bangladesh [8, 43]. Other variables called schooling of partner and desire for children found insignificant in this study.

In this study, there was negatively insignificant relationship found between sex of child and EBF practice. Mothers with female babies were less likely to EBF than mothers with male babies. This may happen because in Bangladesh male babies were more wanted than female babies. But in studies in Malawi, Brazil and Nigeria found mother with female babies were more likely to EBF and the relation was significant [29,30,35]. Also, birth order of infants was found in significant in this study which was not collaborate the results found in north west Ethiopia and Pakistan. They found birth order as a significant predictor for EBF [8,34]. Statistically significant association was found between EBF and ANC visit. Among the mothers who visited 1-3 times and 4 and more times were mostly involved in proper EBF. 4 and more times ANC taker mothers show 2 times more interest to EBF than mother who did not take ANC. The fact for the result because taking more ANC care create awareness among mothers about importance of EBF. This finding was correlate with the results found from Myanmar, Pakistan, Nigeria and Ghana but not similar with the result found from randomized control trial (RCT) done on Italian mothers [25, 31, 34, 35, 45]. The analysis from the study found place of birth insignificant but it is not similar to finding found from Myanmar and Ethiopia [25, 44].

In our study we found rich wealth of mother was significantly associate with EBF practice which indicates rich mothers were 2 times more likely to EBF practice than poor mothers. This finding was similar to the study done in Nigeria [35]. Interestingly, insignificant association found between media exposure and EBF in this study. Number of children born also found insignificant in this study which contradict with study done in Malawi [29]. We found from the study that from eight administrative mothers from Rajshahi, Rangpur and Sylhet division showed significant relation with EBF practice which revealed that mothers from those division were more likely to EBF than rest of five divisions. Furthermore, mother place of residence was found statistically significant for EBF practice. From this analysis it can be said that rural

mothers were more habited to EBF practice than urban mothers. The reason for this could be urban mothers mostly engaged and busy with their professional works because of the available opportunity of employment. The similar finding was found in the study done in Myanmar [25].

Chapter- V

5. Conclusion and Recommendation

5.1 Conclusion

The prevalence found in this study was high compared to other previous studies. Decision on respondent health, taking ANC, wealth index, division and place of residence were significantly associate with EBF practice. Although father/partner can be very important person for proper EBF practice but none of the paternal characteristics did not significantly associated with EBF practice in our study. But it is proven that mothers have significant role. So, it can be said that partner has less influence in EBF practice but mother has great influence for EBF. Finally, it can be said that, it is high time to promote the EBF practice. For this, the central government, health ministry, local and international NGOs work on EBF can play very important role to enhance this practice.

5.2 Recommendation

Future success in increasing EBF practice will require development and improvement in healthcare access and proper healthcare knowledge. Some recommendation based on this study for success in regular EBF practice are:

- Government should increase skilled manpower in the maternity related institution.
- Policy makers should make different strategies for increasing EBF practice.
- Health workers should promote more about importance of EBF during ANC visits and post-delivery time.
- Opportunities for breastfeeding at work place should be given in both government and civil sites.

5.3 Study strength and limitation

Because the used data were from cross-sectional study which only gave information about association not indicates causality. Also, there could be chance of recall bias because the age of infants was less than six months that time so the period is long enough for making mistakes. However, the strength of this study was that it used the BDHS dataset which is a nationally representative dataset and provides information from divisional level to urban and rural areas with appropriate adjustment of sampling design and sampling weight.

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