

# Exploring Barriers for Early Initiation of Breastfeeding among Mothers in the Post-natal Ward: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Early Initiation of Breast Feeding (EIBF), referred to as “provision of mother’s breast milk to infants within 1 hour of birth”, is the cornerstone of infant survival and health. In spite of an increase in proportion of mothers practising EIBF over the past decade, the number is still less than satisfactory.

**Aim:** To find out the proportion of mothers who practised EIBF, and the factors influencing the same.

**Materials and Methods:** Ninety-seven post-natal mothers were interviewed from June 2017 to August 2017 using a pre-designed, pre-tested semi-structured questionnaire. Other relevant information collected from in-patient records. Logistic regression analysis was done.

**Results:** Out of 97 mothers, EIBF was practised by 59 (60.82%). Main reason for not initiating EIBF according to the mothers was “baby not roomed/bedded-in” soon after birth, followed by exhaustion from delivery. Knowledge regarding benefits of EIBF was inadequate. Colostrum feeding was done by 83.51% of mothers. On logistic regression analysis, it was observed that in the multivariate model, education of mother, higher age at marriage, vaginal/vaginal assisted delivery and term/post-term baby were significant factors promoting EIBF.

**Conclusion:** EIBF was practised by less than two-thirds of study subjects. Knowledge regarding EIBF was unsatisfactory. This study revealed education of mother, higher age at marriage, vaginal/vaginal assisted delivery and term/post-term baby were significant factors promoting EIBF.

**Keywords:** Colostrum, Infant feeding, Infant survival, Lactation

## INTRODUCTION

Early initiation of breastfeeding, as recommended by WHO and UNICEF is a critical step in both short and long term survival and sustenance of an infant irrespective of other socio-demographic and healthcare delivery parameters [1]. National Coverage Evaluation Survey of India conducted in 2009 revealed an increase in the rate of EIBF from 24.5% to 34% annually [2]. In spite of 81.1% of the deliveries conducted by skilled health care providers nationwide, an annual 10.3% rise (44.6% in 2014 from 24.5% in 2006) indicates the gap in implementation of EIBF policy under the Baby Friendly Hospital Initiative by World Health Organisation [2,3].

Globally, only two out of five newborns are initiated with breastfeeding within the first hour since birth, as per UNICEF 2018 database [4]. Studies conducted globally showed that EIBF is associated with reduced neonatal mortality and morbidity, and is a matter of concern worldwide [5-9]. EIBF also has an inverse co-relation with Infant Mortality Rate (IMR). Studies revealed that initiation of breastfeeding within an hour of birth is associated with 44% lower IMR [5,7,8,10]. Various studies indicate that failure to initiate breastfeeding early can lead to a 33% increase in preventable mortality and morbidity from respiratory and gastrointestinal infections [11,12]. EIBF also ensures continued and sustained breastfeeding which fosters maternal and child bonding as well as is beneficial for neonatal health and development [13].

Though there are a few studies from different parts of India about EIBF, data from eastern India is lacking in the literature [14-18]. With this background, this cross-sectional, institution based study conducted within a stipulated timeline and limited resources, attempts to find out the proportion of mothers who breastfed their infants within 1 hour of birth, their socio-demographic and clinical profile and their knowledge regarding various aspects of breastfeeding. It also aimed at exploring the facilitating and inhibitory factors influencing EIBF.

## MATERIALS AND METHODS

It was a descriptive, observational, institution-based, cross-sectional study; conducted among mothers admitted in the post-natal ward of a tertiary care hospital in Kolkata, West Bengal, India. Study period was from June 2017 to August 2017. Confidentiality of respondents was maintained. Before inclusion in the study, informed consent was sought from parents and/or caregivers. The study got clearance from Institutional Ethics Committee (Reference number: MC/KOL/IEC/Non-spon/510/02-2017).

Sample size was calculated using the formula:

$$n = \frac{z_{\alpha/2}^2 PQ}{l^2},$$

where n was required sample size,  $Z_{\alpha/2}$  is critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at alpha 0.05), P is prevalence of early initiation of breastfeeding in India=44.6% [3]. Q equals 100-P, L is an absolute precision (10%). Thus calculated sample size was 95.

Based on previous three years record, the average seasonal in-patient load in the post-natal ward approximately equalled 30/day. Eight days were stipulated for data collection. Applying systematic random sampling, sampling interval came to be (240/95) 2.53, approximately 2. So, every alternate mother was selected by applying inclusion and exclusion criteria, after selecting first mother randomly.

**Inclusion criteria** were the mothers admitted in the post-natal ward during the stipulated study period. Mothers who were severely ill and unable to respond, whose babies are born with birth asphyxia, sepsis or very low birth weight (<1800 grams) or needing transfer to Neonatal Intensive Care Unit (NICU), those with contraindications to breastfeeding, and those not giving consent were excluded.

A predesigned and pretested semi-structured schedule containing sections for socio-demographic, income and clinical profile, maternal health care and infant feeding-related information, the knowledge of the mother regarding breastfeeding, and Bed Head Tickets (BHT) and Mother and Child Protection Card (MCPC) were used for data collection. Face validity of the questionnaire was checked by two public health experts and one linguistic expert. Cronbach's alpha was 0.81 indicating good agreement. Details of mother's knowledge assessment questionnaire are given in [Annexure 1].

## STATISTICAL ANALYSIS

Data were entered into MS excel and analysed using SPSS version 20.0. Different parameters were evaluated first by their frequency distributions and finally were assessed in a logistic regression model (ENTER method). Odds ratio with 95% Confidence Interval (CI) of all variables was taken and those found statistically significant were entered into final regression model. Model fitness was assessed using standard tests like Nagelkerke's ( $r^2$ ). Possible variables interactive effects (indicated by the significant p-value) were ruled out and robustness of the model fitness (as per Nagelkerke's ( $r^2$ ) and Likelihood Ratio value) was done. For all statistical tests of significance, p-value <0.05 were considered to reject the null hypothesis or significant to prove the theory.

## RESULTS

Final sample size was 97; mean age was 23.44±6.92 years. Majority of mothers belonged to the age group of 18-24 years [Table/Fig-1]. EIBF was initiated in 59 subjects [Table/Fig-2]. Authors reviewed the causes for not initiating EIBF (38 subjects), which included 'too sick to hold the baby' (14 patients) and 'baby not roomed/bedded-in'

Characteristics	Number	Percentage
<b>Age (in years)</b>		
18-24	59	60.82
25-31	30	30.93
32-38	8	8.25
<b>Religion</b>		
Hinduism	61	62.89
Islam	36	37.11
<b>Residence</b>		
Rural	50	51.55
Urban	47	48.45
<b>Education of mother</b>		
Below primary	19	19.59
Primary	28	28.87
Secondary	33	34.02
Higher secondary and above	17	17.52
<b>Education of father</b>		
Below primary	13	13.40
Primary	20	20.62
Secondary	29	29.90
Higher secondary and above	35	36.08
<b>Occupation of mother</b>		
Home-maker	90	92.78
Others	7	7.22
<b>Occupation of father</b>		
Business	34	35.05
Teacher	6	6.19
Labourer	9	9.28
Others (includes farmers, bank employees, workers in different shops etc.,)	48	49.48

Per capita income		
Less than 5000 INR	82	84.54
≥5000 INR	15	15.46

[Table/Fig-1]: Socio-demographic characteristics of the respondents (n=97).

Age at marriage (in years)	Number	Percentage
15-19	36	37.11
20 or more	61	62.89
<b>Age at first pregnancy (in years)</b>		
15-19	30	30.93
20 or more	67	69.07
<b>Birth order</b>		
First	62	63.92
Second or more	35	36.08
<b>Gender of the newborn</b>		
Male	52	53.61
Female	45	46.39
<b>Types of delivery</b>		
Vaginal/Vaginal assisted	47	48.45
Caesarian section	50	51.55
<b>Birth weight</b>		
<2.5 kg	44	45.36
2.5 kg or more	53	54.64
<b>Preterm or not</b>		
Preterm	37	38.14
Term/post-term	60	61.86
<b>No of antenatal visits</b>		
0-2	46	47.42
3 or more	51	52.58
<b>Advice regarding breastfeeding received</b>		
Yes	83	85.57
No	14	14.43
<b>EIBF initiated</b>		
Yes	59	60.82
No	38	39.18

[Table/Fig-2]: Clinical and biological characteristics of the respondents (n=97).

(24 patients). Colostrum feeding was done by 81 (83.51%) subjects. 83 (85.57%) received advice regarding breastfeeding from some health personnel.

Forty-six patients received advice from Auxiliary Nurse Midwife (ANM), 23 received advices from nurses, 11 received advices from ASHAs and only 3 from doctors. Though 58 (59.79%) mothers gave correct answers regarding the ideal time of breastfeeding, none of them had any knowledge regarding the advantages of EIBF [Table/Fig-3].

Question	No of mothers who gave at least one correct answer	% of mothers who gave at least one correct answer
Ideal time for breastfeeding	58	59.79
Ideal frequency of breastfeeding	20	20.62
Ideal duration of breastfeeding	19	19.59
Advantage of EIBF to mother	0	0.00
Advantage of EIBF to baby	34	35.05
Advantage of EIBF in reducing neonatal death	39	40.21

[Table/Fig-3]: Knowledge regarding various aspects of breastfeeding (n=97).

To assess the factors associated with EIBF, several socio-demographic and clinical variables were at first subjected to

Variables	Categories	EIBF done (59)	EIBF not done (38)	OR (95% CI)	AOR (95% CI)
Age (in years)	18-24	36	23	1.02 (0.44-2.35)	
	25 or more	23	15	1	
Religion	Hinduism	40	21	1.70 (0.74-3.95)	
	Islam	19	17	1	
Residence	Rural	31	19	1.10 (0.49-2.50)	
	Urban	28	19	1	
Education of mother	Primary or less	17	30	1	1
	Secondary or above	42	8	9.26 (3.54-24.25)	3.82 (1.95-10.22)
Education of father	Primary or less	13	20	1	1
	Secondary or above	46	18	3.93 (1.62-9.53)	2.06 (0.93-5.33)
Occupation of mother	Home-maker	55	35	1.18 (0.25-5.59)	
	Others	4	3	1	
Per capita income	<5000	50	32	1	
	≥5000	9	6	0.96 (0.31-2.95)	
Age at marriage (in years)	15-19	12	24	1	1
	20 or more	47	14	6.71 (2.69-16.76)	3.54 (2.12-8.69)
Age at first pregnancy (in years)	15-19	6	24	1	1
	20 or more	53	14	15.14 (5.19-44.20)	6.87 (0.78-62.76)
Birth order	First	34	28	1	
	Second or more	25	10	2.06 (0.85-5.00)	
Gender of newborn	Male	35	17	1.80 (0.79-4.11)	
	Female	24	21	1	
Types of delivery	Vaginal/Vaginal assisted	38	9	5.83 (2.33-14.61)	3.99 (1.82-8.04)
	Caesarian section	21	29	1	1
Birth weight	<2.5 kg	18	26	1	1
	2.5 kg or more	41	12	4.94 (2.05-11.90)	2.71 (0.90-13.41)
Preterm or not	Preterm	13	24	1	1
	Term/post-term	46	14	6.06 (2.46-14.95)	2.64 (1.43-11.26)
No. of antenatal visits	2 or less	13	33	1	1
	3 or more	46	5	23.35 (7.59-71.87)	12.14 (0.78-59.13)
Advice regarding BF received	Yes	54	29	3.35 (1.03-10.94)	1.58 (0.79-2.94)
	No	5	9	1	1

**[Table/Fig-4]:** Logistic regression analysis to assess the factors associated with EIBF (n=97).

AOR: Adjusted odds ratio; Nagelkerke  $r^2$ : 0.475, indicating good model fitness

bivariate analysis and subsequently multivariate analysis. Variables taken were: age, religion, residence, mother's education, father's education, mother's occupation, age at marriage, age at first pregnancy, birth order, gender of newborn, type of delivery, birth weight, preterm or not, number of antenatal visits, advice regarding breastfeeding received or not. In the bivariate model, it was observed that education of mother, education of father, higher age at marriage, higher age at first pregnancy, vaginal/vaginal assisted delivery, higher birth weight, term/post-term, 3 or more antenatal visits and receiving advice regarding breastfeeding all facilitated early initiation of breastfeeding. However, in the multivariate model, it was noticed that education of mother, higher age at marriage, vaginal/vaginal assisted delivery and term/post-term baby were significant factors promoting EIBF [Table/Fig-4].

## DISCUSSION

In the current study conducted in a tertiary care hospital, it was found that the practice of EIBF was prevalent among 60.82% of the study subjects. The study also shed light on various factors influencing EIBF.

An Indian study reported that 40% of the respondents initiated breastfeeding within 1 hour of birth [19]. Another study reported that 20% of their study subjects initiated breastfeeding within an hour while other 30% started breastfeeding their newborns after 24 hours [20]. A study conducted for estimating the prevalence of EIBF in

Tamil Nadu, southern India reported an impressive value of 97.5% of their study subjects to have indulged in EIBF, which is way higher than the values of the present study [21]. Study conducted by El-Mouzan MI et al., showed that 23% of mothers practised EIBF while the same conducted by El-Gilany AH et al., showed that only 11.4% of mothers breastfed their infants within an hour of their birth [22,23]. Patel A et al., reported that among institution delivered infants in India, EIBF rates were 36.4% [24]. Key findings from some recent Indian studies on EIBF are shown in [Table/Fig-5] [14-18, 25-27].

The present study brings to light several factors having significant bearing on timely initiation of breastfeeding such as education of both the parents, age of the mother at marriage, age of the mother at first pregnancy, type of delivery conducted, and also if the mother went for antenatal visits during her pregnancy period and if she received any counselling or advice regarding the advantages and need for breastfeeding and EIBF. The present study revealed that among the study subjects, mothers who had received education of secondary level or more were 9.26 times more likely to conduct EIBF. Similarly, it is also seen in the present study that even education of secondary level or more in the father's part increases the chances of EIBF by about 3.93 times. Education, in general, creates the sense of awareness, understanding and learning. These parents were more informed and concerned regarding the benefits that EIBF has for their child. Setegn T et al., reported that formal education receiving mothers were 1.4 times more likely

Author name	Year of publication	Sample size	Geographic area	Findings
Babu RA et al., [14]	2018	216 mothers	South-eastern region of India	EIBF in 3 (1.39%) Delay in rooming-in was major cause of delay Factors favouring EIBF: early rooming in, mother's knowledge regarding breastfeeding
Bhanderi DJ et al., [15]	2019	330 mothers	Central Gujarat, India	EIBF in 218(66.1%)
Rao MVR and Fathima N [16]	2018	100 mothers	Telengana, India	EIBF in 10% Causes of delayed initiation: unawareness, baby not roomed in
Senanayake P et al., [17]	2019	94,104 women, from NFHS 4 data	All over India	41.5% EIBF Barriers to EIBF were: Caesarean delivery Non-health professional assistance Rural regions of Central India
Sharma A et al., [18]	2016	210 mothers	Tribal area of Madhya Pradesh, India	EIBF in 38.6% Education and occupation of mothers, and mothers who received post-natal advice were most significant associations of EIBF
Subhadra KT [25]	2018	277 mothers	Rural part of Kerala, India	Less than 30% EIBF
Prasad KN and Ahmed N [26]	2015	350 babies	Pondicherry, India	EIBF rate was 75% Factors favouring EIBF: Mother's education Mother's age Mode of delivery
Majra JP and Silan VK [27]	2016	FGD involving 34 nursing care providers	Haryana, India	Barriers to EIBF: Lack of awareness, inverted/retracted nipples, Obstetric/neonatal complications, cultural practices like giving pre-lacteals, gender discrimination.

**[Table/Fig-5]:** Comparison of various Indian studies on EIBF [14-18,25-27].

to breastfeed their infants within the first hour of delivery than mothers who didn't receive any formal education at all {OR: 1.4 (95% CI: 1.032-0.03)} [28]. Sandor M and Dalal K, revealed in their study that women without any education were 50% less likely to indulge in EIBF when compared to educated women [29]. Patel A et al. demonstrated mothers with higher education were more associated with EIBF (adjusted OR 2.00, 95% CI: 1.10-3.60) [24]. The present study has gone on to reveal both antenatal visits (OR: 23.35, 95% CI: 7.59-71.87) and mothers receiving advice regarding breastfeeding (OR: 3.35, 95% CI: 1.03-10.94) to have huge bearing on EIBF practice. At this juncture, education also happens to play a major part. The tendency of visiting health professionals for antenatal check-up during the antepartum period is in general seen more among the parents having received formal education. Wolde T et al., in his study showed antenatal visits to have a statistically significant outcome on EIBF [30]. Archana P et al., reported similar findings [24]. In the present centre, post-natal counselling was also regularly done by on-duty doctors and nurses; however, the quality of counselling lacks uniformity. Sharma A et al., reported in his study that prevalence of EIBF was more among mothers receiving counselling during antenatal visits (OR: 7.681, 95% CI: 1.750-33.711) and post-natal advices (OR: 31.271, 95% CI: 7.367-132.742) regarding breastfeeding [18].

### Limitation(s)

The present study was limited by time and resource constraints. Sample size was relatively less. The percentage of patients practising EIBF derived from this study may be subject to Berksonian (hospital) bias. This may be the reason for a relatively higher percentage of EIBF.

### CONCLUSION(S)

The present study has revealed various factors as education of mother, higher age at marriage, vaginal/vaginal assisted delivery and term/post-term baby were significant factors promoting EIBF. They significantly affect initiation of breastfeeding within one hour of birth of infants. Multicenter studies with larger sample size are required to further assess the impact of these factors on initiation of breastfeeding.

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Theme	Ideal response	Unprompted response of the mother
Ideal time for initiation of breastfeeding	As early as possible, preferably within one hour	
Ideal frequency for breastfeeding	Demand feeding	
Ideal duration of breastfeeding	Exclusive BF up to 6 months, then continued BF along with complementary feeding not less than two years	
Advantage of exclusive breastfeeding to the baby (tick the correct options)	Reduces chance of infection	
	Boosts immunity	
	Increases intelligence of baby	
	Establishes mother child bonding	
Advantage of exclusive breastfeeding to the mother (tick the correct options)	Other (specify)	
	Increased birth intervals in the absence of modern contraceptives and decreased risk of anaemia	
	Increased postpartum weight loss	
	Decreased risk of Type 2 diabetes	
	Helps return of mother's body to pre-pregnant state	
Advantages of early initiation of breastfeeding: Reduces the risk of neonatal death by (tick the correct options)	Reduced risk of breast and ovarian cancer	
	Other (specify)	
	Protects against exposure to infectious pathogens	
	Promotes optimal maturation of the gut and immune system	
	Helps protect against loss of body heat	
Advantages of early initiation of breastfeeding: Reduces the risk of neonatal death by (tick the correct options)	Facilitates sustained breastfeeding.	
	Other (specify)	