

# DIFFERENTIALS AND DETERMINANTS OF THE DURATION OF BREASTFEEDING IN BANGLADESH: A MULTILEVEL ANALYSIS

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**Abstract:** The differentials and determinants of breastfeeding (BF) were studied by a number of socioeconomic and demographic characteristics of mother and child in Bangladesh. The data for this study were taken from the Bangladesh Demographic and Health Survey 1996-1997. Information on BF was taken from the mothers following the last birth (n=4972) (current status) and last but one birth (n= 1851) (retrospective reporting). In this study, about 98 per cent mother in respect of last child and 92 per cent mother in respect of last-but-one child breastfed their children at least briefly. The mean duration of breastfeeding was found about 26.4 months for the last child and 25.9 months for the last-but-one child cohort. Mothers belonging to the older births cohort breastfed for a longer duration than the younger mothers. Education as well as occupation of mothers and fathers was found inversely related with the duration of BF. A positive relationship of the mean duration of breastfeeding was found with post partum amenorrhoea, age of mother at the birth of child, age of child and open birth interval.

**Keywords:** Postpartum amenorrhoea, open birth interval, censored, parity, proportional hazards model, relative risk.

## Introduction

The benefits of breastfeeding on the health of an infant as an inexpensive and an appropriate source of nutrition are well accepted. It gives the baby best protection against diarrhoea, infections and food allergies. and thus reduces infant mortality [1]. The people who recognize the beneficial effects of breastfeeding are quite fretful about the declining trend in the duration of breastfeeding in many developing countries [2]. Several studies have identified that prolonged breastfeeding lengthens the period of non-exposure to the risk of conception and consequently increasing the interval between two consecutive births. Guz and Hobcraft [3] have showed the effect of breastfeeding beyond the start of menstruation after delivery, particularly due to the suckling stimulus as the main factor having its effect on fertility. Nath *et al.* [4] have

shown the effect of breastfeeding on the waiting time of conception after resumption of menstruation.

All of the above mentioned studies have mostly dealt with the duration of breastfeeding (full or partial) in months, but did not attempt to elucidate the level of breastfeeding. The main objectives of this paper were to study determinants of duration of breastfeeding of Bangladeshi women with a set of explanatory variables, as well as its level. This paper is divided into two parts. The first part deals with differentials and determinants of the duration of breastfeeding with some explanatory variables by using survival analysis and proportional hazard model techniques. The second part discusses any variation in the level of the duration of breastfeeding in the light of 'retrospective' as well as 'current status' reporting of the duration of the breastfeeding data.

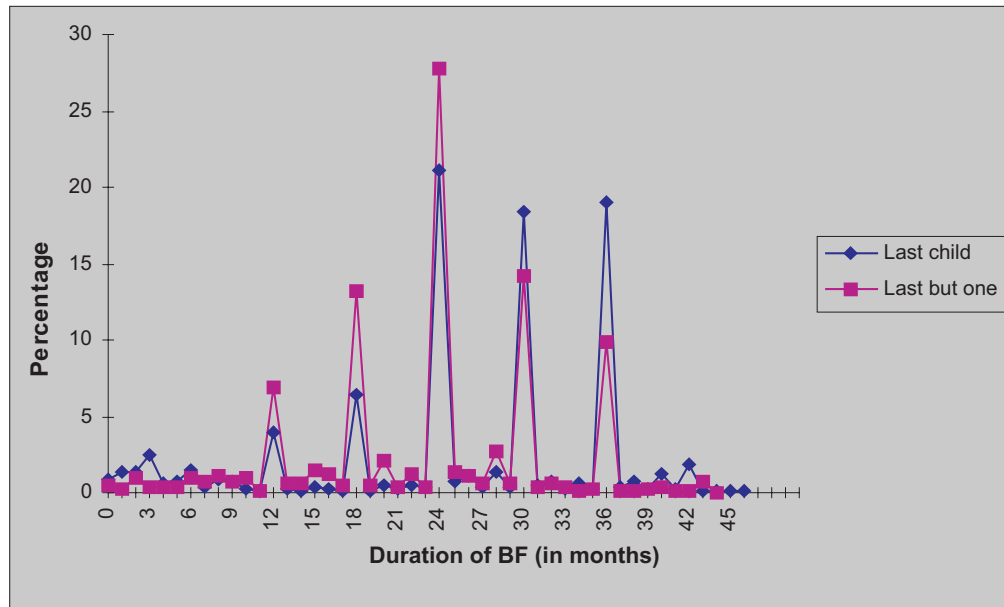
## Materials and Methods

The data for this study were taken from the Bangladesh Demographic and Health Survey (BDHS) 1996-97 [5]. A total of 4,972 women provided information on the duration of BF for their last born child, of whom 2.2 per cent reported to have never breastfed, 28.6 per cent had already weaned, 5.8 per cent experienced death of the child, and the remaining 64.9 per cent were still breastfeeding at the time of the interview. Again, a total of 1851 women provided information on the duration of BF for their last but one child (penultimate child), of whom 7.1 per cent reported to have never breastfed, 76.3 per cent had already weaned, 17.7 per cent experienced death, and the remaining 2.3 per cent were still breastfeeding at the time of the interview. It is not surprising to have some (about 2 per cent) censored cases in the case of the last-but-one child cohort also. Such reporting has also been made in several other studies based on the data from developing countries on the duration of BF [6]. Such events are usually found in cases of under nourished child and who remained sick or the mothers used to breastfeed the last-but-one child along with the last child.

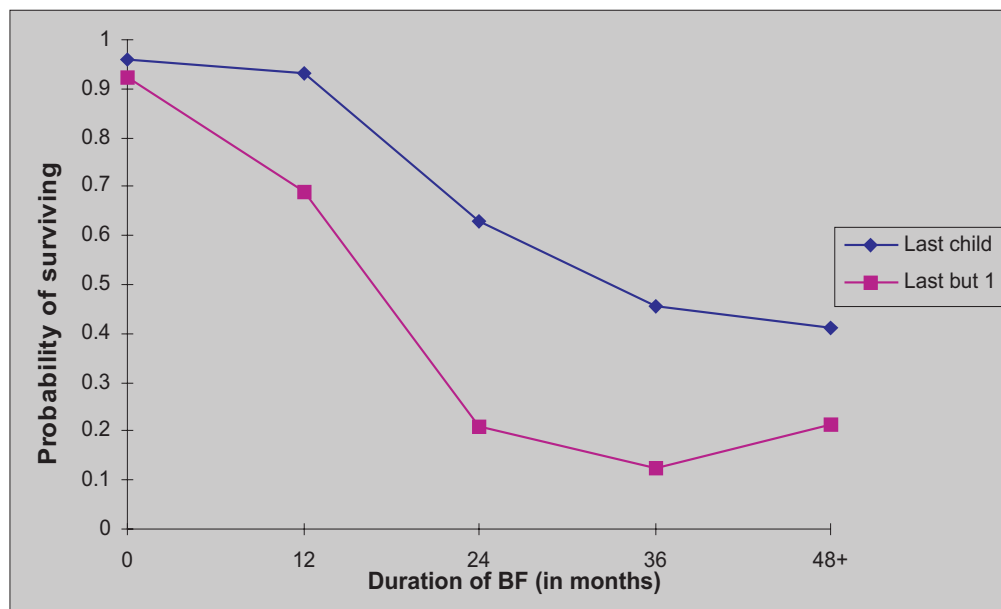
The dependent variable in this study was the duration of breastfeeding. The dependent variable contained some censored cases and it was measured in completed months. The independent variables, all measured at the survey date, were grouped into three categories: demographic, socio-economic and cultural variables. Demographic variables included here were parity of mother (PARITY), current age of mother (AGEMOTH), age of mother at the birth of child (AGEMOTC), post-partum amenorrhoea (PPA), last closed birth interval (CLOSE), open birth interval (OPEN), current age of child (AGECH) and sex of child (SEX). Socio-economic variables included were education of the mother

(EDUM), education of the father (EDUF), employment status of the mother (EMPM), occupation of the father (OCUF), socioeconomic status of household (SOECOHH), and place of residence (RES). Religion (RELIG) was included as a cultural variable. The association of the duration of breastfeeding with all the explanatory variables included in this study was first checked by the Chi-square statistic. Chi-square statistic has also been used to test the goodness of fit of the model as well as to test the significance of the explanatory variables. Various summary measures based on this analysis were also calculated. Both univariate and multivariate proportional hazards model analysis were used to study the duration of breastfeeding. The univariate proportional hazard model analysis was used to give a measure of the effect of each variable on the duration-specific probabilities of the duration of breastfeeding (hazard function) in the absence of the control for other variables. A multivariate proportional hazard model analysis was then undertaken to measure the effect of each category of each variable on the hazard function while controlling the effects of the other variables (and their categories) included in the model. Some explanatory variables which were interrelated were excluded from the multivariate hazard model. A relative risk of 1.00 was considered to indicate baseline category or reference for each variable. A relative risk greater than 1.00 was taken to indicate higher risks of occurrence of the event than the reference category or vice-versa.

Figure 1 shows the distribution of the duration of BF for last and last but one child cohorts. It showed a heaping pattern in the duration of BF at the multiple of six months. A similar pattern of heaping in the duration of BF has also been reported in several other studies conducted in Bangladesh [7] as well as other developed and developing countries [6,8,9,10].



**Fig. 1.** Percentage distribution of duration of breast feeding.



**Fig. 2.** Survival curves based on life table technique.

The reasons for the heaping in the duration of breastfeeding reported by these studies are: misreporting, culturally prescribed norms, memory lapse and selection bias. Nevertheless, it is difficult to detect the systematic tendencies of under reporting and over reporting in the duration of BF, unless the errors are gross. Over reporting in BF was noticed when the duration of BF exceeded the current age of the child or its age at death, whereas under reporting would not result in any visible inconsistencies and therefore remained unnoticed [6,8].

## Results and Discussion

The reported mean duration of BF was 26.4 months in case of the last child and 25.9 months in case of the last-but-one child considering only the surviving children who had completed breastfeeding. The mean duration of breastfeeding found by other Bangladesh studies was between 22 to 34 months [7,11]. The present study reports a shorter mean duration of breastfeeding.

The survival analysis and its different summary measures (mean, median, trimean etc.) of the duration of breastfeeding by various characteristics of mothers and children are given in Table 1. Survival analysis, where censored cases were taken into account, revealed a higher median duration of BF (about 29.9 months) for the last child compared to the last-but-one child (about 27.0 months). This may be due to higher percentage (about 65 per cent) of the censored cases in the last child cohort than for the last-but-one child (only 2 per cent). Theoretically, survival analysis provides a higher value of probabilities at the later categories due to censoring [10]. In the present study, two survival curves of the distribution of the duration of BF for both the birth cohorts differed significantly from each other (Fig. 2).

## BF in relation to parity and age

The average duration of BF in the case of the last child varied with a low value of 27.2 months for current age of the mother (<25 years) to a high value of 30.8 months for the age group 35-49 years (Table 1). The duration of breastfeeding in the case of the last-but-one child also exhibited a similar pattern where it ranged from 25.7 to 27.2 months. Further, age of the mother at the birth of the child showed an almost similar pattern in the duration of BF for the last and last-but-one child cohorts as that of the current age of the mother. The parity order of mothers also showed a similar pattern of the duration of BF as found with age variables for both the birth cohorts. For example, mothers with parity 1-2 breastfed for an average of 27.1 months, which linearly increased to 30.6 months for parity 7+ in the last child cohort. Some authors [11] have also reported a similar pattern in their studies based on Bangladesh data. This may be due to (i) mothers of high parity may be older and they produce less milk but they may be more traditional in orientation, and (ii) usually lower births occur in quick succession than higher order births, hence the chance of voluntary termination of BF at an early age of child for the younger mother might be higher than for the older mothers. Chi-square statistic revealed that parity and current age of the mother for both the birth cohorts bears a significant relationship with the distribution of the duration of breastfeeding (Table 1). After controlling the other covariates, the current age of the mother showed a significant relation with the duration of breastfeeding for both the birth cohorts (Table 3). However, parity and age of the mother at the birth of child have been excluded from the multivariate proportional hazard model analysis to avoid multicollinearity with the current age of the mother.

**Table 1.**  
Survival analysis of BF vs other variables.

Group	Variables	No. of events	Censored cases	Proportion terminating at months			Mean	Median	Trimean	2
				12	24	36				
PARITY										
Last child	1-2	626	72.1	.0677	.3399	.5343	27.1	39.2	29.3	54.5
	3-4	429	68.1	.0593	.4209	.5455	28.1	37.1	30.6	df=24
	5-6	204	66.1	.0831	.3650	.5628	30.1	38.6	31.5	p<.01
	7+	151	64.7	.0681	.3711	.5605	30.6	38.7	32.3	
Last but one	1-2	445	2.10	.2554	.7569	.8507	26.0	27.5	26.7	35.4
	3-4	514	3.38	.2922	.7840	.8841	26.0	27.5	26.7	df=24
	5-6	249	4.96	.3388	.8063	.8846	25.7	27.0	26.1	p>.05
	7+	183	0.54	.3704	.8727	.9286	25.5	26.3	25.9	
AGEMOTH										
Last child	<25	448	79.4	.0601	.3344	.5294	27.2	39.9	28.7	35.0
	25-34	713	62.7	.0746	.3938	.5407	28.4	37.5	30.8	df=16
	35-49	247	53.0	.0657	.3827	.5779	30.8	38.1	32.8	p<.01
Last but one	<25	637	3.0	.3160	.7756	.8824	25.7	27.1	26.3	31.8
	25-34	615	3.3	.3197	.7822	.8679	25.8	27.2	26.3	df=16
	35-49	137	0.7	.2537	.8800	.8696	27.2	28.2	28.0	p<.01
AGEMOTC										
Last child	<25	825	70.7	.0664	.3719	.5583	28.0	38.3	30.2	14.7
	25-34	478	68.1	.0730	.3743	.5346	28.6	38.3	30.7	df=16
	35-49	107	64.7	.0499	.3624	.5082	31.1	39.7	33.1	p>.05
Last but one	<25	990	2.8	.3076	.7723	.8623	25.9	27.3	26.5	28.1
	25-34	350	3.9	.3486	.8194	.9118	25.4	26.6	25.9	df=16
	35-49	51	0.0	.1569	.9070	1.000	29.1	29.4	29.4	p<.05
PPA										
Last child	0-2	378	61.2	.0911	.3742	.5773	25.5	36.6	26.8	162.4
	3-5	141	68.9	.0620	.3174	.5373	26.5	39.6	28.4	df=56
	6-8	139	64.4	.0976	.4375	.4842	26.9	35.5	26.1	p<.01
	9-11	62	76.5	.0581	.4211	.4878	28.0	37.6	29.3	
	12-14	273	58.0	.0705	.3662	.5428	30.6	39.0	32.3	
	15-17	23	74.2	.0704	.3714	.6667	30.0	38.6	30.0	
	18+	375	47.5	.0445	.3786	.5521	31.5	39.0	33.1	
Last but one	0-2	327	3.8	.3794	.7692	.8684	24.2	25.5	24.6	152.8
	3-5	139	1.4	.3415	.7826	.8824	24.5	26.0	25.2	df=56
	6-8	147	2.7	.3911	.8466	.8182	23.9	25.3	24.6	p<.01
	9-11	99	0.0	.4239	.8868	1.000	24.3	24.9	24.6	
	12-14	253	1.9	.3133	.7918	.8529	26.8	27.7	27.1	
	15-17	59	1.7	.2609	.8810	1.000	27.2	28.1	27.8	
	18+	298	2.3	.1297	.7535	.8739	29.6	30.4	30.2	

Table 1 (continued)

Group	Variables	No. of events	Censored cases	Proportion terminating at months			Mean	Median	Trimean	2
				12	24	36				
CLOSE										
Last child	0-11	8	71.4	.000	.3448	.4444	30.0	41.5	31.2	
	12-23	175	65.9	.0965	.3826	.5874	28.8	37.4	29.7	64.7
	24-35	320	67.5	.0655	.3995	.6263	30.4	37.7	32.0	df=32
	36-47	257	67.9	.0681	.3876	.5502	29.4	38.1	30.9	p<.01
	48+	650	71.6	.0616	.3492	.4958	27.1	39.2	29.4	
Last but one	0-11	6	0.0	.4000	.6667	1.000	24.0	24.0	24.8	32.5
	12-23	206	2.8	.3848	.7769	.8235	25.1	26.0	25.3	df=32
	24-35	324	2.7	.3562	.8410	.9655	25.3	26.4	25.7	p>.05
	36-47	238	2.1	.2611	.8097	.8852	26.8	28.1	27.5	
	48+	617	3.4	.2837	.7628	.8556	26.1	27.7	26.8	
OPEN										
Last child	0-11	16	98.6	1.000			6.8	17.9	6.4	450.2
	12-23	46	95.6	.0365			13.6	12+	10.2	df=32
	24-35	224	75.6	.0633	.2759	1.000	23.6	38.8	25.1	p<.01
	36-47	395	39.4	.0740	.4010	.4018	29.4	37.6	30.3	
	48+	729	11.1	.0867	.4144	.6192	31.2	35.9	33.6	
Last but one	0-11	0								173.3
	12-23	28	31.7	.7910			14.1	17.3	14.8	df=24
	24-35	168	7.2	.5644	.8682	1.000	21.0	21.5	21.0	p<.01
	36-47	427	2.3	.3235	.8759	.8276	25.2	26.8	25.9	
	48+	767	28.6	.2324	.7387	.8828	27.8	28.9	28.6	
AGECH										
Last child	<1	NIL								530.8
	1-2	45	95.7	.9622	1.0		11.1	24.0+	10.7	df=40
	2-3	209	77.1	.9347	.7361		22.9	24.0+	24.4	p<.01
	3-4	391	41.6	.9297	.5883	.6148	29.2	37.4	30.1	
	4-5	439	15.9	.9317	.6156	.3663	31.8	37.1	34.2	
	5+	312	4.9	.8856	.5535	.4000	30.5	34.6	34.3	
Last but one	<1									
	1-2	21	32.3	.7222			13.4	17.4	13.9	
	2-3	161	7.5	.3974	.1171		20.3	20.8	20.2	207.39
	3-4	415	2.1	.6718	.1098	.1837	25.1	26.7	25.8	df=32
	4-5	459	1.3	.7413	.2305	.0884	27.1	28.3	27.7	p<.01
5+	335	0.3	.8006	.3083	.1410	28.7	29.8	29.8		

**Table 1 (continued)**

Group	Variables	No. of events	Censored cases	Proportion terminating at months			Mean	Median	Trimean	2
				12	24	36				
SEX										
Last child	Male	720	69.3	.9357	.6287	.4467	28.23	38.4	30.6	5.2
	Female	690	69.6	.9294	.6275	.4630	28.65	38.5	30.8	df=8 p>.05
Last but one	Male	666	3.9	.6981	.2251	.1585	26.05	27.5	26.7	2.4
	Female	725	2.0	.6779	.1952	.0888	25.71	27.0	26.3	df=8 p>.05
EDUM										
Last child	Illiterate	707	72.5	.0539	.3500	.5287	30.18	39.9	32.2	125.8
	Primary	404	67.5	.0744	.3779	.5768	29.26	38.1	31.2	df=24
	Mid-High	230	62.9	.0871	.4095	.5584	24.89	35.6	26.1	p<.01
	Inter+	69	56.1	.1795	.5977	.3636	18.52	28.8	18.4	
Last but one	Illiterate	886	3.0	.3054	.7890	.9177	26.3	27.5	26.8	31.0
	Primary	339	2.3	.3173	.8085	.7895	25.1	26.8	26.0	df=24
	Mid-High	145	4.0	.3214	.7487	.8372	25.9	27.3	26.4	p>.05
	Inter+	21	4.5	.5000	.8750	.0000	18.6	19.5	18.8	
EDUF										
Last child	Illiterate	578	73.1	.0484	.3460	.5567	30.5	39.9	33.3	120.0
	Primary	344	70.1	.0827	.3634	.5325	29.3	38.8	31.0	df=24
	Mid-High	317	64.3	.0753	.4062	.5303	27.3	36.6	27.0	p<.01
	Inter+	162	58.6	.1208	.4819	.6286	21.8	32.2	22.8	
Last but one	Illiterate	711	3.0	.3186	.8114	.9000	25.9	27.2	26.4	36.0
	Primary	372	2.1	.3068	.7966	.8421	25.8	27.2	26.5	df=24
	Mid-High	219	3.52	.2734	.7157	.9231	26.9	28.2	27.4	p>.05
	Inter+	78	3.7	.4000	.7952	.6667	23.0	24.5	23.7	
EMPM										
Last child	Unemployed	874	71.1	.0724	.3824	.5758	28.1	37.9	29.9	30.2
	Employed without cash	193	68.8	.0718	.4204	.5584	29.0	36.9	30.6	df=16 p<.05
	Employed with cash	343	64.9	.0515	.3219	.4831	29.0	40.6	32.3	
Last but one	Unemployed	919	3.7	.3073	.7763	.8880	26.1	27.4	26.6	15.7
	Employed without cash	203	2.4	.3033	.7985	.8235	25.9	27.4	26.6	df=16 p>.05
	Employed with cash	266	0.8	.3337	.8349	.8627	25.0	26.4	25.8	

Table 1 (continued)

Group	Variables	No. of events	Censored cases	Proportion terminating at months			Mean	Median	Trimean	2
				12	24	36				
	OCUF									
Last child	Agg.& related work.	489	71.7	.0489	.3176	.5214	30.4	40.8	32.9	85.4
	Daily labourer	461	69.3	.0707	.4189	.5697	28.2	36.8	30.0	df=32
	Service.	78	61.0	.0748	.5655	.4571	30.7	32.3	25.1	p<.01
	Business	342	66.6	.0989	.3745	.5435	26.8	37.3	28.1	
	Others	35	74.5	.0274	.3368	.8235	32.1	39.0	33.5	
Last but one	Agg.& related work.	519	2.3	.2976	.8006	.9077	26.3	27.6	26.9	38.7
	Daily labourer.	475	3.5	.2873	.7822	.8976	26.1	27.6	26.8	df=32
	Service.	52	1.9	.3696	.8070	1.000	24.0	25.3	24.5	p>.05
	Business	294	3.9	.3705	.7919	.7761	24.8	26.0	25.3	
	Others	43	0.0	.3171	.6786	.7778	27.1	28.1	27.8	
	SOECOHH									
Last child	Low	404	74.8	.0521	.3550	.5200	30.1	39.9	32.8	97.7
	Middle	818	68.4	.0721	.3742	.5462	28.9	38.4	31.0	df=16
	High	183	54.4	.1053	.4421	.6154	22.5	32.9	23.7	p<.01
Last but one	Low	597	2.3	.3237	.8073	.9000	26.1	27.2	26.6	38.8
	Middle	711	2.9	.2915	.7717	.8856	26.1	27.6	26.8	df=16
	High	75	7.4	.3857	.8434	.4444	22.5	24.8	23.3	p<.01
	RES									
Last child	Urban	254	61.46	.1658	.6273	.8333	24.9	35.9	26.2	57.4
	Rural	1156	70.80	.1481	.6143	.8410	29.2	38.8	31.2	df=8
										p<.01
Last but one	Urban	149	3.87	.3731	.6228	.7541	24.3	25.5	24.7	36.7
	Rural	1142	2.82	.3054	.8074	.9003	26.1	27.4	25.63	df=8
										p<.01
	RELIG									
Last child	Muslim	1280	69.4	.9312	.6108	.4478	28.4	37.8	30.5	36.1
	Hindu	126	70.1	.9440	.7816	.5057	29.2	43.0	33.1	df=16
	Others	4	63.64	1.000	.7500	.2000	30.0	39.8	31.5	p<.05
Last but one	Muslim	1282	2.7	.3097	.7983	.8910	25.5	27.3	26.5	9.3
	Hindu	105	6.3	.3465	.6923	.7368	25.9	26.9	27.8	df=16
	Others	4	0.0	.2500	.6667	1.000	30.0	30.0	30.0	p>.05
Total	Last child	1410	68.5	.0674	.3719	.5452	28.4	38.4	30.7	
Total	Last but one	1391	2.8	.3123	.7902	.8750	25.9	27.2	26.5	

Note : Total event case is not equal to 1410 ( for last child) or 1391 (for last but one child ) due to missing value

### BF in relation to post-partum amenorrhoea (PPA)

A significant positive association was found between the duration of BF and post-partum amenorrhoea (Tables 1 and 3). The mean duration of BF for the different duration groups of post partum amenorrhoea increased from a low value of 25.5 months (amenorrhoeic for 0-2 months) to a high value of 31.5 months (amenorrhoeic for 18+ months) for the last child cohort, whereas it varied from 23.9 months (amenorrhoeic for 6-8 months) to 29.6 months (amenorrhoeic for 18+ months) for the last but one child. Survival analysis showed that about 17 per cent and 11 per cent of the mothers in the last and last-but-one child cohort, respectively, terminated BF during the first twelve months after experiencing 0-2 months of post-partum amenorrhoea, whereas only about 7 per cent and 4 per cent of the mothers did so for the last and last-but-one child cohort, respectively, who were amenorrhoeic for 18+ months. Univariate proportional hazard analysis also showed a significant impact of the duration of PPA on the hazard function of the duration of BF in respect of the last-but-one child (Table 2).

### BF in relation to birth interval

This study showed that mean duration of BF varied according to closed birth interval from a low value of 27.1 months for CLOSE category 48+ months to 30.0 months for CLOSE category of 0-11 months. The duration of BF also varied according to open birth interval from a low value of 6.8 months for OPEN category 0-11 months to a high value of 31.2 months for the OPEN category 48+ months (in case of last child) (Table 1). In an Indian case study, an average duration of BF was found between 14.6 months (for CLOSE category of 0-23 months) to 23.7 months (for CLOSE category of 48+ months); and between 18.8 months (for OPEN category of 0-11 months) to 25.5 months (for OPEN category of 48+ months) [6]. Thus the duration of BF was found significantly related with open birth interval (Table 2). A significant relationship was maintained between these two even after controlling the effects for other covariates (multivariate hazard analysis) (Table 3). Due to linear dependency of open birth interval with age of child, it was dropped from the multivariate analysis.

**Table 2.**  
Univariate analysis of the risks of weaning of breastfeeding on selected variables.

Variables	Last child (n=4682, censored=99)				Last but one child (n=1384, censored=41)			
	-2log L with covariates	Model $\chi^2$	df	p	-2log L with covariates	Model $\chi^2$	df	p
PARITY	20170.390	0.008	1	0.930	17990.51	4.454	1	0.035
AGEMOTH	20132.299	5.560	1	0.018	17965.42	0.110	1	0.741
AGEMOTC	20169.300	1.100	1	0.029	17994.17	0.865	1	0.352
EDUM	20116.450	57.085	1	0.000	17994.90	0.127	1	0.721
EDUF	19965.392	49.474	1	0.000	17824.502	0.275	1	0.600
OCUF	20088.901	12.980	1	0.000	17873.386	0.740	1	0.390
PPA	20147.159	23.213	1	0.000	17977.713	17.344	1	0.000
CLOSE	20168.660	1.751	1	0.186	17991.240	3.817	1	0.051
OPEN	20055.395	110.830	1	0.000	17902.330	83.578	1	0.000
AGECH	20051.815	119.701	1	0.000	17913.073	83.079	1	0.000
SEX	20170.238	0.164	1	0.686	17993.050	1.972	1	0.160
RELIG	20160.897	8.842	1	0.003	17993.994	0.998	1	0.031
RES	20153.524	17.994	1	0.000	17994.115	0.889	1	0.000
SOECOHH	20046.686	38.125	1	0.000	17668.222	0.0569	1	0.811

### **BF in relation to age and sex of child**

The mean duration of BF increased with increase in age of the child in respect of the last and the last-but-one child cohorts (Table 1). Even after controlling the effects for other explanatory variables, a significant positive relationship existed between these two variables (Tables 2 and 3). For last child cohort, the mean duration of BF for the male child was slightly lower (28.2 months) compared to that for the female child (28.7 months), whereas in the case of the last-but-one child, it was higher (26.0 months) in the case of a male child compared to a female child (25.7 months). However, both cohorts showed no evidence of marked differentials in the duration of BF by sex of the child, after controlling the effects of other covariates (Table 3).

### **BF in relation to education and occupation variables**

Education and occupation have been considered to measure socio-economic status of a woman [6]. In Bangladesh, about half of the mothers were found illiterate with no earning source. So, father's (husband's) education and occupation have also been included for this analysis. Table 1 shows that in the case of the last child mothers, having no schooling, were found to breastfeed on an average for 30.2 months which linearly decreased to 18.5 months for the mothers with higher education (Inter+). Husband's education also showed an inverse relationship with the duration of BF. A similar pattern was also observed in the case of the last-but-one child cohort. Similar findings have also been reported by other researchers based on the data from developing countries [9,12]. Univariate proportional hazard model analysis exhibited a significant contribution of education in explaining the duration of the BF in the case of

the last child cohort (Table 2). After controlling the effect of other covariates (Table 3), multivariate proportional hazard model analysis also confirmed this relation, where risk of early weaning significantly increased with increased education of mothers as compared to the illiterate mothers. This may be due to the fact that illiterate mothers do not get enough time to give breast milk and most of the educated mothers work outside in day time and thus tend to lactate for shorter period and probably also provide food supplements to the children much earlier. Husbands' education was dropped from the multivariate analysis to avoid multicollinearity problem. Women whose husbands were agriculturists or doing related works experienced a longer mean duration of BF than those women whose husbands belonged to other categories of occupation (Tables 1 and 3).

### **BF in relation to place of residence and socioeconomic status of household**

As may be expected, rural mothers showed a longer mean duration of BF than the urban mothers for both the birth cohorts, and the relationship between these two was found significant (Tables 1 and 2). Proportional hazard model analysis (Table 3) showed that the risk of weaning of the duration of breastfeeding was lower for the rural mothers as compared to the urban mothers after controlling the effect of other variables.

The mean duration of BF was higher among mother's belonging to low socioeconomic category of households and lower for high category of households. Households of low socioeconomic status exhibited that only 7% and 6% of the mothers terminated BF at the first 12 months for the last and last-but-one birth cohort, respectively. However, their specific contribution in explaining the duration of BF was not

**Table 3.**  
Proportional hazard model analysis: Risks of weaning of breastfeeding.

Variable	Group	Last child		Last but one	
		Risk ratio	p	Risk ratio	p
PARITY	1-2	-	-	-	-
	3-4	1.001	0.984	0.945	0.283
	5-6	1.045	0.495	0.987	0.837
	7+	1.051	0.587	1.113	0.264
AGEMOTH	<25	-	-	-	-
	25-34	1.001	0.979	1.017	0.740
	35-49	1.081	0.327	1.026	0.793
AGEMOTC	<25	-	-	-	-
	25-34	0.968	0.533	1.068	0.333
	35-49	0.852	0.101	0.849	0.197
EDUM	Illiterate	-	-	-	-
	Primary	1.156	0.084	0.943	0.478
	Mid-high	1.274	0.050	0.852	0.074
	Inter+	3.245	0.000	1.396	0.077
EDUF	Illiterate	-	-	-	-
	Primary	1.017	0.849	1.092	0.136
	Mid-high	1.076	0.484	0.879	0.051
	Inter+	1.324	0.050	0.977	0.834
EPEM	With cash	-	-	-	-
	without cash	1.257	0.038	1.011	0.844
	Unemployed	1.111	0.171	0.929	0.067
OCCUF	Agg.&related work.	-	-	-	-
	Daily labourer.	1.389	0.000	0.958	0.491
	Service.	1.084	0.644	1.235	0.121
	Business	1.322	0.023	1.023	0.741
	Others	1.404	0.106	0.887	0.363
CLOSE	0-11	-	-	-	-
	12-23	1.113	0.266	0.943	0.574
	24-35	1.104	0.263	1.084	0.412
	36-47	1.074	0.429	0.882	0.223
	48+	1.005	0.953	0.906	0.364

'-' indicates reference category

significant in both the data sets after controlling the effects for the other explanatory variables (Table 3).

### BF in relation to cultural variable

The variation in the duration of BF according to cultural variables has been observed in many developing countries such as Bangladesh [11], India [9] and Ghana [8]. Hindu mothers exhibited slightly longer duration than the Muslim mothers [11].

The present study also showed a slightly higher mean duration of BF among the Hindu mothers (29.2 months in respect of last child, and 25.9 months in respect of last but one child) than their Muslim counterparts (28.4 months in

respect of last child, 25.5 months in respect of last-but-one child) (Table 1). However, no significant relationship between religion and the duration of BF was observed (Table 2).

### Level of the duration of BF under both 'retrospective' and 'current' status reporting of data

Some controversies have been reported regarding the level of the duration of BF obtained from retrospective and current status reporting of data [6]. Some of the researchers have argued that a significant difference of the duration of breastfeeding was obtained under these two types of data reporting. However, [10] argued that the differential does not exist whether BF data is obtained from either the retrospective or from

**Table 3 (continued)**

Variable	Group	Last child		Last but one	
		Risk ratio	p	Risk ratio	p
OPEN	0-23	-	-	-	-
	24-35	0.783	0.049	0.726	0.045
	36-47	0.719	0.249	0.822	0.257
	48+	0.897	0.724	1.067	0.775
AGECH	<1	-	-	-	-
	1-2	0.778	0.555	4.534	0.872
	2-3	1.143	0.624	4.720	0.868
	3-4	1.286	0.356	2.881	0.909
	4-5	1.510	0.170	1.740	0.953
SEX	5+	1.853	0.055	1.535	0.964
	Male	-	-	-	-
RELIG	Female	0.991	0.742	1.045	0.111
	Muslim	-	-	-	-
RES	Hindu	0.658	0.001	0.959	0.081
	Others	1.079	0.914	1.010	0.977
SOECOHH	Urban	-	-	-	-
	Rural	1.011	0.803	1.009	0.844
SOECOHH	Low	-	-	-	-
	Middle	0.976	0.589	0.976	0.638
	High	1.069	0.378	1.025	0.789

'-' indicates reference category

the current status reporting. Theoretically, the difference depends on censoring observations because survival analysis inflates probabilities at the later categories of the duration variable due to censoring. Figure 2 also exhibits a higher probability at the later categories of the duration of BF for the current status data (last child) than the retrospective data (last-but-one child).

As discussed earlier, the duration of BF (mean, median or mode) and its demographic and socioeconomic correlates were calculated from both the 'retrospective' and 'current' status data set. While the differentials in the duration of BF by characteristics of mother and child were identical in both the data sets, the median duration of BF was quite different. A higher median (29.9 months) and trimean (28.7 months) of the duration of BF was found for the last child than the last-but-one child (median 27.0 months and trimean 26.5 months). Questions also arise as to why a higher median duration of BF exists subsequent to the birth of last child than the last-but-one child and whether such a differential really exists or not between the retrospective and the current status reporting of the duration of BF? To answer these questions, the mothers were selected who had given at least two live births at the time of the survey and who had completed their BF. There were 142 such mothers for both the last child and last-but-one child cohort. For this sample, the median duration of BF obtained was 26.9 months and 27.1 months for the last and the last-but-one child cohort, respectively. Thus, no significant difference was observed in the duration of BF regardless of whether it was obtained under "retrospective" reporting or current status reporting. However, the 'current status' data may have better coverage than the censored cases, whereas the 'retrospective' reporting may have missed information for some mothers. In both types of data, the reporting of the duration of BF might be influenced by recall

lapse and memory biases. Nevertheless, the recall lapses may be higher for those births which occurred a long time ago i.e. in 'retrospective' reporting. On balance, it appears that the 'current status' data may provide some consistent estimates of the mean duration of the BF than the retrospective reporting.

In conclusion, this study shows that the breastfeeding phenomena noted above for Bangladesh are shared universally by other developing countries. According to the present investigation the duration of breastfeeding is longer for mothers of higher parity than other mothers but this difference does not reveal statistical significance. The duration of breastfeeding increases with increase in duration of post partum amenorrhoea. Education and occupation of both the mothers and the fathers was found inversely related with the duration of breastfeeding. The sex of the child shows no differentials in the duration of breastfeeding. The Hindu mothers breastfeed for a longer duration than the Muslim mothers. The study also reveals that mothers belonging to a high socioeconomic status breastfeed for a shorter duration than their socially deprived counterparts. The education of women, employment status of women and occupation of husbands has a significant negative effect on the duration of BF. The study provides an opportunity to examine the duration of BF in respect of the last child (current status) and the penultimate child (retrospective one). There is a debate in the literature as to which of these two types of data gives better estimates of the mean duration of BF. In fact, no significant difference was found in this study in the mean duration of BF regardless of whether the data come from 'retrospective' or 'current' status reporting. So far as the quality of the data is concerned, the 'current' status data may provide a better source for estimating the level of the duration of BF than the 'retrospective' reporting.

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