

Barriers to exclusive breastfeeding in rural community of central Gujarat, India

Dinesh J. Bhanderi¹, Yogita P. Pandya¹, Deepak B. Sharma¹

¹Department of Community Medicine, Pramukhswami Medical College, Karamsad, Gujarat, India

ABSTRACT

Context: Exclusive breastfeeding (EBF) in first the 6 months of life is the most effective way to satisfy nutritional and psychological needs of a baby. However, EBF rate for India remained low at 54.9% during 2015–2016. It is therefore essential to understand the reasons for such a low EBF rate in the country so that appropriate interventions can be developed and implemented. **Objectives:** (1) To estimate the prevalence of EBF in rural community of central Gujarat and (2) to identify barriers to EBF in this community. **Materials and Methods:** A community-based cross sectional study was conducted among mothers of 330 infants of age 6 months to 1 year using pretested questionnaire. Two-stage cluster sampling technique was used to select the sample. χ^2 test, *t*-test, and logistic regression were applied to assess the significance of associations. **Results:** EBF rate in the studied population was detected to be 49.7%. Early marriage of parents, less educated parents, male child, Christian religion, working mother, less number of antenatal visits, operative delivery, late initiation of breastfeeding, not feeding colostrum, lack of knowledge about EBF, and poor counseling of mother regarding EBF were identified as barriers to EBF. **Conclusion:** Prevalence of EBF was found to be lower than the national average in the rural community of central Gujarat. Effective strategies at local, state, and national levels should aim at addressing the barriers to EBF that are identified in this study.

Keywords: Barriers, exclusive breastfeeding, rural community

Introduction

Survival, optimal growth and development, and prevention of infections are the most critical needs of infants, particularly in the first 6 months of life. Under most circumstances, breast milk is the ideal food for the infant to fulfil all these three needs. Exclusive breastfeeding (EBF) in the first 6 months of life is the most effective way to satisfy nutritional and psychological needs of a baby. World Health Organization defines “Exclusive Breastfeeding” as giving no other food or drink – not even water – except breast milk.^[1] EBF protects the infants from several morbidities such as diarrhea, pneumonia, ear infections, allergies, necrotizing enterocolitis, and sudden infant death syndrome.^[2] EBF has been identified as single most effective intervention to decrease infant mortality.^[3] Suboptimal and non-EBF in the first

6 months of life contributes to 1.4 million deaths and 10% of the disease burden in children of age less than 5 years.^[4] Apart from infectious diseases, it also reduces the risk of childhood leukemia and chronic conditions such as obesity and type 1 and 2 diabetes in adulthood.^[2] Additionally, it is vital for the intellectual development of the child. The contribution of EBF to child’s health is particularly important in the context of a developing country like India, which is facing double burden of communicable and noncommunicable diseases. Although the infant mortality rate of the country has declined to 34 in 2016 from 164 in 1960, it is still very high compared with that of several other countries.^[5] Moreover, poor environments do not allow feeding with other milk or early initiation of complementary feeding, as there is risk of contamination with pathogens and of overdilution of top milk. Thus, EBF remains the most cost-effective intervention in the given conditions for improving infants’ health and reduce morbidity and mortality in them.

Address for correspondence: Dr. Dinesh J. Bhanderi, Department of Community Medicine, Pramukhswami Medical College, Karamsad, Gujarat, India. E-mail: bhanderi1963@gmail.com

Access this article online

Quick Response Code:



Website:
www.jfmipc.com

DOI:
10.4103/jfmipc.jfmipc_329_18

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Bhanderi DJ, Pandya YP, Sharma DB. Barriers to exclusive breastfeeding in rural community of central Gujarat, India. J Family Med Prim Care 2019;8:54-61.

However, despite the efforts of governmental and nongovernmental agencies, the EBF rate for India remained low at 46.4% during 2008–2012.^[6] National Family Health Survey-4 (NFHS-4) also reported a low EBF rate of 54.9%.^[7] It is therefore essential to understand the reasons for such a low EBF rate in the country so that appropriate interventions can be developed and implemented. This study aims at estimating the prevalence of EBF in rural community of Anand taluka located in the central part of Gujarat state in India and identifying the barriers to EBF in this community.

Materials and Methods

After approval of Institutional Ethics Committee, the present community-based cross-sectional study was conducted among mothers of 330 infants of age 6 months to 1 year in the rural community of Anand taluka. EBF rate is defined as the proportion of infants, age less than 6 months, who received only breast milk and no other liquids or solids except for drops or syrups consisting of vitamins, mineral supplements, or medicines. Sample size was calculated using the formula^[8] $N = Z_{\alpha/2}^2 \frac{r(1-r)fk}{pne^2}$, where $Z_{\alpha/2} = Z_{0.025} = 1.96$, $r =$ estimate of EBF to be measured by the survey (taken as 46.4%), $f =$ sample design effect which is 2.0 (default value), $k =$ multiplier to account for the anticipated rate of nonresponse (taken as 1.1 considering 10% nonresponse), $P =$ proportion of the total population accounted for by the target (infant) population (taken as 3%^[9]), $n =$ average household size in rural population of Anand district (taken as 4.9^[10]), and $e =$ allowable error (10% of r , i.e. 4.7). The calculated N of 307 was rounded to 330.

Two-stage cluster sampling technique was used to select the sample. There are 37 villages in Anand taluka. The cumulative population of these villages is 244,278 as per 2011 census.^[11] Eleven clusters with 30 households in each cluster were sequentially selected by adding a random number less than sampling interval of 22,208. Thus, it was sampling with probability proportional to size. In each cluster, a start was made for home visits from a geographically random point, and 30 households having at least one infant of age 6 months to 1 year was selected by systematic random sampling. After taking informed written consent, relevant information was collected from mothers of these infants using pretested questionnaire. Data collected were analyzed using Stata-14.2 (StataCorp, LLC, TX, USA) software. χ^2 test, Fisher's exact test, t -test, and logistic regression were applied to assess the significance of associations, considering P value ≤ 0.05 as statistically significant.

Results

A total of 330 mothers participated in our study, having a mean age of 24.6 years \pm 3.5 [Table 1]. A majority (81%) of them had received education of primary level and above [Table 2]. About 91% mothers were Hindu, 62% belonging to other backward class, and 77% living in joint family [Table 3]. About

Table 1: Distribution of respondents according to age

Variable	Mean \pm SD (years)		Total	t-test P
	EBF			
	Yes (n=164)	No (n=166)		
Maternal age	24.7 \pm 3.21	24.5 \pm 3.80	24.6 \pm 3.52	0.462
Maternal age at marriage	20.9 \pm 3.16	18.8 \pm 1.76	19.8 \pm 2.76	0.000
Paternal age at marriage	21.7 \pm 3.59	22.5 \pm 4.15	22.1 \pm 3.89	0.071

SD: Standard deviation; EBF: Exclusive breastfeeding

41% mothers belonged to socioeconomic class I according to modified Prasad's classification^[12] as shown in Table 3. Among the mothers surveyed, 199 (60%) had a male child of age 6 months to 1 year, whereas 131 (40%) had a female child [Table 3]. Of these 330 infants, 164 were exclusively breastfed, making the EBF rate in the studied population to be 49.7%. In univariate analysis [Tables 1–5], significant association was found between EBF and maternal age at marriage ($P = 0.000$), maternal ($P = 0.017$) as well as paternal ($P = 0.01$) education, religion ($P = 0.023$), maternal working status ($P = 0.000$), child's gender ($P = 0.001$), child's birth order ($P = 0.000$), preceding birth interval ($P = 0.009$), place of antenatal care (ANC; $P = 0.000$), type of delivery ($P = 0.008$), time of initiation of breastfeeding ($P = 0.000$), colostrum feeding ($P = 0.039$), maternal counseling for EBF ($P = 0.000$), and decision-maker about child feeding ($P = 0.039$). Logistic regression analysis [Table 6] showed that EBF is significantly associated with maternal age at marriage ($P = 0.000$), birth order ($P = 0.000$), preceding birth interval ($P = 0.039$), paternal education ($P = 0.035$), religion ($P = 0.011$), maternal working status ($P = 0.000$), health problem in mother related to childbirth ($P = 0.029$), health problem in child related to birth ($P = 0.015$), maternal knowledge about EBF benefits ($P = 0.000$), and maternal counseling about EBF ($P = 0.000$).

Discussion

Our study found EBF rate of 49.7% in rural population of Anand taluka of Gujarat state, which is lower than the district rate of 68.8%,^[13] the state rate of 60.2% in rural Gujarat,^[14] as well as the national rate of 56% in rural India,^[7] as reported by NFHS-4. A rapid survey conducted by the Ministry of Women and Child Development, Government of India, in 2013–2014 also reported a higher EBF rate (65.1%) in rural population.^[15] However, a district-level rapid household survey conducted in 2011 reported an EBF rate of 44% in rural Gujarat, with a range of 10%–83% across different districts of the state.^[16] While comparing our figure with that of rural population of neighboring states, it was found to be lower than EBF rates in Rajasthan (57.5%),^[17] Maharashtra (60.6%),^[18] and Madhya Pradesh (60.6%).^[19] However, the EBF rate we detected in our study is comparable to that found in studies conducted in rural south India (48.5%),^[20] and in our neighboring country Sri Lanka (50.8%).^[21] Interestingly, studies conducted in middle-east countries like Jordan,^[22] Qatar,^[23] and Saudi Arabia^[24] reported very low EBF rates of 2.1%, 24.3%, and 37%, respectively.

Table 2: Distribution of respondents according to education

Variable	EBF		Total, n (%)	P
	Yes, n (%)	No, n (%)		
Maternal education				0.017 ^a
Illiterate	21 (40.4)	31 (59.6)	52 (15.8)	
Just literate	9 (81.8)	2 (18.2)	11 (3.3)	
Primary	93 (52.2)	85 (47.8)	178 (53.9)	
Secondary	19 (40.4)	28 (59.6)	47 (14.2)	
Higher secondary	9 (37.5)	15 (62.5)	24 (7.3)	
Graduate	13 (72.2)	5 (27.8)	18 (5.5)	
Paternal education				0.01 ^b
Illiterate	14 (45.2)	17 (54.8)	31 (9.4)	
Just literate	5 (83.3)	1 (16.7)	6 (1.8)	
Primary	57 (48.3)	61 (51.7)	118 (35.8)	
Secondary	59 (61.5)	37 (38.5)	96 (29.1)	
Higher secondary	15 (31.9)	32 (68.1)	47 (14.2)	
Graduate and above	14 (43.8)	18 (56.3)	32 (9.7)	
Education of respondent's father-in-law				0.14 ^b
Illiterate	55 (53.4)	48 (46.6)	103 (42.4)	
Just literate	2 (28.6)	5 (71.4)	7 (2.9)	
Primary	51 (52.0)	47 (48.0)	98 (40.3)	
Secondary	9 (47.4)	10 (52.6)	19 (7.8)	
Higher secondary	6 (75.0)	2 (25.0)	8 (3.3)	
Graduate and above	1 (12.5)	7 (87.5)	8 (3.3)	
Education of respondent's mother-in-law				0.563 ^b
Illiterate	94 (46.8)	107 (53.2)	201 (69.6)	
Just literate	6 (46.2)	7 (53.8)	13 (4.5)	
Primary	34 (56.7)	26 (43.3)	60 (20.8)	
Secondary	7 (53.8)	6 (46.2)	13 (4.5)	
Higher secondary	1 (100.0)	0 (0.0)	1 (0.3)	
Graduate and above	1 (100.0)	0 (0.0)	1 (0.3)	

EBF: Exclusive breastfeeding, ^a χ^2 test, ^bFisher's exact test

Our study did not find maternal age as a predictor of EBF. A literature review done by Andy Emmanuel showed that older maternal age is associated with higher rates of EBF.^[25] However, in another systematic review of middle eastern research, mixed results were obtained, where 7 of the 12 studies did not find maternal age to be associated with EBF, whereas the remaining 5 found significant association between the two.^[26] A study conducted in another part of Gujarat, also, did not find maternal age associated with EBF rate.^[27] On the contrary, studies conducted in rural south India^[20] and rural Uttar Pradesh^[28] found a strong association between maternal age and EBF.

We also studied parents' age at marriage and found that mothers married at younger age are less likely to breastfed their infants exclusively. At the same time, paternal age at marriage was not found to be associated with EBF.

Several studies have identified parental education as an important determinant for EBF.^[25,27-30] Findings from our study support the crucial role of both maternal and paternal education in practicing EBF. However, in the Middle Eastern review, 10 studies showed no association, whereas 3 studies showed negative association between maternal education and EBF.^[26] Similarly, few Indian studies did not find any relationship between the two.^[31,32] A

pooled analysis from three prospective birth cohort studies done in south India revealed that uneducated mothers are more likely to continue EBF than their educated counterparts.^[33] In our study also, multivariate analysis revealed only paternal education to be associated with EBF rates. Knowledge about breast milk alternatives and its accessibility to educated mothers may be a barrier to EBF. Moreover, our study did not find education of grandparents, who may be decision-makers in the family, a determining factor for EBF.

Among other sociodemographic variables, our study found religion, working status of mother, child's gender, lower birth order, and birth interval of less than 2 years as barriers to EBF. EBF rates were found to be lower in families following Christianity, working mothers, and male infants. EBF rates were higher in Muslim families compared with Hindu and Christian families. In contrast to this, religion was not found to be an influencing factor in one Ghanian^[34] and two Indian studies.^[31,32] In congruence to the number of studies conducted in India and abroad,^[21,23-26,28,35-38] our study demonstrated lower EBF rates in working mothers compared with nonworking ones. Such finding emphasizes the need for leave assistance to mothers that allows them resume work after 6 months of childbirth. A Turkish study has shown that late return to work and staying home during the

Table 3: Distribution of respondents according to background characteristics

Variable	EBF		Total, n (%)	P
	Yes, n (%)	No, n (%)		
Religion				0.023 ^a
Hindu	147 (49.2)	152 (50.8)	299 (90.6)	
Muslim	15 (71.4)	6 (28.6)	21 (6.4)	
Christian	2 (20.0)	8 (80.0)	10 (3.0)	
Caste				0.93 ^b
General	33 (50.0)	33 (50.0)	66 (20.0)	
Scheduled caste	25 (51.0)	24 (49.0)	49 (14.8)	
Scheduled tribe	7 (58.3)	5 (41.7)	12 (3.6)	
Other backward class	99 (48.8)	104 (51.2)	203 (61.5)	
Type of family				0.896 ^b
Joint	126 (49.4)	129 (50.6)	255 (77.3)	
Nuclear	38 (50.7)	37 (49.3)	75 (22.7)	
Socioeconomic class				0.459 ^a
I	69 (51.5)	65 (48.5)	134 (40.6)	
II	60 (46.2)	70 (53.8)	130 (39.4)	
III	28 (51.9)	26 (48.1)	54 (16.4)	
IV	4 (44.4)	5 (55.6)	9 (2.7)	
V	3 (100.0)	0 (0.0)	3 (0.9)	
Working status of mother				0.000 ^b
Not working	156 (59.5)	106 (40.5)	262 (79.4)	
Working	8 (11.8)	60 (88.2)	68 (20.6)	
Gender of last child				0.001 ^b
Male	84 (42.2)	115 (57.8)	199 (60.3)	
Female	80 (61.1)	51 (38.9)	131 (39.7)	
Birth order				0.000 ^c
1	25 (18.2)	112 (81.8)	137 (41.5)	
2	79 (74.5)	27 (25.5)	106 (32.1)	
3	29 (61.7)	18 (38.3)	47 (14.2)	
4	17 (81.0)	4 (19.0)	21 (6.4)	
5	4 (66.7)	2 (33.3)	6 (1.8)	
6	10 (76.9)	3 (23.1)	13 (3.9)	
Preceding birth interval				0.009 ^b
<24 months	23 (35.9)	41 (64.1)	64 (33.2)	
≥24 months	72 (55.8)	57 (44.2)	129 (66.8)	

EBF: Exclusive breastfeeding. ^aFisher's exact test, ^b χ^2 test, ^c χ^2 test for linear trend

first 6 months of childbirth facilitate EBF in working mothers.^[30] Our study reported significantly higher EBF rate in female infants than in male ones. The reason for this finding may be the belief among mothers that male infants need more amount of milk for growth and development compared with female infants, and hence only breast milk may not be sufficient to meet their nutritional demands. However, studies by Patil *et al.*^[29] and Al Ghwass and Ahmed^[39] reported contradictory results where male infants were more likely to be exclusive breastfed than female counterparts. Other studies did not find infant's gender to be significant predictor of EBF.^[30,33,34,40] Gender-related variations in EBF rates may be due to cultural differences in the studied populations. Furthermore, our study found that children with lower birth order are less likely to be exclusively breastfed, suggesting that multiparity influences EBF positively. Our finding is consistent with that of other studies done in India^[27,29] and elsewhere.^[25,30,38] Multiparous mothers may be less apprehensive

and more experienced regarding breastfeeding which may result in higher EBF rates in this group. Similarly, we found that birth interval of more than 2 years has a positive impact on EBF, which is in congruence with the finding of a study done in south Gujarat.^[27]

Our study did not find caste, type of family, and socioeconomic class as barriers to EBF. Association of family type and EBF has remained equivocal in various studies conducted in other parts of world, one showing higher EBF rates in nuclear families,^[27] while others in non-nuclear families.^[32,33] Studies conducted in Mysuru^[36] and Turkey^[30] did not find type of family being associated with EBF. These variations may result from the role played by the decision-makers who are different in nuclear and non-nuclear families. Unlike our finding, lower socioeconomic status was found to be a significant barrier to EBF by several studies.^[27,32,33,40]

We, in our study, also assessed association of EBF with variables related to childbirth. All the mothers who participated in our study had at least one antenatal visit. Lower number of antenatal visits and that too in either community health center, district hospital, or a private hospital was revealed as a barrier to EBF. Higher frequency of antenatal visits was reported to have a positive impact on EBF in studies done in south Gujarat,^[27] rural south India,^[20] rural Uttar Pradesh,^[28] and Egypt.^[39] Similarly, in congruence with other studies,^[26,28,32,38,41,42] operative delivery was identified as a strong barrier to EBF in our study. However, unlike our finding, the mode of delivery was not found to be influencing EBF rates in a number of other studies.^[27,30,33,34,36,37,40] Late initiation of BF and not feeding colostrum were other barriers to EBF identified in our study. It has been observed by many studies that early initiation of BF significantly improves the likelihood for the mothers to practice EBF.^[24,26-29,38] Similarly, feeding colostrum to the newborn baby has been found to have a positive impact on EBF.^[28,29] These findings suggest that a strong foundation for EBF can be laid by observing correct BF practices in the first few hours of life. Promotion of institutional deliveries and training of birth attendants, particularly in rural areas, can enhance such practices, ultimately resulting in better child health. Counseling of mothers regarding EBF during antenatal or perinatal period and having correct knowledge about EBF were equally found to be a positive influencing factors for EBF in our study. However, all participating mothers had at least one antenatal visit, and all had institutional delivery; only 61.8% of them received EBF counseling. EBF counseling to mothers, antenatal education programs, and breastfeeding support interventions were found to be significantly associated with EBF in studies conducted in India^[27,29] and other countries.^[24,30,43-46] Similarly, poor or inadequate knowledge about breastfeeding was found to be an important barrier to EBF in studies conducted in Sri Lanka^[21] and in the state of Qatar.^[23] Moreover, our study has recognized the importance of mother's role in decision-making about infant feeding. We found a significantly higher proportion of infants being exclusively breastfed when their mothers were

Table 4: Distribution of respondents according to background characteristics

Variable	EBF		Total, n (%)	P
	Yes, n (%)	No, n (%)		
Place of ANC				0.000 ^a
Subcenter	94 (61.0)	60 (39.0)	154 (46.7)	
PHC	19 (32.8)	39 (67.2)	58 (17.6)	
CHC/district hospital	0 (0.0)	8 (100.0)	8 (2.4)	
Private hospital	51 (46.4)	59 (53.6)	110 (33.3)	
Number of antenatal visits				0.014 ^b
<4	17 (33.3)	34 (66.7)	51 (15.5)	
≥4	147 (52.7)	132 (47.3)	279 (84.5)	
Place of delivery				0.477 ^a
Subcenter	2 (33.3)	4 (66.7)	6 (1.8)	
PHC	33 (44.0)	42 (56.0)	75 (22.7)	
CHC/district hospital	22 (46.8)	25 (53.2)	47 (14.2)	
Private hospital	107 (53.0)	95 (47.0)	202 (61.2)	
Type of delivery				0.008 ^b
Normal	142 (53.4)	124 (46.6)	266 (80.6)	
Operative	22 (34.4)	42 (65.6)	64 (19.4)	
Timing of delivery				0.282 ^a
Full-term	159 (49.2)	164 (50.8)	323 (97.9)	
Preterm	5 (71.4)	2 (28.6)	7 (2.1)	
Birth weight				0.054 ^b
≥2.5 kg	132 (52.8)	118 (47.2)	250 (75.8)	
<2.5 kg	32 (40.0)	48 (60.0)	80 (24.2)	
Health problem in mother during pregnancy or childbirth				0.217 ^a
Yes	7 (70.0)	3 (30.0)	10 (3.0)	
No	157 (49.1)	163 (50.9)	320 (97.0)	
Health problem in child during birth				0.45 ^b
Yes	17 (56.7)	13 (43.3)	30 (9.1)	
No	147 (49.0)	153 (51.0)	300 (90.9)	

EBF: Exclusive breastfeeding; ANC: Antenatal care; PHC: Primary health center; CHC: Community health center. ^aFisher's exact test, ^bχ² test

the decision-makers for their feeding. Multivariate logistic regression, in addition, revealed that development of health problems in mothers and infants related to pregnancy and childbirth such as preeclampsia, eclampsia, retained placenta, postoperative infection, nipple problems, birth asphyxia, delayed crying, and neonatal jaundice resulted in lower EBF rates. This finding is consistent with that reported by other researchers.^[30,47]

Considering the barriers to EBF identified in our study, the role of grassroot-level healthcare providers and primary care physicians becomes pivotal in improving EBF rates in rural population. It starts with identifying the “high-risk mother” who is less likely to exclusively breastfeed her child – mother who is married at a young age, less educated, one who is employed, not attending antenatal clinic regularly, having an operative delivery, given birth to male child, one who has initiated breastfeeding lately, and not fed colostrum to the newborn. As evident from our study, every opportunity should be captured to counsel these mothers and equip them with correct knowledge and skills so that breastfeeding is initiated as early as possible and continued exclusively for 6 months. Similarly, early detection and management of health problems in mother and child that can jeopardize EBF practice can prove to be a crucial measure

taken by primary care physician to improve EBF rates. Finally, the role of primary care physician as a social reformer cannot be underemphasized by virtue of which child marriages and female illiteracy can be minimized, myths and misconceptions associated with EBF can be corrected, and healthcare utilization can be maximized.

Our study has few limitations. First, causal association cannot be established because of the cross-sectional nature of the study design. Second, incomplete or inaccurate retrieval of past events or experience by the participants may have introduced recall bias in the study results. However, we attempted to minimize it by including mothers of infants of age 6 months to 1 year in our study. On the other hand, as the study was conducted in the community with adequate sample size and zero nonresponse, it has good external validity allowing us to generalize our findings to other populations of the state.

Conclusion

Prevalence of EBF was found to be lower than the national average in the rural community of Anand taluka. Effective strategies at local, state, and national levels should aim at addressing the barriers to EBF that are identified in this study.

Table 5: Distribution of respondents according to background characteristics

Variable	EBF		Total, n (%)	P
	Yes, n (%)	No, n (%)		
Time of initiation of BF				0.000 ^a
Within 1 h of birth	125 (57.3)	93 (42.7)	218 (66.1)	
Within 1-2 h of birth	15 (42.9)	20 (57.1)	35 (10.6)	
Within 2-3 h of birth	1 (7.1)	13 (92.9)	14 (4.2)	
After 3 h of birth	23 (36.5)	40 (63.5)	63 (19.1)	
Colostrum given				0.039 ^b
Yes	154 (51.7)	144 (48.3)	298 (90.3)	
No	10 (31.3)	22 (68.8)	32 (9.7)	
Home visit for postnatal care				0.320 ^b
Yes	81 (52.9)	72 (47.1)	153 (46.4)	
No	83 (46.9)	94 (53.1)	177 (53.6)	
Mother has correct knowledge about EBF				0.226 ^b
Yes	16 (61.5)	10 (38.5)	26 (7.9)	
No	148 (48.7)	156 (51.3)	304 (92.1)	
Mother counseled for EBF				0.000 ^b
Yes	137 (67.2)	67 (32.8)	204 (61.8)	
No	27 (21.4)	99 (78.6)	126 (38.2)	
Breast problem in respondent				0.061 ^c
Yes	0 (0.0)	5 (100.0)	5 (1.5)	
No	164 (50.5)	161 (49.5)	325 (98.5)	
Use of OCPs during 6 months after childbirth				1.000 ^c
Yes	1 (33.3)	2 (66.7)	3 (0.9)	
No	163 (49.8)	164 (50.2)	327 (99.1)	
Decision-maker regarding child feeding				0.039 ^b
Mother	139 (52.7)	125 (47.3)	264 (80.0)	
Other than mother	25 (37.9)	41 (62.1)	66 (20.0)	

EBF: Exclusive breastfeeding; BF: Breastfeeding; OCP: Oral contraceptive pills. ^a χ^2 test for linear trend, ^b χ^2 test, ^cFisher's exact test

Table 6: Factors associated with EBF - multivariate logistic regression analysis

Variable	Adjusted OR	95%CI	P
Maternal age at marriage	2.59	1.79-3.77	0.000
Birth order	3.16	1.70-5.86	0.000
Preceding birth interval	2.25	1.04-4.86	0.039
Paternal education	0.55	0.32-0.96	0.035
Religion	21.49	2.01-229.49	0.011
Mother's working status	0.004	0.001-0.03	0.000
Health problem in mother related to pregnancy or childbirth	0.07	0.006-0.76	0.029
Health problem in child related to birth	0.03	0.002-0.5	0.015
Mother's knowledge about EBF	0.02	0.003-0.16	0.000
Mother's counseling about EBF	0.05	0.01-0.16	0.000

EBF: Exclusive breastfeeding; OR: Odds ratio; CI: Confidence interval

Financial support and sponsorship

Publication of this study was possible due to partial funding of publication charges by Charutar Arogya Mandal, Karamsad.

Conflicts of interest

There are no conflicts of interest.

References

- World Health Organization. Exclusive breastfeeding.

e-Library of Evidence for Nutrition Actions (eLENA). Available from: <http://www.who.int/elena/titles/exclusive-breastfeeding/en/>. [Last accessed on 2018 Oct 04].

- Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess (Full Rep)* 2007;1-186.
- World Health Organization. Global Nutrition Targets 2025. Available from: http://www.who.int/nutrition/globaltargets_breastfeeding_policybrief.pdf. [Last accessed on 2018 Oct 04].
- Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child undernutrition: Global and regional exposures and health consequences. *Lancet*. 2008;371:243-60.
- The World Bank. Mortality rate, infant (per 1,000 live births) - All countries and economies. Available from: <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN>. [Last accessed on 2018 Oct 04].
- United Nations Children's Fund. Nutrition Indicators - India. Available from: http://www.unicef.org/infobycountry/india_statistics.html. [Last accessed on 2018 Oct 04].
- International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare, Government of India, New Delhi. India Fact Sheet. National Family Health Survey-4, 2015-16. Available from: <http://rchiips.org/NFHS/pdf/NFHS4/India.pdf>. [Last accessed on 2018 Oct 04].
- Statistics Division. Department of Economic and Social

- Affairs. United Nations. Designing Household Survey Samples: Practical Guidelines. Studies in Methods, Series F No. 98, 2005. Available from: <http://unstats.un.org/unsd/demographic/sources/surveys/Handbook23June05.pdf>. [Last accessed on 2018 Oct 4].
9. Park K. Park's Textbook of Preventive and Social Medicine. 22nd ed. Jabalpur, India: M/s Banarsidas Bhanot; 2013.
 10. Office of Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. Census India 2011.HH-01 Normal Households By Household Size (Total, SC/ST, City). Available from: http://www.censusindia.gov.in/2011census/population_enumeration.html. [Last accessed on 2018 Oct 4].
 11. Office of Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. Census India 2011. Anand Taluka, Anand. Available from: <http://www.census2011.co.in/data/subdistrict/3864-anand-anand-gujarat.html>. [Last accessed on 2018 Oct 6].
 12. Singh T, Sharma S, Nagesh S. Socio-economic status scales updated for 2017. *Int J Res Med Sci* 2017;5:3264-7.
 13. International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare (MOHFW), Government of India, New Delhi. District Fact Sheet, Anand, Gujarat. National Family Health Survey-4, 2015-16. Available from: http://rchiips.org/NFHS/FCTS/GJ/GJ_FactSheet_482_Anand.pdf. [Last accessed on 2018 Oct 6].
 14. International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare, Government of India, New Delhi. State Fact Sheet-Gujarat. National Family Health Survey-4, 2015-16. Available from: http://rchiips.org/NFHS/pdf/NFHS4/GJ_FactSheet.pdf. [Last accessed on 2018 Oct 6].
 15. Ministry of Women and Child Development Government of India. Rapid Survey on Children 2013-2014 - India Fact Sheet. Available from: <http://wcd.nic.in/sites/default/files/RSOC%20FACT%20SHEETS%20Final.pdf>. [Last accessed on 2018 Oct 6].
 16. National Rural Health Mission, Government of Gujarat. District level rapid household survey: DLRHS-I (2011). Available from: http://www.academia.edu/5702753/Executive_Summary_DLRHS_GOG_2011t. [Last accessed on 2018 Oct 6].
 17. International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare, Government of India, New Delhi. State Fact Sheet - Rajasthan. National Family Health Survey-4, 2015 -16. Available from: http://rchiips.org/NFHS/pdf/NFHS4/RJ_FactSheet.pdf. [Last accessed on 2018 Oct 6].
 18. International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare (MOHFW), Government of India, New Delhi. State Fact Sheet-Maharashtra. National Family Health Survey-4, 2015-16. Available from: http://rchiips.org/NFHS/pdf/NFHS4/MH_FactSheet.pdf. [Last accessed on 2018 Oct 6].
 19. International Institute for Population Sciences, Mumbai, and Ministry of Health and Family Welfare (MOHFW), Government of India, New Delhi. State Fact Sheet-Madhya Pradesh. National Family Health Survey-4, 2015-16. Available from: http://rchiips.org/NFHS/pdf/NFHS4/MP_FactSheet.pdf. [Last accessed on 2018 Oct 6].
 20. Nishimura H, Krupp K, Gowda S, Srinivas V, Arun A, Madhivanan P. Determinants of exclusive breastfeeding in rural South India. *Int Breastfeed J* 2018;13:40.
 21. Ratnayake HE, Rowel D. Prevalence of exclusive breastfeeding and barriers for its continuation up to six months in Kandy district, Sri Lanka. *Int Breastfeed J* 2018;13:36.
 22. Dasoqi KA, Safadi R, Badran E, Basha AS, Jordan S, Ahmad M. Initiation and continuation of breastfeeding among Jordanian first-time mothers: A prospective cohort study. *Int J Womens Health* 2018;10:571-7.
 23. Hendaus MA, Alhammadi AH, Khan S, Osman S, Hamad A. Breastfeeding rates and barriers: A report from the state of Qatar. *Int J Womens Health* 2018;10:467-75.
 24. Raheel H, Tharkar S. Why mothers are not exclusively breast feeding their babies till 6 months of age? Knowledge and practices data from two large cities of the Kingdom of Saudi Arabia. *Sudan J Paediatr* 2018;18:28-38.
 25. Emmanuel A. A literature review of the factors that influence breastfeeding: An application of the health belief model. *Int J Nurs Health Sci* 2015;2:28-36.
 26. Alzaheb RA. A Review of the factors associated with the timely initiation of breastfeeding and exclusive breastfeeding in the Middle East. *Clin Med Insights Pediatr* 2017;11:1179556517748912.
 27. Chudasama RK, Patel PC, Kavishwar AB. Breastfeeding initiation practice and factors affecting breastfeeding in South Gujarat region of India. *Internet J Family Pract* 2008;7.
 28. Verma A, Dixit P. Knowledge and practices of exclusive breastfeeding among women in rural Uttar Pradesh. *J Neonatal Biol* 5:228.
 29. Patil S, Hasamnis A, Pathare R, Parmar A. Prevalence of exclusive breast feeding and its correlates in an urban slum in western India. *IeJSME* 2009;3:14-8.
 30. Yılmaz E, DoğaÖcal F, Vural Yılmaz Z, Ceyhan M, Kara OF, Küçüközkan T. Early initiation and exclusive breastfeeding: Factors influencing the attitudes of mothers who gave birth in a baby-friendly hospital. *Turkish J Obstetr Gynecol* 2017;14:1-9.
 31. Patel DV, Bansal SC, Nimbalkar AS, Phatak AG, Nimbalkar SM, Desai RG. Breastfeeding practices, demographic variables, and their association with morbidities in children. *Adv Prev Med* 2015;2015:892825.
 32. Radhakrishnan S, Balamuruga S. Prevalence of exclusive breastfeeding practices among rural women in Tamil Nadu. *Int J Health Allied Sci [serial online]* 2012;1:64-7.
 33. Velusamy V, Premkumar P, Kang G. Exclusive breastfeeding practices among mothers in urban slum settlements: Pooled analysis from three prospective birth cohort studies in South India. *Int Breastfeed J*.2017;12:35.
 34. Asare BY, Preko JV, Baafi D, Dwumfour-Asare B. Breastfeeding practices and determinants of exclusive breastfeeding in a cross-sectional study at a child welfare clinic in Tema Manhean, Ghana. *Int Breastfeed J* 2018;13:12.
 35. Swetha R, Ravikumar J, Nageswara Rao R. Study of breastfeeding practices in coastal region of South India: A cross sectional study. *Int J Contemp Pediatr* 2014;1:74-8.
 36. Polineni V, Boralingiah P, Kulkarni P, Manjunath R. A comparative study of breastfeeding practices among working and non-working women attending a tertiary care hospital, Mysuru. *Natl J Community Med* 2016;7:235-40.
 37. Sharmin L, Chowdhury MAK A, Khatun S, Ahmed N. Barriers to exclusive breastfeeding among urban mothers. *J Enam Med Col* 2016;6:88-92.

38. Chekol DA, Biks GA, Gelaw YA, Melsew YA. Exclusive breastfeeding and mothers' employment status in Gondar town, Northwest Ethiopia: A comparative cross-sectional study. *Int Breastfeed J* 2017;12:27.
39. Al Ghwass MM, Ahmed D. Prevalence and predictors of 6-month exclusive breastfeeding in a rural area in Egypt. *Breastfeed Med* 2011;6:191-6.
40. Al-Kohji S, Said HA, Selim NA. Breastfeeding practice and determinants among Arab mothers in Qatar. *Saudi Med J* 2012;33:436-43.
41. Imhonde H, Shaibu H, Imhonde J, Handayani L. Type of birth, depression and anxiety as determinates of breastfeeding attitude among nursing mothers. *Int J Public Health Sci* 2012;1:49-54.
42. Khatun H, Comins CA, Shah R, Munirul Islam M, Choudhury N, Ahmed T. Uncovering the barriers to exclusive breastfeeding for mothers living in Dhaka's slums: A mixed method study. *Int Breastfeed J* 2018;13:44.
43. Senghore T, Omotosho TA, Ceesay O, Williams DCH. Predictors of exclusive breastfeeding knowledge and intention to or practice of exclusive breastfeeding among antenatal and postnatal women receiving routine care: A cross-sectional study. *Int Breastfeed J* 2018; 2;13:9.
44. Park HW, Ryu KH, Piao Y, Li P, Hong JS, Kim HB, *et al.* Positive effect of baby-friendly hospital initiatives on improving mothers' intention for successful breastfeeding in Korea. *J Korean Med Sci* 2018;33:e272.
45. Kim SK, Park S, Oh J, Kim J, Ahn S. Interventions promoting exclusive breastfeeding up to six months after birth: A systematic review and meta-analysis of randomized controlled trials. *Int J Nurs Stud* 2018;80:94-105.
46. Flaherman, V, Chan S, Desai R, Agung F, Hartati H, Yelda F. Barriers to exclusive breast-feeding in Indonesian hospitals: A qualitative study of early infant feeding practices. *Public Health Nutr* 2018;21:2689-97.
47. Khasawneh W, Khasawneh AA. Predictors and barriers to breastfeeding in north of Jordan: Could we do better? *Int Breastfeed J* 2017;12:49.