

Study of Breastfeeding Practices in Children Living in East District of Sikkim

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Abstract: Breastfeeding is an unequalled way of providing ideal food for healthy growth & development of infants. It is also an integral part of reproductive process with important implications for the health of mother. WHO recommends Exclusive Breastfeeding (EBF) during the first six months of life for optimal growth & development of infants.¹ Although breastfeeding is nearly universal in both India (95.7%) & Sikkim (98.1%), only 46.4% of infants in the country & 37.2% in Sikkim are exclusively breastfed.² Our study aims to study the prevalence of breastfeeding practices & various factors influencing it & the prevailing infant practices in the East district of Sikkim. This community based descriptive cross sectional study was conducted in children in the age group of 6 months to 2 years living in East district of Sikkim over a period of 1 year (November 2013 – October 2014). A total of 650 children were included in the study. Majority of the patients, 461 (70.9%) belonged to the age group of 18 – 24 months. All of the children were breastfed. However, prevalence of exclusive breastfeeding for 6 months was only 46.5% with 97.2% initiated on breastfeeding within 1 hour of birth & 8.9% were given pre lacteal feeds. Practice of EBF for 6 months was found to have significant association ($p < 0.05$) among women of younger age group, lower educational status, women with normal BMI (54%) & children with low birth weight (85.7%). Among working women only 9.9% practiced EBF for 6 months. Pre lacteal feeds was practiced more among obese mothers (47.3%). Though breastfeeding was universal, there has not been improvement in the EBF practices in the state with more than half of children not receiving EBF for 6 months. Deep rooted customs & belief that mother's milk is not sufficient for the baby seems to be the main reason for early introduction of complementary food.

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I. Introduction

Good nutrition is the cornerstone for survival, health & development for current & succeeding generations. It is very important for all, but it is especially important for children because it is directly linked to all aspects of their growth & developmental factors which will have direct ties to their level of health as adults. For any neonate, "Breastmilk is best" is now a universal concept. Breastfeeding is an unequalled way of providing ideal food for healthy growth & development of infants. It is also an integral part of reproductive process with important implications for the health of mother. WHO recommends Exclusive Breastfeeding (EBF) during the first six months of life for optimal growth & development of infants.¹ All infants should start breastfeeding within 1 hour of birth & be exclusively breastfed, i.e only breast milk & no other liquids or solids, not even water with exception of oral rehydration solution, or syrup of vitamin or medicines up to 6 months of age.³ According to Lancet 2004, breastfeeding for the first 6 months & continued breast feeding for the next 6 months will reduce mortality of children less than 5 years by 13% globally & 16% in India.⁴

In Sikkim, breastfeeding is practiced by majority of lactating mothers but not in form of exclusive breastfeeding. Although breastfeeding is nearly universal in both India (95.7%) & Sikkim (98.1%), only 46.4% of infants in the country & 37.2% in Sikkim are exclusively breastfed. About 12.5 % children are give pre lacteal feeds.² Many factors & barriers exists between what has been recommended & what is being practiced in reality while implementing optimal feeding practices among infants. The present study was undertaken to identify the prevalence of breastfeeding practices & various factors influencing it & the prevailing infant practices in the East district of Sikkim

II. Aims & Objects

1. To study the prevalence of breastfeeding practices among children living in East District of Sikkim.
2. To assess the influence of individual & group level factors on breast feeding practices.

III. Material & Methods

This study was carried out under the guidance of Department of Community Medicine, Sikkim Manipal Institute of Medical Sciences (SMIMS), Sikkim from November 2013 to October 2014 among children in East district of Sikkim. A total 650 subjects aged ≤ 2 years were taken for in this study.

Study Design: Community based descriptive cross sectional study.

Study Location: This study was conducted in the East district of Sikkim.

Study Duration: 1 year (November 2013 to October 2014).

Sample size: Sample size is calculated by the formula

$$n = \frac{4pq}{L^2} \text{ where}$$

n = sample size, p = prevalence, L = Standard error, $q = 100 - p$. 'p' here is 37.2% which is the prevalence of exclusive breastfeeding of Sikkim.² The standard error 'L' is 10% (10% of 37.2 = 3.72).

Applying the formula, the value of 'n' we get is 675. Data was collected from a total of 683 patients but 33 were lost to follow up, so the final sample size came to be 650.

Subjects & selection method: East district was selected by simple random sampling among all districts of Sikkim. There are 5 ICDS project areas in East district. 20% of project area i.e 1 project area was selected by simple random sampling. One project area covers an average of 100 ICDS centers. 50% of the centers was selected by simple random sampling i.e 50 centers. Mother infant pair was selected from each ICDS center by simple random sampling method.

Inclusion criteria: Children in the age group of 6 months to 2 years whose parent/ care giver gives consent.

Exclusion criteria: Children in the age group of 6 months to 2 years whose parent/ care giver do not give consent.

Procedure methodology:

After approval from Institutional ethics committee SMIMS, Sikkim & permission from the Women & Child Welfare Department, Government of Sikkim, selected ICDS centers were visited & infant mother pair from each ICDS center was selected by simple random sampling. Identified houses of the selected study population was visited & written informed consent was obtained. A well-designed questionnaire was used to collect the data. The questionnaire also included socio-demographic characteristics such as age, religion, literacy, marital & working status of the mother, & age, gender & necessary anthropometric measurements of child.

Statistical Analysis: Data were collected into a hard copy entry sheet and then entered in IBM SPSS Statistics 21 for windows (IBM corp. 1995, 2012) and analysed. Descriptive statistics like mean, SD and proportion were used. Qualitative data was analysed using Chi square test & multiple logistic regression. Chi-square and Fisher exact tests were performed to test for differences in proportions of categorical variables between two or more groups. "p" value less than 0.05 was considered as a level of significance at Confidence Interval (C.I) of 95 percent.

IV. Result

On completion of study after a period of 1 year it was revealed that prevalence of exclusive breastfeeding for 6 months was 46.5% though all the children have been ever breastfed at certain point of time. The pre lacteal feed was given to 8.9% of babies & 97.2% were breastfed within 1 hour of birth.

Table no 1 Shows socio demographic profile of mother & children.

Majority of the mothers were in age group of < 25 years (43.4%) followed by age group of 25 -30 years (34.6%). Mean age was 25.80 ± 4.31 years. Majority of mothers belonged to Hindu religion 62.2% & Muslims comprised of only 2.6%. Buddhist and Christians comprised of 14.8% & 20.5% respectively. 95.1% were literate but only 31.07% constituted working mothers.

Majority of children (70.9%) belonged to the age group of 18 to 24 months. Infants constituted 12.6%. The mean age was 19.10 ± 5.8 months). 91.9 % had institutional delivery of which 6.9 % constituted caesarean section. normal vaginal delivery. Majority were of normal birth weight (97.07%).

Table no 1: Shows socio demographic profile of mother & children

MOTHER			CHILDREN		
Age group (in years)	Frequency	Percent	Age Group (in months)	Frequency	Percent
< 25	282	43.4	6 to 12	82	12.6
25 to 30	225	34.6	12 to 18	107	16.5
30 to 35	127	19.5	18 to 24	461	70.9
> 35	16	2.5			
Literacy Status of mother			Place Of Delivery		
Illiterate	32	4.9	Home	58	8.9
Primary	227	34.9	Institutional	592	91.1
Middle School	180	27.7			
High School	131	20.2			
Intermediate	56	8.6			
Bachelor/ PG	24	3.7			
Religion			Birth Weight		
Hindu	404	62.2	< 2500 g	14	2.15
Muslim	17	2.6	2500 g to 4000 g	631	97.07
Buddhist	96	14.8	> 4000 g	5	0.78
Christian	133	20.5			
Working mother					
Yes	202	31.07			
No	448	68.93			
Total	650	100		650	100

Table no 2: Records the prevalence of breastfeeding practices.

Prevalence of exclusive breastfeeding for 6 months was 46.5% though all the children have been ever breastfed at certain point of time. The pre lacteal feed was given to 8.9% of babies & 97.2% were breastfed within 1 hour of birth.

Table no2: Records the prevalence of breastfeeding practices

Prevalence of ever Breastfed & Exclusive Breastfeeding	Frequency	Percent
Ever Breastfed	Yes	650
	No	0
EBF for 6 months	Yes	302
	No	348
Prevalence of time of Breastfeeding Initiation		
Within 1 Hour	632	97.2
Less than 12 hours	9	1.4
More than 24 hours	9	1.4
Prevalence of pre lacteal feeding		
Yes	58	8.9
No	592	91.1
Total	650	100

Figure 1: Type of Pre-lacteal feed given in the study

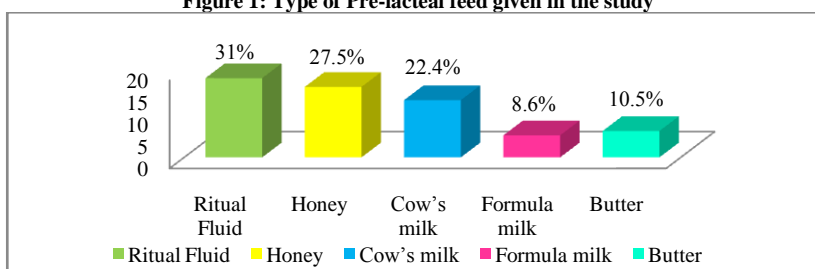


Table no3: Shows influence of maternal age on breastfeeding practices.

Early initiation of breastfeeding was practiced more among the younger age group mothers (< 25 years = 42.87%) as compared to older age group 30 years (30 to 35 years = 19.62% & > 35 years = 2.07%). Exclusive

breastfeeding for six months was practiced more among the younger age group (<25 years) caregiver/mothers, as compared to the older age group (>35 years), 47.4% & 1.7% respectively. The practice of giving pre lacteal feeding was observed more among the mothers in the age group of <25 years (51.7%) as compared to mothers of higher age group. Chi square test for only exclusive breastfeeding revealed significant association with maternal age (p = 0.011).

Table no 3:Shows influence of maternal age on breastfeeding practices

	BF within 1 hour		EBF for 6 months		Pre-lacteal Feeding		Total
	Yes	No	Yes	No	Yes	No	
Maternal Age							
< 25 years	271 (42.87%)	11 (61.13%)	143(47.4%)	139(39.9%)	30 (51.7%)	252 (42.6%)	282
25 to 30 years	224 (35.44%)	1 (5.55%)	110(36.4%)	115(33%)	18 (31%)	207 (35%)	225
30 to 35 years	124(19.62%)	3(16.66%)	44(14.6%)	83(23.9%)	7 (12.1%)	120 (20.3%)	127
> 35 years	13 (2.07%)	3(16.66%)	5(1.7%)	11(3.2%)	3 (5.2%)	13 (2.2%)	16
Total	632	18	302	348	58	592	650
	$x^2 = 0.78$ $df: 1p: 0.37$		$x^2 = 11.12$ $df: 1p: 0.011$		$x^2 = 0.56$ $df: 1p: 0.45$		

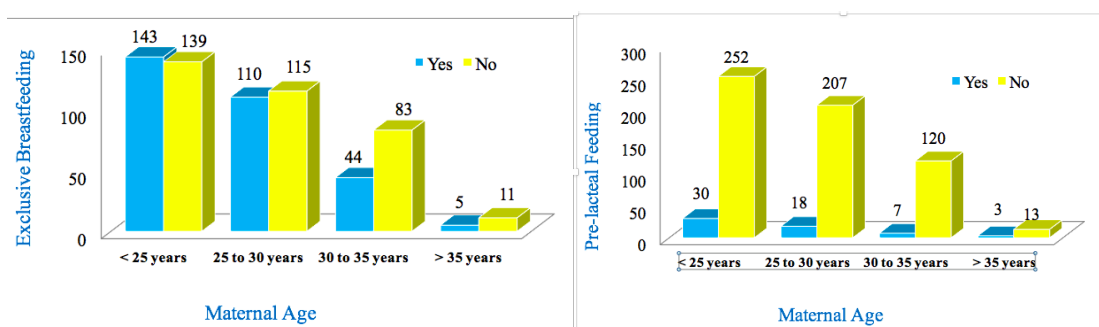


Table no4: Shows influence of educational status of mother on breastfeeding practices.

It was observed that the practice of early initiation of breastfeeding was more among mothers with lower literacy status (high & intermediate school educated = 100%) than those with higher literacy status (Graduate/ Post graduate = 79.16%). Pre-lacteal feed was more among mothers with higher literacy status (Graduate/ postgraduate educational level = 29.1%) as compared to mothers with lower literacy status. Exclusive breastfeeding for six months was also observed to be more among mothers with lower literacy status (primary & middle school educated are at 59.9% & 65% respectively) as compared with mothers with higher literacy status. The values were statistically highly significant only for exclusive breastfeeding for 6 months (p = 0.0001).

Table no 4: Shows influence of educational status of mother on breastfeeding practices

	BF within 1 hour		EBF for 6 months		Pre-lacteal Feeding		Total
	Yes	No	Yes	No	Yes	No	
Educational Status							
Illiterate	32 (100%)	0	18 (56%)	14 (44%)	4 (12.5%)	28 (87.5%)	32
Primary	222 (97.7%)	5 (2.3%)	136 (59.9%)	91 (40.01%)	28 (12.3%)	199 (87.7%)	227
Middle School	172(95.5%)	8(4.5%)	117 (65%)	63 (35%)	13 (7.2%)	167 (92.8%)	180
High School	131(100%)	0	24 (18.3%)	107 (81.7%)	4 (3.1%)	127 (96.9%)	131
Intermediate	56 (100%)	0	4 (7.1%)	52 (92.9%)	2 (3.5%)	54 (96.4%)	56
Bachelor/ PG	19 (79.16%)	5 (20.84%)	3 (12.5%)	21 (87.5%)	7 (29.1%)	17(70.9%)	24
Total	632	18	302	348	58	592	650
	$x^2 = 0.03$ $df: 1p: 0.86$		$x^2 = 1.302$ $df: 5p: 0.0001$		$x^2 = 2.5$ $df: 1p: 0.117$		

Table no 5: Shows influence of working status of mother on breastfeeding practices.

Early initiation of breast feeding was practiced by both caregivers/mothers who were home makers (97%) as well as working mothers (97.5%). Exclusive breast feeding was practiced more among mothers who were not working (62.9%) as compared to working mothers (9.9%). Pre lacteal feeds was observed to be given more by mothers those who were not working (10%) as compared to working women (6.4%). The values were statistically highly significant only for exclusive breastfeeding for 6 months (p = 0.0001).

	BF within 1 hour		EBF for 6 months		Pre-lacteal Feeding		Total
	Yes	No	Yes	No	Yes	No	
Working Status							
Yes	197 (97.5%)	5 (2.5%)	20(9.9%)	182(90.1%)	13(6.4%)	189(93.6%)	202
No	435 (97%)	13 (3%)	282 (62.9%)	166 (37.1%)	45 (10%)	403 (90%)	448
Total	632	18	302	348	58	592	650
	$\chi^2 = 0.094$ $df: 1p: 0.76$		$\chi^2 = 1.56$ $df: 1 p: 0.0001$		$\chi^2 = 2.23$ $df: 1p: 0.135$		

Table no 5: Shows influence of working status of mother on breastfeeding practices

Table no 6: Shows influence of nutritional status of mother on breastfeeding practices.

Early initiation of breast feeding was practiced almost equally irrespective of nutritional status of mother. Exclusive breast feeding was practiced more among mothers with normal BMI (54%). Pre lacteal feeds was practiced more by obese mothers (47.3%) & was least among normal & under weight mothers (9.2% & 6.2% respectively). The values were statistically highly significant only for exclusive breastfeeding for 6 months ($p = 0.0002$)& pre lacteal feeding (0.0001).

Table no 6:Shows influence of nutritional status of mother on breastfeeding practices.

	BF within 1 hour		EBF for 6 months		Pre-lacteal Feeding		Total
	Yes	No	Yes	No	Yes	No	
Maternal Nutritional Status							
Under Weight (BMI < 18.5)	112 (94%)	6 (6%)	48 (40.6%)	70 (59.4%)	12(10.1%)	106(89.9%)	118
Normal Weight (BMI: 18.5 – 24.99)	344 (98%)	7 (2%)	190 (54%)	161 (46%)	22 (6.2%)	329 (93.8%)	351
Over Weight (BMI ≥ 25)	158 (97.5%)	4 (2.5%)	56 (34.5%)	106 (65.5%)	15 (9.2%)	147 (90.8%)	162
Obese (BMI ≥ 30)	18 (94.7%)	1 (5.3%)	8 (42.1%)	11 (57.9%)	9 (47.3%)	10 (52.7%)	19
Total	632	18	302	348	58	592	650
	$\chi^2 = 4.31$ $df: 1p: 0.99$		$\chi^2 = 19$ $df: 3p: 0.0002$		$\chi^2 = 37.8$ $df: 3p: 0.0001$		

Table no 7: Shows influence of birth weight of child on breastfeeding practices

Early initiation of breast feeding was practiced almost equally irrespective of birth weight of child. Exclusive breast feeding was practiced more among children with low birth weight i.e <2500 g(85.7%). Pre lacteal feeds was practiced more among higher birth weight babies i.e > 4000 g (40%). None of the babies with low birth weight was given pre lacteal feed. The values were statistically significant only for exclusive breastfeeding for 6 months ($p = 0.006$).

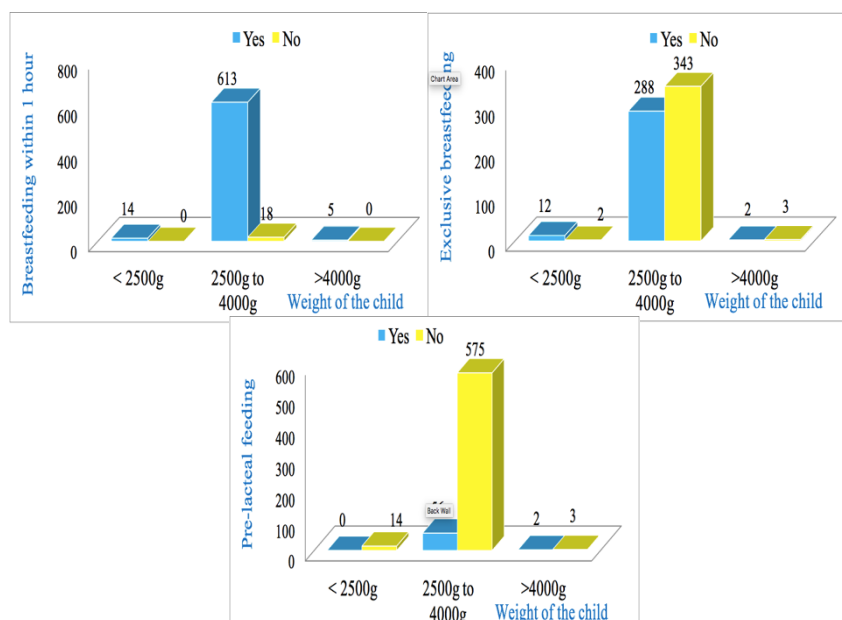


Table no 7: Shows influence of birth weight of child on breastfeeding practices

	BF within 1 hour		EBF for 6 months		Pre-lacteal Feeding		Total
	Yes	No	Yes	No	Yes	No	
Birth weight of child							
<2500 g	14 (100%)	0	12 (85.7%)	2 (14.3%)	0	14 (100%)	14
2500 g to 4000g	613 (97%)	18 (3%)	288 (45.6%)	343 (54.4%)	56 (8.87%)	575 (91.13%)	631
> 4000 g	5 (100%)	0	2(40%)	3(60%)	2 (40%)	3(60%)	5
Total	632	18	302	348	58	592	650
	$\chi^2 = 0.41$ $df: 1p: 0.52$		$\chi^2 = 7.32$ $df: 1p: 0.006$		$\chi^2 = 0.5$ $df: 1p: 0.48$		

V. Discussion

Breastfeeding has been conclusively demonstrated as one of the important determinants for comprehensive growth & development of infants. According to WHO exclusive breastfeeding means that infant only receives breast milk and no any other food or drinks not even water till 6 months of age. In spite of a worldwide campaign for promotion of breastfeeding, achievements are not up to the desired level, less than 40% of infants in the resource limited settings are breastfed within an hour of birth.⁴ Global rates of exclusive breastfeeding at 6 months of age are low & EBF rate falls within few weeks after birth.^{5,6,7} Poor infant feeding practices & their consequences are one of the world’s major problems & a serious obstacle to social & economic development.

Currently no Indian study is available regarding breastfeeding practices among children in Sikkim except for NFHS. Thus, the present study aimed to study the prevalence of breastfeeding practices & various factors influencing it & the prevailing infant practices in the East district of Sikkim.

The study, shows that all children (100%) have been ever breastfed which is similar to NFHS 3 data for Sikkim of 98.1%. Exclusive breastfeeding for 6 months of age was 46.5% which is higher than national data of 37.2% for Sikkim (Table 2). Mean duration of EBF was 4.91 ± 1.24 months which is higher than the national average of 2 months.² Results are consistent with study done Pune by Borad A et al who found prevalence of EBF to be 48.6%.⁸ Whereas prevalence of EBF was higher in states of Tamil Nadu & Punjab which was 68% & 57.7% respectively^{9,10} & low in state of Odisha which was only 8.6%.¹¹ Such low levels of EBF practices in spite of receiving repeated advice on ANC & PNC visits regarding breastfeeding practices, is mainly due to deep rooted customs & belief that mother’s milk is not sufficient for the baby & hence leading to early introduction of complementary food. The influence of family members also played a major role in continuation of EBF irrespective of literacy or knowledge of mothers on breastfeeding practices.

Early initiation of breastfeeding is initiation of breastfeeding in first hour of birth.¹² In the present study we found initiation of breastfeeding within 1 hour was 97.2% (Table 2) which is much higher than national data of 42.91% for Sikkim.² UNICEF statistic shows, that in India, early initiation was done in only 40.5%.¹³ Majority of the deliveries in the present study were institutional deliveries which could have been the reason for high prevalence of early initiation of breastfeeding.

Feeds which are given to the newborn babies before they are initiated on breastmilk for the first time are called pre lacteal feeds.¹⁴ The study shows pre lacteal feeding was given to 8.9% of the children (Table 2), which is lower than national data of 12.3% for Sikkim.² The better health interventions in the form of health education to the pregnant women & her family members through health workers & ASHAs (Accredited Social Health Activist) in the State may have been the reason for lower practice of pre lacteal feeding. Ritual fluid was the most commonly given pre lacteal feed (31%) followed by honey (27.5%) & cow’s milk (22.4%) (Figure 1). This again reflects the cultural & religious belief prevalent in our community that ritual fluid gives blessings & good health to the newborn & introduction of honey makes the child sweet. Butter was also given as a pre lacteal feed mostly among Buddhist community, reason being that butter makes the child healthy & well nourished.

In the study, EBF for 6 months was practiced more among mothers in the younger age group (51%) i.e less than 25 years as compare to mothers in older age group (32%) of more than 35 years (Table 3). With advancing maternal age EBF was found to be declining. This finding was statistically significant ($p = 0.011$). This may be related to the fact that young mothers were mostly first time mothers & are enthusiastic to practice EBF to their child. This is consistent with study done by Kumar et al¹⁵ who revealed that mothers in the younger age group (<25 years), EBF was 42% & only 6.8% in mothers more than 30 years. Early initiation of breastfeeding was also more common in the younger age group (Table 3) but findings were not statistically significant. Pre lacteal feeding was more common among mothers in the age ore than 35 years (Table 3). This finding was also not statistically significant. This may be due to the fact that mothers of older age tend to follow age old rituals & customs more than the younger ones. It is consistent with study in Pondicherry which revealed findings of older age group mothers practicing more pre lacteal feeding.¹⁶

In the study, EBF for 6 months was practiced more among mothers with lower education status with only 12.5% of graduate & postgraduate mothers practicing EBF (Table 4). The findings were statistically significant ($p = 0.0001$). Mothers with higher education status were working mothers & had to return to work after certain period of time (usually 12 weeks) after completion of their maternal leave which might have been the reason for such low rates. The findings are in contrast to the study done by Aparagita et al¹⁷ which revealed EBF being practiced more among mothers of higher educational status. Pre lacteal feeding was given more by mother of higher educational level (29.1%). (Table 4). Though not statistically significant, the results are also contrast with findings of study done by Prashad et al¹⁶ who revealed that it was more common in lower educational level mothers. It was also dissimilar to study done by Varshney et al¹⁸ who concluded that maternal education, especially beyond primary school was found to be associated with better feeding practices in terms of early initiation, EBF & pre lacteal feeding.

EBF was also practiced more among mothers (62.9%) who were homemakers (Table 5). The findings were statistically significant ($p = 0.0001$). This may be due to the fact that firstly, working mothers do not get required number of maternity leave of 6 months to practice EBF & secondly, after returning to work they may have no provision for breastfeeding at their work place, such as crèches & nursing station. Similar study done by Khan et al¹⁹ showed that rate of EBF drops considerably with working status of mother. In contrast, Rajesh et al²⁰ in a study done in Rajkot reported no association between working status of mother & EBF. The possible justification for such findings could be excellent execution of maternal & infant care which included promotion of breastfeeding especially after introduction of IMNCI training in Gujarat.²⁰ No statistical association was found between working status of mother & early initiation of breastfeeding or pre lacteal feeding.

In the study, statistical significance was associated between nutritional status of mother & EBF & pre lacteal feeding (Table 6). Mothers who were under weight (BMI < 18.5) did not breastfeed their child exclusively for 6 months as compared to mothers who were of normal nutritional status ($p = 0.0002$). Probably it is due to fact that malnutrition, especially during pregnancy leads to low birth weight baby which eventually face problem initially to create demand for breastfeeding. Therefore, early introduction of complementary feeds. Pre lacteal feeding was practiced more among obese mothers (47.3%) & was least among normal & under weight mothers (9.2% & 6.2% respectively) with $p = 0.0001$.

EBF for 6 months was more among children with lower birth weight (< 2500 g) as compared to normal or overweight ones (Table 7). The findings were statistically significant ($p = 0.006$). This may be due to the fact that mothers give low birth weight baby more care & follow proper breastfeeding practices. It is similar to a study done by Rajesh et al²⁰ in Rajkot. Early breastfeeding & pre lacteal feed was also found to be more common among high birth weight baby (>4000 g) but findings were not statistically significant (Table 7).

VI. Conclusion

Though breastfeeding is universal, level of early initiation of breastfeeding is high & there is low level of pre lacteal feeding, there has not been much improvement in the EBF practices in the state with more than half of children not receiving EBF for 6 months. Deep rooted customs & belief that mother's milk is not sufficient for the baby seems to be the main reason for early introduction of complementary food. Maternal age, educational level, nutrition & working status, & birth weight were found to have significant association with breastfeeding practices in this study.

There is a need for appropriate action to be taken at all levels to improve the breastfeeding practices by propagation of the right message to the antenatal & postnatal mothers & to their families. To promote & support breastfeeding among working mothers, be it in a formal or non formal sector, provision of crèches & breastfeeding areas in the work place is to be ensured.

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