

## Research Article

# Exclusive Breastfeeding Practice and Its Associated Factors among Mothers of Infants Less Than Six Months of Age in Debre Tabor Town, Northwest Ethiopia: A Cross-Sectional Study

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**Background.** Exclusive breastfeeding for the first six months of life is recommended by the World Health Organization and United Nations Children's Fund. However, the prevalence of exclusive breastfeeding is very low in many developing countries including Ethiopia. **Objectives.** The study was aimed at assessing the prevalence of exclusive breastfeeding practice and its associated factors among infants aged six months in Debre Tabor town. **Methods.** Community based cross-sectional study was conducted. Simple random sampling technique was employed in the selection of participants. Data were collected using pretested and structured questionnaire through face-to-face interview. Odds ratios with their 95% CI were computed and variables having  $p$  value less than 0.05 in the multivariable logistic regression were considered as significantly associated with the dependent variable. **Result.** Of 470 mother-infant pairs samples, 453 were included in the final analysis. The overall age appropriate rate of EBF practice was found to be 70.8%. Having an infant aged 2-3 months [AOR = 2.3 (95% CI: 1.12, 6.42)], giving birth in the health facility [AOR = 3.8 (95% CI: 2.18, 7.32)], being a house wife in occupation [AOR = 2.4 (95% CI (1.22, 6.92))], receiving counseling/advice on infant feeding [AOR = 2.1 (95% CI: 1.61, 5.41)], and colostrums feeding [AOR = 1.5 (95% CI: 1.28, 7.98)] were found to be significantly associated with EBF practice. **Conclusion and Recommendations.** A small proportion of infants are exclusively breastfed during the first 6 months. Promoting institutional delivery, revising the leave after birth, advice and counseling pregnant mothers about EBF, and enabling every mother to encourage colostrum feeding were recommended in order to increase the proportion of women practicing exclusive breastfeeding.

## 1. Back Ground

Exclusive breastfeeding (EBF) is the optimal feeding practice to achieve infants' growth and development. It is one of the strategies to improve nutritional status and growth in children. EBF can avert the major causes of neonatal death such as sepsis, acute respiratory tract infections, meningitis, and diarrhoea [1]. Moreover, breastfeeding delays the return of a woman's fertility and reduces the risks of postpartum hemorrhage, premenopausal breast cancer, and ovarian cancer [2].

In view of the above, suboptimum breastfeeding, particularly nonexclusive breastfeeding, results in 1.4 million child deaths and 10% of disease burden in children under five years [3]. Global risk assessment of suboptimal breastfeeding

indicates that 96% of all infant deaths in developing countries are attributable to inappropriate feeding occurring during the first six months of life [4]. The 2011 Ethiopian Demographic and Health Survey (EDHS) showed 52% of children less than 6 months of age are exclusively breastfed. In Amhara region with high prevalence rates of stunting which is above the national average (52%) is mainly caused by inappropriate neonatal feeding [5].

The immediate consequence of poor nutrition during 0–6 months of age leads to morbidity, mortality, and delayed mental and motor development. Gradually early nutritional deficits are linked to impairments in intellectual performance, work capacity, reproductive outcomes, and overall health during adolescence and adulthood [6].

Sociocultural factors, food insecurity, poor professional counseling on breastfeeding, place of delivery, mode of delivery, obstetrics, and medical factors are considered as factors influencing feeding practice by different studies [7–9].

Despite many studies conducted on exclusive breastfeeding and well-recognized importance of exclusive breastfeeding, the practice is not widespread in the developing world and increase on the global level is still very modest with much room for improvement. Moreover, the associated factors are different from country to country and even within the same country [1, 2].

Breastfeeding is nearly universal in Ethiopia but EBF during the first six months after birth is not widely practiced. Among subgroups, the percentage of young children who are exclusively breastfed decreases sharply from 70 percent of infants aged 0-1 month to 55 percent of those aged 2-3 months and, further, to 32 percent among infants 4-5 months old. In addition to breast milk, 19 percent of infants under six months of age are given plain water only, while 14 percent receive milk in addition to breast milk, and 4 percent are given nonmilk liquids and juice. Sixteen percent of infants under six months of age are fed using a bottle with a nipple [5].

To strengthen the effort in reducing child mortality, the Ethiopian Ministry of Health (MOH) had targeted an increase in the proportion of exclusively breastfed infants under the age of 6 months to 70 percent by 2015 as one strategy to improve child health [1, 10]. In line with this, the Ethiopian government has increased its efforts to enhance good nutritional practices through health education and developed the infant and young child feeding (IYCF) guideline in 2004 [11] and the Health Extension Program (HEP) has included exclusive breastfeeding as one part of the health care package [12]. Identifying factors associated with breastfeeding practices in different contexts is assumed to facilitate better advocacy and wider coverage in the country. Therefore, the current study will reveal the practice of exclusive breastfeeding and associated factors which are crucial for decision-makers at different levels for designing empirical and evidence based intervention in Debre Tabor town.

## 2. Methods

**2.1. Study Design and Study Period.** Institution based cross-sectional study was conducted in April 2014 at Debre Tabor town of the Amhara Region of Ethiopia, about 130 kilometers southeast of Gondar town, 50 kilometers east of Lake Tana, and 666 kilometers from Addis Ababa. It has an area of 1562 hectares that extends from 11°51'N to 38°1'E with an elevation of 2706 meters above sea level. It has a total population of 46,397 and 10,790 households. The town is divided into four kebeles. There are 3682, 3594, 1284, and 2230 households in kebele 1, kebele 2, kebele 3, and kebele 4, respectively. There are three health centers and one hospital. There are two health extension workers in each kebele who provided basic primary health care services [13].

The sample size was calculated by considering the assumptions for single population proportion formula: the proportion ( $P$ ) = 50.3% exclusive breastfeeding rate [10],  $Z$

the standard normal distribution value at 95% confidence level of  $Z_{\alpha/2} = 1.96$ , 5% of absolute precision, and 10% nonresponse rate. Hence, the total sample size was 426. However, there were 470 mother-infant pairs during the study period and, therefore, all were included.

Simple random sampling technique using computer generated random number was employed in the selection of participants. The registration of mothers who have a child aged less than 6 months by the local health extension workers (HEW) were used as a sampling frame. In the study area, Debre Tabor town, there are 4 kebeles. Proportional allocation was used to select the participants. Based on this, 139, 148, 59, and 124 mother-infant pairs were selected from kebeles 1, 2, 3, and 4, respectively.

Pretested and structured questionnaires using face-to-face interviewing with caregivers were used for data collection. The questionnaire was partly adapted from EDHS and WHO which is designed to assess infant and young child feeding practices in developing countries including Ethiopia [5, 7, 8].

The prevalence of EBF was calculated based on the respective age of the infants. Whenever study participants were not able to be interviewed for some reason (e.g., absence, refusal), attempts were made three times to interview the respondent rather than simply considering them as nonresponse.

Data were collected by four diploma nurses (supervised by two B.Sc nurses). A two-day comprehensive training was given to data collectors and supervisors. The questionnaire was first prepared in English and then translated into Amharic (the local language) and back into English to ensure consistency. Pretesting of the questionnaire was undertaken on 5% (24 mothers) of the sample size in Debre Tabor town at Gasay town before the actual data collection.

The questionnaires were coded and entered into EPI Info version 3.5.3 statistical software and then exported to SPSS windows version 16 for further analysis. Data were summarized and presented using descriptive statistics. Bivariate and multiple logistic regressions were computed to identify the presence and strength of associations. Odds ratios with 95% CI were computed and variables having  $p$  values less than 0.05 in the multiple logistic regression models were considered significantly associated with the dependent variable.

### 2.2. Operational Definition

**2.2.1. Prevalence of Exclusive Breastfeeding.** Prevalence of exclusive breastfeeding was calculated as newborns/infants below 6 months who were fed only on breast milk in the 24 hours preceding the survey to the total number of children in the same age group (<6 months of age) and multiplied by 100.

## 3. Ethical Considerations

Ethical clearance was obtained from the Ethical Review Committee of the Debre Tabor University. An official letter of cooperation was gained from South Gondar Zone Health Department and Debre Tabor town administrative health offices. Verbal consent was obtained from each participant before the start of interview. Confidentiality was kept by

justifying that no information was disclosed individually and using anonymous data. The respondents were having the right not to participate in or withdraw from the study at any stage.

## 4. Results

**4.1. Sociodemographic Characteristics of the Participants.** A total of 453 mothers of children were included in the study with a response rate of 96.4%. The mean age of the mothers was 28.4 years (SD  $\pm$  5.3 years) whereas the median age of the infants was 3 months (IQR = 2 months). A majority, 412 (90.9%), of the mothers were married, 448 (98.8%) were Amhara by ethnicity, and 231 (50.9%) were housewives by occupation. Three hundred eighty (83.8%) of mothers had primary education. Regarding infants, 294 (64.9%) were female and 180 (39.8) % were between 2 and 3 months of age (Table 1).

**4.2. Obstetric Characteristics of the Participants.** Most of the respondents, 446 (98.5%), had ANC follow-up with a mean number of ANC visits of 3.1 (SD  $\pm$  1.04); however, 47% were not counseled on exclusive breastfeeding for six months during their ANC follow-up. Concerning the place of delivery, 370 (81.6%) delivered their youngest child at health institutions. Four hundred and fifty-one (99.6%) of the mothers delivered vaginally, and 324 (87.5%) of the mothers who delivered at health institutions were counseled on breastfeeding (Table 2).

**4.3. Breastfeeding Practices.** Almost all 452 (99.8%) children had ever breastfed at some point in the past. Of those who had ever breastfed, 356 (78.6%) of the mothers initiated breastfeeding within one hour of birth, 441 (97.3%) had fed colostrum, and 116 (25.6%) of mothers gave one or more prelacteal feeds.

The majority, 280 (61.8%), of mothers give breast milk for their infant eight times and above per 24 hrs. Despite the fact that on-demand breastfeeding is recommended, 44.3% of mothers breastfed their infants only when the infant cries and 42.8% of mothers apply the on-demand feeding. The prevalence of EBF computed using 24-hour dietary recall method showed 321 (70.8%) of the participants practiced EBF appropriate to their age (Table 3).

For mothers who have not ever breastfeed, the perceived reasons were as follows: child refused to take BM (28.9%) and breast problems (24.5%) (Figure 1).

Based on the 24-dietary recall period, about 48.2% of mothers gave breast milk with some addition of foods like cow's milk (17.0%), cereal based fluids (13.2%), tea (2.9%), and formula milk (1.8%) (Figure 2).

**4.4. Factors Associated with Exclusive Breastfeeding Practice.** Binary logistic regression analysis showed that infant age, occupation, and educational status of the mother, monthly income, ANC visit during last pregnancy, place of delivery, mode of delivery, colostrums feeding, sex of infant, and

TABLE 1: Sociodemographic characteristics of the mothers with their infants ( $n = 453$ ) among mothers who gave birth in the last 6 months in Debre Tabor town, Northwest Ethiopia, 2014.

Variables	Frequency	Percentage (%)
<i>Age of mother (in years)</i>		
<20	21	4.6
20–29	279	61.6
$\geq 30$	153	33.8
<i>Ethnic group</i>		
Amhara	448	98.8
Tigre	5	1.2
<i>Marital status</i>		
Single	30	6.6
Married	412	90.9
Divorced	6	1.3
Widowed	5	1.1
<i>Religion</i>		
Orthodox	438	96.6
Muslim	13	2.9
Protestant	2	0.5
<i>Maternal education</i>		
Cannot read and write	43	9.5
Primary school (1–8)	380	83.8
Secondary school and higher	30	6.7
<i>Caregivers income</i>		
$\leq 300$	47	10.4
300–999	218	48.1
$\geq 1000$	188	41.5
<i>Occupation</i>		
Merchant	141	31.2
Housewife	231	50.9
Government employee	71	15.7
Other*	10	2.2
<i>Sex of the infants</i>		
Male	159	35.1
Female	294	64.9
<i>Infants age (in months)</i>		
$\leq 1$	105	23.2
2–3	180	39.8
4–6	168	37.0

*Other\**: students, farmers, and daily laborers.

receiving counseling/advice on infant feeding were associated with adherence.

In multiple logistic regression, age of the infant [AOR = 2.3 (95% CI: 1.12, 6)], giving birth in the health facility [AOR = 3.8 (95% CI: 2.18, 7.32)], being a housewife in occupation [AOR = 2.4 (95% CI (1.22, 6.92))], receiving counseling/advice on infant feeding [AOR = 2.1 (95% CI: 1.61, 5.41)], and colostrums feeding [AOR = 1.5 (95% CI: 1.28, 7.98)]

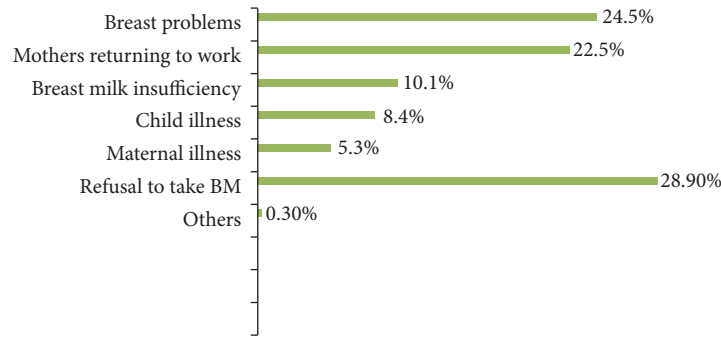


FIGURE 1: Reasons for not to breastfeed infants among mothers in Debre Tabor town, Northwest Ethiopia in Debre Tabor town, Northwest Ethiopia.

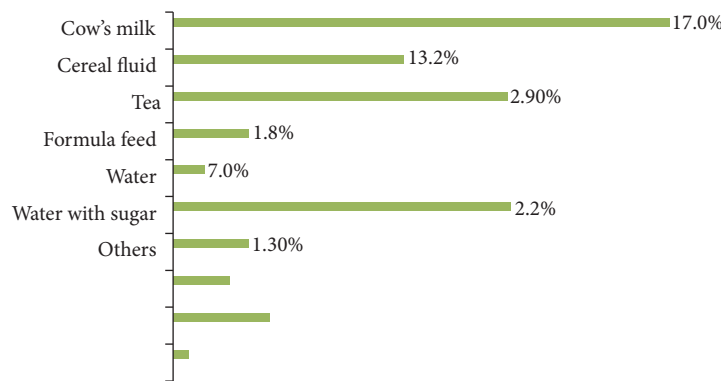


FIGURE 2: Mixing of breast milk with some foods among mothers in Debre Tabor town.

were found to be significantly associated with EBF practice (Table 4).

## 5. Discussion

This study assessed the prevalence of exclusive feeding practice and its associated factors among mother-infant pairs at Debre Tabor town, Northwest Ethiopia. The prevalence of exclusive breastfeeding was found to be 69.6% in the 24 hours preceding the survey.

This finding is comparable to similar studies conducted in Goba district (71.3%) [14], Jimma town (67.2%) [15], Madagascar (68%) [16], and Brazil (72.5%) [17]. It was lower than studies conducted in Ghana (79%) [16] and Iran (82%) [18]. This might be because of the small sample size in Ghana and Iran which increases estimation of exclusive breastfeeding rate. Nevertheless, it higher than studies conducted in Bahir Dar City Administration (50.36%) [4], EDHS (52%) [7], Bolivia (65%) [16], Turk Islands (50.6%) [19], UK (35%) [20], and Canada (13.8%) [21]. This might be due to the accessibility of information in the recent times. It might be also because a higher number of participants are housewives, thus increasing the mother-infant bond which in turn boosts breastfeeding.

In the present study, breast related problem was reported as the major reason (24.5%) for not breastfeeding infants. A study conducted in Goba Woreda [14] supported this finding. This could be because the mothers may fear child illness secondary to breast problems.

Similar to other studies [4, 14], child refusal to take breast milk (28.9%) and mothers returning to work (22.5%) lead them to not giving breast milk.

A number of factors were reported as predictors of exclusive breastfeeding among infants. In the present study, if the age of the infant is 4–6 months, then the child was less likely to be exclusively breastfed. Studies conducted in Bale Goba [14], Jimma town [15], and Brazil [17] showed similar findings. This is due to the fact that when the age of the baby increases, the mothers may return to work.

The findings also showed that those infants who are born in health institutions were about four times more likely to be exclusively breastfed than those who are born at home. This finding is supported by a study conducted at Bahir Dar [10]. This may be because mothers get counseling and advice when they give birth at the health facility and understand the rationale behind exclusive breastfeeding.

This study also showed that mothers' occupation or being a housewife was associated with exclusive breastfeeding which is in line with findings from Bahir Dar [10]. This could

TABLE 2: Obstetric characteristics of participants ( $n = 453$ ) in Debre Tabor town, Northwest Ethiopia, 2014.

Variables	Frequency	Percentage
<i>Follow-up of ANC</i>		
Yes	446	98.5
No	7	1.5
<i>Frequency of ANC visits</i>		
≤2	39	8.6
3-4	366	80.8
4 and above	48	10.6
<i>Counsel on EBF during ANC visit</i>		
Yes	240	52.8
No	213	47.2
<i>Place of delivery</i>		
Health facility	370	81.6
Home	83	18.4
<i>BF counseling at health facility during delivery</i>		
Yes	324	71.5
No	129	28.5
<i>Mode of delivery</i>		
Vaginal	451	99.6
C/S	2	0.4

happen because the mothers can have frequent contact with their babies and give breast milk. On the other hand, mothers were more likely employed and thus spend less time with the child to give the breast milk consistently.

In the present study, those mothers who received infant feeding counseling/advice practiced exclusive breastfeeding about two times more than those who did not get counseling about exclusive breastfeeding. This finding is consistent with that of a study conducted in Bale Goba and Bahir Dar [10, 14].

If mothers do not understand benefits of exclusive breastfeeding to infants, they might be poorly motivated to give exclusive breastfeeding.

In this study, giving the first milk/colostrums was positively associated with exclusive breastfeeding. This could be explained by the idea that the baby will be healthy and secretion of breast milk increases.

However, the present study does have some inherent limitations. Using a 24-hour recall period measures current status and may cause the proportion of exclusively breastfed infants to be slightly overestimated, since some infants who were given other liquids regularly may not have received them in the 24 hours before the survey. Despite the efforts made during data collection to minimize the recall biases, this may not be eliminated. The cross-sectional nature of the study which used a snapshot of prevalence of exclusive breastfeeding practice at one point in time may hinder the cause and effect relationship [22].

TABLE 3: Breastfeeding practices of the respondents ( $n = 453$ ) in Debre Tabor town, Northwest Ethiopia, 2014.

Variables	Frequency	Percentage
<i>Ever breastfed</i>		
Yes	452	99.8
No	1	0.2
<i>Initiation time</i>		
Within 1 hour	356	78.6
After 1 hour	43	9.4
Do not remember	54	11.9
<i>Colostrum discarded</i>		
Yes	12	2.7
No	441	97.3
<i>Prelacteal feeding</i>		
Yes	116	25.6
No	337	74.4
<i>Exclusive breastfeeding practice</i>		
Yes	321	70.8
No	132	29.2
<i>Breastfeeding frequency per 24 hrs</i>		
≥8 hrs	280	61.8
<8	173	38.2
<i>Time to give BF*</i>		
On demand	194	42.8
When the baby cry	201	44.3
On schedule	41	9.0
Others**	17	3.7

\* BF: breastfeeding; \*\* others: on convince, breast full.

## 6. Conclusion

A small proportion of infants are exclusively breastfed during the first 6 months, despite what is recommended in the national and global infant and young child feeding guidelines. Strengthening infant feeding advice/counseling during ANC follow-up and birth, promoting institutional delivery, and enabling every mother to encourage colostrums feeding were recommended in order to increase the proportion of women practicing EBF.

## Disclosure

Getachew Arage, BSc, is MSc lecturer in Debre Tabor University, College of Health Sciences, Department of Nursing. Haileyesus Gedamu, BSc, is MSc lecturer in Debre Tabor University, College of Health Sciences, Department of Nursing.

## Competing Interests

The authors declare that they have no competing interests.



TABLE 4: Bivariate and multivariate analysis of factors associated with exclusive breastfeeding practices among mothers who gave birth in the last 6 months ( $n = 453$ ) in Debre Tabor town, 2014. \* $P > 0.05$ ; \*\* $P \geq 0.05$ .

Variables	EBF practice		OR (95% CI)	
	Yes	No	COR (95% CI)	AOR (95% CI)
<i>Sex of the infant</i>				
Male	119	40	1	
Female	227	67	1.4 (0.88, 2.25)*	
<i>Age of the mothers</i>				
<30	13	8	1	
20–29	233	46	1.21 (0.67, 2.16)	
≥30	123	30	0.81 (0.47, 1.63)*	
<i>Educational status of the mothers</i>				
Cannot read and write	16	27	1	
Elementary school	299	81	1.4 (0.77, 2.52)	
Secondary education and higher	19	11	0.752 (0.43, 1.29)*	
<i>Mode of delivery</i>				
Vaginal	410	25	1	
C/S	11	7	2.07 (1.07, 4.05)*	
<i>Place of delivery</i>				
Health facility	293	77	2.7 (1.40, 5.25)*	<b>3.8 (2.18, 7.32)**</b>
Home	37	46	1	1
<i>ANC follow-up</i>				
Yes	384	39	2.5 (1.08, 6.24)*	
No	18	12	1	
<i>Occupation</i>				
Merchant	89	52	1	1
Housewife	156	75	2.7 (1.68, 4.22)*	<b>2.9 (1.29, 6.92)**</b>
Government employee	39	32	2.7 (1.68, 4.22)*	1.07 (0.25, 4.53)
<i>Colostrum discarded</i>				
Yes	7	5	1.4 (1.52, 26.90)*	1.53 (1.28, 7.42)**
No	361	280		
<i>Age of the infant</i>				
<1 month	86	15	1	1
2–3 months	115	65	3.9 (2.39, 6.4)*	<b>2.3 (1.12, 6.42)**</b>
4–6 months	96	72	1.2 (1.12, 3.41)	
<i>Monthly income</i>				
<300	27	20	1	
300–999	178	40	1.3 (0.85, 2.25)	
≥1000	117	71	2.12 (0.93, 4.87)	
<i>Receiving counseling/advice on infant feeding</i>				
Yes	251	73	2.01 (1.02, 3.98)*	<b>2.1 (1.16, 5.41)**</b>
No	83	46	1	1

## Authors' Contributions

Getachew Arage and Haileyesus Gedamu wrote the proposal, participated in data collection, analyzed the data, and drafted the paper. All authors read and approved the final paper. Getachew Arage and Haileyesus Gedamu contributed equally to this work.

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