



# Exclusive Breast Feeding and Its Associated Factors Among Mothers of <12 Months Old Child in Harar Town, Eastern Ethiopia: A Cross-Sectional Study

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**Background:** Exclusive breast-feeding is the practice of feeding breast milk during the first 6 months and no other liquids and solid foods except medications. Despite its demonstrated benefits, exclusive breast-feeding practice in many countries including Ethiopia is lower than the international recommendation. However, studies about exclusive breast-feeding in the study area are limited. Therefore, this study aimed to fill this gap.

**Methods and Materials:** Community-based cross-sectional study was employed. A cluster sampling method was used to select 577 women who had a child aged <12 months. Data were collected using a pretested interviewer-administered questionnaire. Epi-Data version 3.1 and SPSS version 21 were used for data entry and analysis. Bivariate and multivariate logistic regressions were used to analyze the association between the dependent and independent variables.

**Results:** A total of 577 study participants have participated in the study which gives 97.8% response. Exclusive breast-feeding practice among the mothers was 45.8%. Women in the age group of 26–40 were 2 times more likely to breast-feed than women in the age group of 18–25 at (AOR = 1.980 [95% CI = 1.098, 3.570]). Women who have information about exclusive breast-feeding were two times more likely to breast feed than those who have no information at (AOR = 1.952 [95% CI = 1.130, 3.373]). Those women who initiated breast-feeding early were 12 times more likely to breastfeed than those women who did not initiate early at (AOR = 12.336 [95% CI = 1.331, 14.316]).

**Conclusion:** The overall exclusive breast-feeding practice among the women was found to be less. Age, information on breast-feeding and early initiation of breast-feeding were found as important predictors of exclusive breast-feeding. Improving access to information on recommended infant feeding is vital, and encouraging exclusive breast-feeding among mothers through proper counseling and mother-friendly work environment is advisable.

**Keywords:** breast-feeding, exclusive breast-feeding, practice, Harar

## Background

Exclusive breast-feeding (EBF) is the practice of feeding breast milk (including expressed breast milk) during the first 6 months and no other liquids and solid foods, except medications.<sup>1</sup> Exclusive breastfeeding offers both nutrition and protection from diseases and when given for 6 months will save 1.3 million infants worldwide annually. According to the WHO report, 37% of infants aged less 6 months are breastfed exclusively worldwide. In the case of Africa, only fewer than 1/3 of under 6 months of infants breastfed exclusively.<sup>2,3</sup>

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Internationally, there has been advancement in improving child survival. However, many declarations were passed to decrease child death by two thirds by 2015 from the level recorded in 1990; in the last two decades, the under-five mortality was diminished by half in 2013, from 12.7 to 6.3 million. Sub-Saharan Africa (SSA), where the under-five deaths are 15 times higher than the deaths in an average high-income country, continues to bear the greatest problem. Ethiopia is among the developing countries where the highest infant mortality rate (59/1000 live birth) occurs.<sup>4</sup>

Poor infant feeding has negative consequences on the health and nutritional status of children; it affects the physical and cognitive development of the children. Breastfeeding is a vital element of a child's nutritional status that determines his/her growth and development.<sup>5</sup>

Globally, malnutrition contributes 60% of the 10.9 million annual deaths among under-five children. Greater than two-thirds of these deaths are related to inappropriate feeding practices that occur during the first year of life. Inadequate breastfeeding accounts for 45% of deaths related to neonatal infections, 30% of deaths related to diarrhea, and 18% of deaths related to acute respiratory diseases among under-five children.<sup>6</sup>

According to the Ethiopian Demographic Health Survey (EDHS) 2016, only 58% of infants were exclusively breastfed during the survey, which showed slight improvement, but still lower than the WHO recommendation. In contrast to WHO recommendation, the survey report showed that 17% of infants aged 0–5 months consume plain water, 5% consume no milk liquids or other milk and 11% were introduced complementary foods in addition to breast milk.<sup>7</sup>

Several strategies have been identified by UNICEF and WHO to promote EBF practices. These include starting breast-feeding within 1 hour of births, EBF for first 6 months of infant life, and appropriate weaning after 6 months and complementary foods while continuing to breast feeding for 2 years.<sup>4</sup>

The Ministry of Health of Ethiopia has tried to enhance optimal breastfeeding practice by developing training manuals and implementation guidelines on breastfeeding. These have been incorporated into the primary health care system in line with the health extension program but breastfeeding practice remains far from the global recommendation.<sup>8</sup> To achieve the Sustainable Development Goal in reducing child mortality, infant breastfeeding has been identified as one of the major intervention areas both globally and nationally.

Therefore, the aim of this study was to assess the magnitude of exclusive breast-feeding practice and its associated factors among women who had a child aged <12 months, which is mandatory to implement interventions that speed up the government efforts and decrease the rate and burden of infant morbidity.

## Methods and Materials

### Study Setting and Period

The study was conducted in Harar town. It is the capital of East Hararghe and the Harari Regional State. With a total area of 343.2 square kilometers (Urban = 19.5 Sq Km and Rural = 323.7 Sq Km), Harar is located in the Eastern part of Ethiopia, 516 km from Addis Ababa, and at an elevation of 1885 meters. The total population of the town is 245,000. Of these, 52.2% are female and 47.8% are male. The crude birth rate and general fertility rate for the year 2013 were 20.3 and 64 births per 1000, respectively. In 2013, the Total Fertility Rate (TFR) was 1.9 births per woman of reproductive age.<sup>9,10</sup> The study was conducted from July 1–30/2019.

### Study Design and Population

A community-based retrospective cross-sectional study was conducted among the mothers residing in the selected kebeles of the study area for more than 6 months, and who had a child <12 months of age. The mothers who could not communicate due to illness and who were not available in home during the data collection period after three visits were excluded from the study.

### Sample Size Determination and Sampling Procedure

Single population proportion formula,  $n = (Z\alpha/2)^2 pq/d^2$  was used with the proportion (58%) which was taken from EDHS 2016.<sup>7</sup> A confidence level of 95% and a 5% degree of precision were used. By considering the 1.5 design effect and 5% non-response rate, the final sample size was 590.

A cluster sampling technique was used and five kebeles (the smallest administrative units) were selected by the lottery method. Proportional allocation for each kebele was used to give equal chance. A systematic random sampling technique was used to select study participants among the households until the desired sample size was achieved.

### Data Collection Tools, Procedure and Quality Control

An interview-based a structured questionnaire was used to collect data. It was prepared in English, then translated

into Amharic, then translated back into English to maintain the reliability, and finally administered in Amharic. Three health extension workers were recruited for the data collection. Mothers from selected households who had a child aged <12 months during the survey were interviewed. If more than one mother/women who had an infant aged <12 months were in the selected household, only one of them was interviewed and the data were collected regarding the EBF practices during the child age from 0 to 6 months. During the interview, when eligible participant was not present in the household visit, we visited three times and then excluded those were not available within those three visits. The interview was taken around 45 minutes for each participant.

To control the data quality, three-day training was given for the supervisor and the data collectors. The tools were pre-tested and modifications were made to fit our set up based on the pretest result. The collected data were checked on a daily basis for completeness and cleaned manually and double data entry was performed to check clarity.

## Operational Definitions

### Exclusive Breastfeeding

Feeding only breast milk for at least 6 months except for ORS, drops, syrups (vitamins, medicine, and minerals) do not allow anything else in the past 24hrs before the survey for the babies who were less than or equal to 6 months.

### Early Initiation of Breast-Feeding

Initiating feeding breast milk within 1 hour after delivery.

### Complementary Feeding

Introducing any food or liquid, including non-human and solid or semi-solid foods to the baby after 6 months.

### Knowledge Score on EBF

An average of responses on knowledge variables will be done by computing variables. Mothers who scored less than the mean score were labeled to have poor knowledge and those who scored above the mean score as having good knowledge.

## Data Processing and Analysis

The data were entered into the computer by using Epi-Data Version 3.0.2. Data analysis was done by using Statistical Package for social science (SPSS) software Version 21. Frequencies of variables were generated; tabulation and percentages were used to illustrate study findings. Pearson correlation test was done to see the

relationship between variables. The association between the outcome variables (ie, EBF practice) and independent variables was analyzed using a logistic regression model. Covariates with a P-value <0.2 were retained and entered into the multivariable logistic regression analysis using a forward selection and backward elimination approach. Hosmer and Lemeshow's goodness-of-fit test was used to assess whether the necessary assumptions were fulfilled. Adjusted odds ratio (AOR) with 95% confidence intervals (CI) using a P-value <0.05 was considered as statistically significant association with the outcome variable.

## Ethical Consideration

Ethical clearance for the study was obtained from the IRB of Saint-Paul Hospital Millennium Medical College (SPHMMC). Formal letters were written to all concerned authorities and permission was secured at all levels. Informed voluntary, written and signed consent was obtained from each respondent after explaining the purpose and procedure of the study. All the basic principles of human research ethics (respect of persons, beneficence, voluntary participation, confidentiality and justice) were respected.

## Results

### Socio-Demographic Characteristics of Respondents

A total of 577 study participants have participated in the study, which gives a 97.8% response rate. The study participants were with a mean age of 32.6 years and  $9.5 \pm SD$  (Table 1).

### Breast-feeding practice of study participants

The study finding showed that only 45.8% of the mothers exclusively breast-fed their infant. Many of the study participants (69.3%) initiated breastfeeding immediately after delivery. Regarding the frequency of breast-feeding, 40.1% of the mothers fed 2–3 times/day, and 37.2% 4–7 times/day. In the last 24 hours (recall), 64.6% of them had given their baby extra liquid/solid food. The majority of the study participants provide animal milk (81.5%) as additional liquid and porridge (72.6%) as semisolid food. When asked their reason for giving additional liquids/semi-solid foods, many of the mothers answered that their baby got hungry (78%), that breast milk alone was not enough (74.8%), and that they did not produce enough breast milk (69.2%).

**Table 1** Sociodemographic Characteristics of Study Participants Towards Exclusive Breast-Feeding, Harar Town, Harari Regional State, Eastern Ethiopia (n=577)

Variables	Frequency (n)	Percentage (%)
<b>Age</b>		
18–25	256	44.4
26–40	321	55.6
<b>Marital status</b>		
Married	532	92.2
Divorced	37	6.4
Others	8	1.4
<b>Religion</b>		
Muslim	413	71.6
Orthodox	118	20.5
Protestant	41	7.1
Others	5	0.86
<b>Ethnicity</b>		
Oromo	208	36
Amhara	64	11.1
Harari	230	39.9
Somali	49	8.5
Others	26	4.5
<b>Mother education</b>		
Unable to read and write	91	15.8
Primary school	234	40.6
Secondary school & above	205	35.5
College or university	47	8.1
<b>Mother occupation</b>		
Housewife	319	55.3
Government employee	121	21
Private employee	56	9.7
Merchant	69	12
Others	12	2
<b>Average monthly income</b>		
300–2500	136	23.6
2501–5000	236	40.9
>5000	205	35.5

### Knowledge of study participants about exclusive breast-feeding

The study showed that the overall knowledge of study participants was 68.46%. Many of the study participants (444 (76.9%)) had heard about exclusive breast-feeding and the most cited source of information was health

facility 406 (70.4%), media 191 (33.1%), Family/friends/relatives (22.4%) and from other sources (0.7%).

Regarding the knowledge about exclusive breast-feeding, almost all the study participants (97.6%) knew that breastmilk should be given immediately after birth for the baby and 86% of the study participants knew that the first milk/colostrum should be given for the baby. Many of the study participants (74.8%) believed that breast milk alone is adequate for the baby for the first 6 months.

Concerning complementary feeding, 31.7% of the study participants believed that additional fluids or semi-solid should be introduced to the baby and the majority of them responded that complementary feeding should start at 6 months (73.8%) and only 3.2% stated that complementary feeding should start at 7 months and above.

### Obstetrics and Infant Conditions of Study Participants

The obstetric and infant conditions of the study participants assessed in the study were indicated here below as reported by the mothers (Table 2).

### Factors Associated with Exclusive Breast-Feeding

Age, number of pregnancies, breast-feeding information, and early initiation of breast-feeding were found as important predictors of exclusive breast-feeding in the bivariate analysis. After adjusting for other variables, only three variables (Age, information on breast feeding and early initiation of breast-feeding) remained significant in the multivariate logistic regression (Table 3).

### Discussion

This study finding showed that the overall practice of exclusive breast-feeding among the mothers was 45.8%. This is in line with other study findings in Cameroon (45.2%)<sup>11</sup> and Nepal (45%).<sup>12</sup> It is also similar to other study findings which were conducted at Mecha district, North West Ethiopia (47.13%).<sup>13</sup> Bahirdar city (50.3%) and (49.1%),<sup>14,15</sup> and Mota town, East Gojjam zone (50.1%).<sup>16</sup>

The prevalence of EBF in this study is lower than the ones found by studies conducted in Debre Berhan, Central Ethiopia (68.6%).<sup>17</sup> Debre Markos, Northwest Ethiopia (60.8%).<sup>18</sup> Hossana town (70.5%), and Offa district (78.0%).<sup>19–21</sup>

It was also lower than the prevalence reported from Dubti town (81.1%), Afar Regional State<sup>22</sup> and the national level prevalence of 58% reported by Ethiopian Demographic and

**Table 2** Obstetrics and Infant Conditions of Study Participants Towards Exclusive Breast-Feeding, Harar Town, Harari Regional State, Eastern Ethiopia (n=577)

Variable	Frequency (n)	Percentage (%)
<b>Number of children in family</b>		
1	275	47.7
2-3	185	32
4 above	117	20.3
<b>Antenatal care follow-up</b>		
Yes	544	94.3
No	33	5.7
<b>Antenatal care visits</b>		
1 visit	26	4.8
2 visits	105	19.3
3 visits	194	35.6
4 visits and above	219	40.3
<b>Place of delivery</b>		
Home	34	5.9
Health facility	543	94.1
<b>Mode of delivery</b>		
Vaginal delivery	467	86
Cesarean section	76	14
<b>Sex of the child</b>		
Male	325	56.3
Female	252	43.7
<b>Postnatal care</b>		
Yes	543	94.1
No	34	5.9
<b>Baby illness/sick</b>		
Yes	128	22.2
No	449	77.8
<b>Disease condition</b>		
Vomiting	90	15.9
Diarrhea	81	14
Fever	83	14.3
Common cold	87	15.1
Cough	71	12.3
Skin allergy	69	11.9
Others	35	6.03

Health Survey (EDHS) in 2016.<sup>7</sup> This difference might be due to the variation in culture and socio-economic characteristics of the study participants and the presence of NGOs in those study areas working on infant and young child feeding.

The magnitude of EBF in our study is slightly higher than the ones found by studies conducted in Nigeria (31%),<sup>23</sup> Dabat district (30.7%), northwest Ethiopia,<sup>24</sup> Addis Ababa (central Ethiopia) (29.3%),<sup>25</sup> Tanzania (24.1%),<sup>26</sup> and Bangladesh (35.9%).<sup>27</sup> This can be justified with a variation of study setting and study population.

The study revealed that 68.46% of the mothers had good knowledge of exclusive breastfeeding. The finding is consistent with the study which was conducted at Dabat, Northwest Ethiopia, which reported that 69.8% of the mothers had good knowledge about EBF.<sup>28</sup>

This finding is higher than that of the study conducted in Nigeria, which reported that 31% of the mothers had adequate knowledge of exclusive breastfeeding.<sup>23</sup> In Bahirdar, 28.7% of the mothers had knowledge of infant and young child feeding recommendation<sup>29</sup> and Mizan Aman town, Southwestern Ethiopia, where 34.7% of the women were knowledgeable about EBF.<sup>30</sup> This difference might be due to the difference in the study settings and awareness level of the community.

The current study showed that maternal age, information on breast-feeding, and early initiation of breast-feeding were associated with the practice of exclusive breast-feeding. This finding is consistent with other study findings.<sup>17,19-22,26</sup>

The study showed that the women in the age group of 26–40 were about 2 times more likely to exclusive breast-feed their infants than those in the age group of 18–25 (AOR = 1.98 [95% CI = 1.10, 3.57]). This is in line with the results reported from Debre Berhan<sup>17</sup> and Tanzania<sup>26</sup> as an important predictor of EBF.

The women who had information about EBF were about 2 times more likely to exclusive breast-feed their infants (AOR = 1.95 [95% CI = 1.13, 3.37]). The finding is in line with other study findings in Offa district, Southern Ethiopia<sup>21</sup> and Halaba special woreda, SNNP, Ethiopia,<sup>19</sup> and have a significant association with exclusive breastfeeding.

The women who initiated breastfeeding early were 12 times more likely to exclusive breast-feed their infants (AOR = 12.33 [95% CI = 1.33, 14.32]). The finding is similar to that of Dubti town, Afar regional state, northeast Ethiopia,<sup>22</sup> Offa district, Southern Ethiopia<sup>21</sup> and that of Hossana, Southern Ethiopia,<sup>20</sup> which reported early initiation of breastfeeding within 1 hour as a strong predictor of EBF.

## Limitation

Finally, as a limitation. since we have used the dietary recall since birth method, we might have introduced recall bias, as the mothers might not have recalled accurately when they

**Table 3** Bivariate and Multivariate Analysis of Factors Associated with Exclusive Breast-Feeding, Harar Town, Harari Regional State, Eastern Ethiopia (n=577)

Variables	Exclusive Breast-feeding		Odds Ratio (95% Confidence Interval)	
	Yes	No	COR(95% CI)	AOR(95% CI)
<b>Age</b>				
18–25	130	126	1	1
26–40	134	187	1.44(1.04, 2.01)	1.98(1.10, 3.57)*
<b>Maternal education</b>				
Unable to read and write	35	56	1	1
Primary school	120	114	0.59(0.36, 0.97)	0.67(0.28, 1.61)
Secondary school and above	89	116	0.82(0.49, 1.35)	0.54(0.27, 1.12)
College/university	20	27	0.84(0.41, 1.73)	0.64(0.30, 1.35)
<b>Average monthly income</b>				
<2500	60	76	1	1
2501–5000	99	137	1.09(0.71, 1.67)	0.80(0.41, 1.60)
>5000	105	100	0.75(0.49, 1.16)	0.74(0.37, 1.47)
<b>Number of pregnancies</b>				
1–2	135	140	1	1
3–4	80	105	1.45 (0.88, 2.38)	1.01(0.55, 1.84)
5 and above	49	68	1.81(1.01, 3.24)	1.21(0.59, 2.51)
<b>Breast-feeding information</b>				
Yes	215	49	1.61(1.08, 2.40)	1.95(1.13, 3.37)*
No	229	84	1	1
<b>Antenatal care follow-up</b>				
Yes	249	15	1.01(0.50, 2.05)	1.00(0.42, 2.36)
No	295	18	1	1
<b>Early initiation of breast-feeding</b>				
Yes	252	311	7.40(1.64, 13.39)	12.34(1.33, 14.32)*
No	12	2	1	1
<b>Knowledge about EBF</b>				
Good knowledge	186	209	1.19(0.83, 1.69)	1.16(0.72, 1.87)
Poor knowledge	78	104	1	1

**Notes:** \*Significantly associated with p-value <0.05 in multivariate analysis.

**Abbreviations:** COR, crud odds ratio; CI, confidence interval; AOR, adjusted odds ratio; EBF, exclusive breast-feeding.

introduced a food item. This may under- or over-estimate the true prevalence of EBF. It is also difficult to establish a temporal relationship as the study design was cross-sectional.

### Conclusion

The overall exclusive breast-feeding practice among the women was found to be less. Age, information on breast-feeding, and early initiation of breast feeding were found as important predictors of exclusive breast-feeding.

Improving access to information on recommended infant feeding is vital and encouraging exclusive breast-feeding among mothers through proper counseling and mother-friendly work environment is advisable.

### Data Sharing Statement

All related data has been presented within the manuscript. The dataset supporting the conclusions of this article is available from the authors on reasonable request.

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## Author Contributions

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

## Disclosure

The authors declare no conflicts of interest in this work.

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