



## Original Research

# Determinants of exclusive breastfeeding practice among mothers in Sheka Zone, Southwest Ethiopia: A cross-sectional study

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## ABSTRACT

**Objectives:** The objective of this study was to identify the determinants of exclusive breastfeeding (EBF) practice in Sheka zone, Ethiopia. In addition, the study aims to assess the prevalence of EBF practice in the study area.

**Study design:** A community-based cross-sectional study design was used.

**Methods:** A random sample of 630 mothers was selected by stratified cluster sampling using Kebele (an administrative unit) as a cluster. Data were collected using interviewer-administered questionnaires between June and July 2017. Descriptive statistics were used to assess the prevalence of EBF. A multivariable logistic regression model was used to identify determinants of EBF practice.

**Results:** The prevalence of EBF was 76%. The prevalence of EBF decreases as the age of the infant increases: 95.3% of infants aged 1 month were exclusively breastfed, but only 45.5% of infants aged 6 months were exclusively breastfed. The determinants of EBF practice were age of the child, mother's educational level, marital status, household income, place of delivery, receiving postnatal care and place of residence. Mothers with a child aged <1 month were 34.9 times more likely to be practicing EBF than mothers with a child aged 5–6 months.

**Conclusions:** Although the prevalence of EBF was below the World Health Organisation recommended level, the practice of EBF in the study area was good. The prevalence of EBF was shown to decrease as infant age increased. Therefore, we recommend that health workers in health centres and hospitals provide advice about EBF and the duration of EBF during postnatal care visits and infant vaccination appointments.

## 1. Introduction

Breastfeeding, and exclusive breastfeeding (EBF) in particular, is one of the major strategies that helps to improve the nutritional status and survival of infants worldwide. Malnutrition is responsible, directly or indirectly, for 60% of the 10.9 million annual deaths among children under 5 years of age. Feeding practices in infants and young children have a significant impact on their nutritional status. Approximately 40% of deaths in children under 2 years of age are associated with inappropriate feeding practices [1].

The World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) recommend that all mothers should breastfeed their children exclusively for the first 6 months and thereafter they should continue to breastfeed for as long as the mother and child wish. At the age of 6 months, in addition to breastfeeding, children should receive appropriate and sufficient complementary feeding [2,3].

Both UNICEF and the WHO emphasise that breastfeeding is critical to

achieving many of the Sustainable Development Goals (SDGs), such as: SDG 2, ending hunger and improving nutrition; SDG 3, preventing child mortality and decreasing the risk of non-communicable diseases; and SDG 4, supporting cognitive development and education. Breastfeeding is also an enabler to ending poverty, promoting economic growth and reducing inequalities. Despite its demonstrated benefits, EBF prevalence and duration in many countries, including Ethiopia, are lower than the international recommendation of EBF for the first 6 months of life [3,4]. Previous studies in Ethiopia have shown that breastfeeding is nearly universal, but the proportion of children who are exclusively breastfed up to the age of 6 months is less than the recommended levels [5,6].

Breast milk helps prevent respiratory infections, diarrhoeal disease, urinary tract infections, obesity, asthma, diabetes and other life-threatening conditions in children. Furthermore, research suggests that breastfeeding protects mothers against breast and ovarian cancer, reduces bone density and possibly postpartum haemorrhage. Promoting EBF is particularly important in low-resource settings where maternal

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and infant mortality and morbidity rates are high [7].

In Ethiopia, national breastfeeding practices are poor for many reasons, including traditional and cultural beliefs, low educational levels, heavy workloads of mothers, poor sanitary conditions, type of assistance at delivery, duration of stay at home, ethnicity, poor maternal knowledge, age, parity, antenatal service utilisation and place of delivery [8,9].

According to the 2016 Ethiopian Demographic and Health Survey (EDHS), the proportion of infants aged <6 months old who received EBF was 58%, which was slightly improved compared to 2011 EDHS (52%), but remains far from the global recommendation of 90% [10].

Although many studies have been conducted in different parts of Ethiopia, the prevalence and determinants of EBF practice have not been determined in Sheka Zone; hence, the current investigation aims to fill this gap in the research.

## 2. Methods

### 2.1. Study area

This study was conducted in Sheka Zone, Ethiopia. The capital of the Zone, Masha, is located 676 km southwest of Addis Ababa, the capital of Ethiopia. Administratively, the Zone is structured into three Woreda (an administrative unit within the Zone), with two town administrations comprised of 10 urban and 57 rural Kebeles (an administrative unit within a Woreda).

### 2.2. Study design

A community-based cross-sectional study was carried out to investigate the determinants of EBF practice. The study population consisted of mothers who had an infant aged <6 months old and who were living in Sheka Zone at the time of data collection.

### 2.3. Sampling procedure and sample size determination

In our study, a stratified cluster sampling method was applied, using Kebeles as clusters, and urban and rural as stratum. The sample size was calculated using a single population proportion formula using the following parameters: confidence level (95%), margin of error (5.5%), the Ethiopian national prevalence of EBF (58%) and default value of design effect (2).

$$n = \frac{(Z_{\alpha/2})^2 PQ}{d^2} \times deff = \frac{(1.96)^2 \times 0.58 \times 0.42}{(0.055)^2} \times 2 = 618.7 (\text{round up} = 619)$$

After adjusting the sample size for an anticipated non-response of 5%, the total sample size was 650. However, data were collected from only 630 (96.9%) mothers due to non-response. Reasons for non-response included respondents being away/visiting family at the time of data collection and refusal to participate (for unknown reasons).

### 2.4. Data collection

A structured interviewer-administered questionnaire was prepared by reviewing relevant literatures. Pre-testing of the questionnaire was completed by interviewing 20 respondents from Tepi town (one of the two town administrations) and the questionnaire was improved as a result of the pre-test. The questionnaire contained a combination of open-ended and closed-ended questions.

Interviews were administered by 15 community health extension workers. The interviewers completed an intensive 3-day training course, delivered by the investigators, on interviewing techniques, meanings of each question, and how to collect and record data. The data were collected between June and July 2017. The supervision of the survey during data collection was also conducted by the authors.

### 2.5. Variables

**Dependent variable.** The dependent variable for the study was the practice of EBF using the 'ever given the infant anything besides breast milk since birth' definitions.

**Independent variables.** The independent variables included maternal sociodemographic and socio-economic characteristics. Contextual factors were determined by the delivery history of the mother (i.e. place of delivery and type of birth). Infant characteristics included infant age in days, infant sex and infant morbidity (assessed on a 2-week recall).

### 2.6. Statistical analyses

Quantitative data were entered, coded and analysed using IBM SPSS version 20. Descriptive statistics were computed to determine the prevalence of EBF. To identify associated factors, a bivariate logistic regression was performed for each independent variable with EBF. Finally, multivariable logistic regression was completed to elucidate the determinants of EBF.

**Table 1**  
Demographic and socio-economic characteristics of participants.

Variable	n	%
Place of Residence		
Rural	315	50.0
Urban	315	50.0
Ethnicity		
Sheka	346	54.9
Kefa	101	16.0
Amhara	84	13.3
Oromia	34	5.4
Others	65	10.3
Marital Status		
Currently not married	32	5.1
Married	598	94.9
Mother's education level		
No education	161	25.6
Primary	318	50.5
Secondary	113	17.9
Tertiary	38	6.0
Mother's occupation		
Housewife	394	62.5
Employed	57	9.0
Merchant	52	8.3
Farmer	71	11.3
Others	56	8.9
Husband's education level		
No education	116	18.9
Primary	270	44.0
Secondary	135	22.0
Tertiary	92	15.0
Husband's occupation		
Not Employed	345	56.4
Employed	154	25.2
Merchant	113	18.5
Gender of the child		
Male	281	44.6
Female	349	55.4
Age of the child (days)		
≤30	39	6.2
31–60	72	11.4
61–90	94	14.9
91–120	131	20.8
121–150	139	22.1
151+	155	24.6
Monthly household income (ETB)		
≤1000	357	56.7
1001–2000	148	23.5
2001–3000	65	10.3
>3001	60	9.5

ETB, Ethiopian Birr.

### 3. Results

As shown in Table 1, from the 630 respondents, 50% of mothers were living in rural areas, 54.9% were from the Sheka ethnic group and 94.9% were married. In addition, the largest proportion of mothers (40.8%) were aged <25 years and the mean age of the mothers was 27.3 years.

In total, 55.4% of the children were female. In terms of educational background, 50.5% of mothers attended primary level education and 44% of husbands of married women had primary level education. The majority of mothers (58.3%) were Protestant, followed by 32.7% Orthodox Christian. The average monthly family income was 1406.8 Ethiopian Birr (ETB), although 56.7% of households had a monthly income ≤1000 ETB.

#### 3.1. Current practice of exclusive breastfeeding

The current practice of EBF for children aged <6 months, as shown in Fig. 1, is 76% (479 mothers), with comparatively higher practice seen among mothers with a child aged <1 month old (92.3%).

The detailed current practices of EBF are presented in Table 2. For mothers who were not practicing EBF, 84.1% gave clean water to their babies, 43.7% gave milk other than breast milk (e.g. fresh animal, powdered or tinned) and 5.3% gave porridge and/or gruel to their babies.

More than half of the mothers who participated in this study identified advantages of breastfeeding for the baby, including it providing a good meal for the baby (65.0%), protecting the baby from illnesses (54.2%), helping the growth of the baby (64.3%) and developing the relationship between mother and baby (22.4%). The recommended duration of EBF was correctly identified to be 6 months by 96% of the mothers who participated (mean = 6.21 months).

#### 3.2. Reproductive health history

The reproductive health histories of the study participants are presented in Table 3. The average number of children born alive was 2.4. For 31.6% of participants, the infant referred to in this study was their first child. The majority of mothers (97.6%) had received antenatal care (ANC) for the most recent pregnancy. In total, 34.1% of mothers gave birth in government hospitals and 53.2% in government health centres;

**Table 2**

Mothers current exclusive breastfeeding (EBF) practice and knowledge.

Variable	n	%
Knowledge of mothers on EBF duration		
Yes	605	96.0
No	25	4.0
Knowledge of mothers on when the baby should start supplementary foods		
Yes	562	89.2
No	68	10.8
How long the baby should be EBF (months [mean])		
		6.21
Foods in addition to breast milk		
Ever had clean water	127	84.1
Ever had milk (powdered, tinned or fresh animal)	66	43.7
Ever had porridge or gruel and others	8	5.3
Schedule of breastfeeding		
Mother breastfed the baby when the baby wanted	477	75.7
Mother breastfed the baby when the baby cries	402	63.8
Mother breastfed the baby on schedule	157	24.9
Mother breastfed the baby when the mother wanted	70	11.1
Mother breastfed the baby whenever the breast engorged	181	28.7
Benefits of EBF for the baby		
Breastfeeding is a good meal for the baby	406	65.0
Breastfeeding protects the baby from illnesses	339	54.2
Breastfeeding develops the relationship between mother and baby	140	22.4
Breastfeeding helps the growth of the baby	402	64.3
Benefits of EBF for the mother		
After delivery breastfeeding helps the uterus to return to its position	63	10.6
Breastfeeding develops the relationship between mother and baby	328	55.2
Breastfeeding prevents pregnancy	183	30.8
Breastfeeding protects the mother from illnesses	365	61.4
Breastfeeding saves money	158	26.6
Knowledge of mother on when to give breast to the baby		
The baby should be put to breast whenever the baby wants	494	78.5
The baby should be put to breast whenever the mother wants	210	33.4
The baby should be put to breast on schedule	175	27.8

87.6% of mothers were advised about EBF during delivery. Postnatal care (PNC) for the most recent birth was reported by 81.3% of mothers.

#### 3.3. Factors associated with exclusive breastfeeding practice

Multiple logistic regression analysis was performed by considering variables that were significant up to the 20% significant level in the bivariate analysis. A forward stepwise method was used.

The multiple logistic regression (see Table 4) identified age of child,

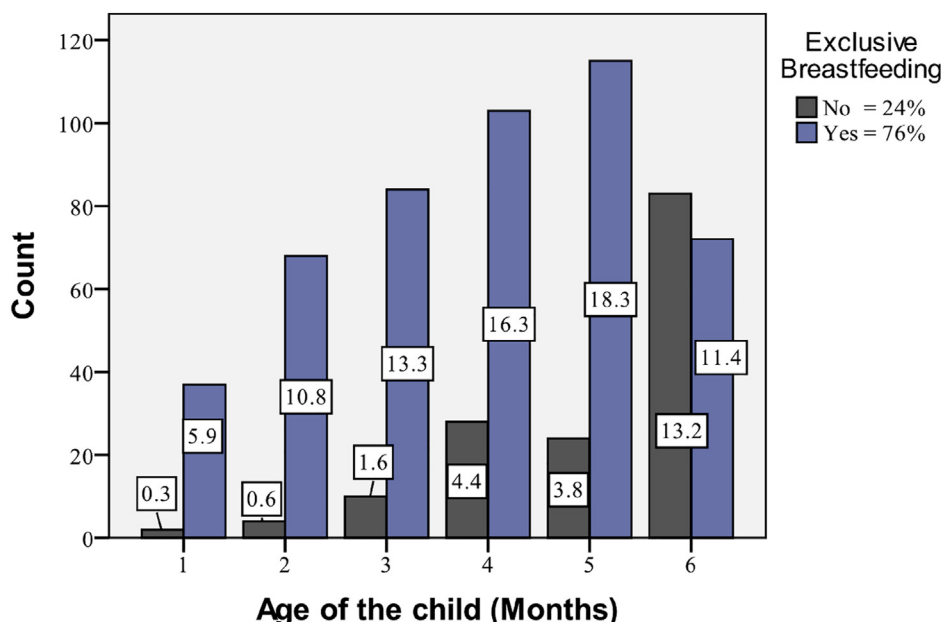


Fig. 1. Age of the child by exclusive breastfeeding status.

**Table 3**  
Reproductive health history of mothers.

Variable	n	%
Received ANC		
Yes	615	97.6
No	15	2.4
Get advice about breastfeeding at ANC		
Yes	362	58.9
No	253	41.1
Place of delivery		
Home or private health center	80	12.7
Government hospital	215	34.1
Government health center	335	53.2
Type of delivery		
Normal	587	93.2
Caesarian	43	6.8
Get advice about breastfeeding on delivery		
Yes	552	87.6
No	78	12.4
Received PNC		
Yes	512	81.3
No	118	18.7
Get advice about breastfeeding on PNC		
Yes	501	98.0
No	10	2.0
Birth order of child		
First	199	31.6
Second	171	27.1
Third and above	260	41.3
Child morbidity for last 2 weeks		
Yes	125	19.8
No	505	80.2
Birth interval between the last two children (years [mean])		2.64
Number of children born alive [mean]		2.37

ANC- antenatal care; PNC- postnatal care.

mother's educational level, marital status, household income, place of delivery, receiving PNC and place of residence to be the determinants of EBF practice.

#### 4. Discussion

This study aimed to identify the prevalence and determinants of EBF practice in Sheka Zone. Despite the benefits of EBF, there are a number of barriers which hinder the current practice.

In this study, the prevalence of EBF was 76%, which is comparable with studies from Hossana town (74%) and Enderta Woreda (70.2%) [11, 12]. The prevalence of EBF in this study was higher than the 2016 EDHS report (58%) and villages of kangemi, Kenya (45.5%) [10,13], but lower than studies conducted in Egypt (93%) [14].

Mothers with a child aged <1 month were 34.9 times more likely to be practicing EBF than mothers with a child aged 5–6 months. As the age of the infant increased towards 6 months, EBF was less likely to be practiced. This finding is comparable with results from Jimma, Goba and Enderta Woreda [12,15,16]. Decreased EBF with increased child age is common in many developing countries as the majority of mothers believe that breast milk alone is not sufficient as the infant gets older. Mothers in developing countries have many responsibilities within the household and also in income generation activities. This leads to mothers spending increased time away from their child, especially as the child grows, and this may be another reason for the large decline in the prevalence of EBF practice in children aged 5–6 months.

Infants of mothers who delivered at home or in private health centres were 50% less likely to exclusively breastfed than mothers who delivered at government health centres (at the 10% significance level). This finding was consistent with studies performed in Debre Berhan, Ghana, and Kingoma region of west Tanzania [17–19]. This could be explained by the fact that mothers who delivered at health facilities received breastfeeding advice. In contrast to this finding, a study conducted in Nepal found that mothers choosing to deliver at home were more likely to

**Table 4**  
Logistic regression result on determinants of EBF.

Factors	COR [95% CI]	p-Value	AOR [95% CI]	p-Value
Age of the child (months)				
<1	24.60[5.75, 105.33]	.000	34.90 [7.35, 165.65]	.000
1–2	20.40 [7.09, 58.71]	.000	34.60 [10.88, 109.99]	.000
2–3	9.60 [4.63, 19.92]	.000	11.93 [5.47, 26.05]	.000
3–4	4.49 [2.64, 7.63]	.000	6.77 [3.68, 12.45]	.000
4–5	5.95 [3.46, 10.22]	.000	6.67 [3.63, 12.20]	.000
5–6	1		1	
Mother's education level				
No education	1		1	
Primary	1.86 [1.21, 2.87]	.005	2.51 [1.44, 4.37]	.001
Secondary	1.59 [0.91, 2.76]	.104	3.86 [1.78, 8.35]	.001
Tertiary	0.77 [0.37, 1.62]	.493	1.66 [0.60, 4.64]	.332
Monthly household income (ETB)				
≤1000	4.25 [2.40, 7.52]	.000	5.60 [2.55, 12.26]	.000
1001–2000	3.35 [1.77, 6.32]	.000	5.38 [2.41, 12.03]	.000
2001–3000	2.42 [1.16, 5.05]	.019	3.70 [1.54, 8.89]	.003
3001+	1		1	
Place of delivery				
Home and private health center	0.68 [0.40, 1.16]	.160	0.50 [0.25, 1.01]	.054
Government hospital	1.36 [0.89, 2.06]	.153	1.89 [1.13, 3.15]	.015
Government health center	1		1	
Receiving PNC				
Yes	1.95 [1.26, 3.00]	.003	2.60 [1.47, 4.59]	.001
No	1		1	
Place of residence				
Rural	1.79 [1.23, 2.60]	.002	2.22 [1.23, 4.02]	.008
Urban	1		1	
Marital status				
Currently not married	3.18 [0.96, 10.59]	.060	4.00 [0.99, 16.28]	.052
Married	1		1	

AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; EBF, exclusive breastfeeding; ETB, Ethiopian Birr.

remain exclusively breastfeeding for 6 months [20].

Infants of mothers with an average monthly income of ≤1000 ETB were 5.6 times more likely to exclusively breastfed than mothers with average monthly income of ≥3000 ETB. This study indicates that when the mother earned a high income, the rate of EBF decreased. This finding was consistent with studies conducted in Ethiopia and Bangladesh [21, 22]. A possible explanation for this finding is that women with higher incomes are less likely to stay at home during the daytime, which may compromise the practice of EBF.

Mothers with secondary education were 3.86 times more likely to be practicing EBF than mothers with no education. This finding is consistent with previous studies [23,24] and shows that improved maternal education increases mother's knowledge, attitudes and practices towards EBF practice, and enables them to be involved in better economic statuses than their counterparts, which subsequently empowers them to resist external interferences and pressures from traditional beliefs and misconceptions.

Mothers who received PNC were 2.6 times more likely to be practicing EBF than mothers who had no PNC. This might be the result of

good counselling about breastfeeding after delivery by health workers. This result was consistent with other study findings from Addis Ababa, Enderta Woreda, Egypt and Nigeria [12,14,25,26].

#### 4.1. Limitations

This cross-sectional study was conducted in the months of June and July, which is the principal time for agricultural work in the study area and in many parts of Ethiopia. It should be noted that there may be a difference in the practice of EBF during different seasons, but it was not considered in the current study.

#### 5. Conclusions

The prevalence of EBF in Sheka Zone in 2017 was 76%, which was higher than the national prevalence of 58% in 2016. Although the prevalence was below the WHO recommended level of 90%, the practice of EBF in the area was good.

The practice of EBF in the study area depends on age of the child, mother's education, marital status, place of residence, income, receiving PNC and place of delivery.

The prevalence of EBF decreases as the age of the infant increases. In total, 95.3% of infants aged <1 month were exclusively breastfed, but only 45.5% of infants aged 6 months were exclusively breastfed. We recommend that health workers in health centres and hospitals provide advice about EBF and the optimal duration of EBF at PNC visits and infant vaccination appointments.

#### Ethical approval

Permission to undertake this research was obtained from the Sheka Zone health bureau. Informed verbal consent was also obtained from study participants in their local language after explaining the purpose of the study, benefits of partaking in the study and the right to withdraw from the study at any time during data collection. The participants were also assured the confidentiality of their responses since their names were not included in the questionnaire.

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#### Availability of data

The datasets analysed in the current study are available from the corresponding author on reasonable request.

#### Author contributions

Both authors were responsible for the design of the research, supervision of the data collection, ensuring the quality of collected data, analysis of data, interpretations of the findings and drafting the manuscript. Both authors reviewed the manuscript and approved the final version.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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