

The practice of key messages for optimal breastfeeding and associated factors among lactating mothers in the Boset District, Oromia, Ethiopia

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Abstract

Background: Inadequate breastfeeding can lead to significant morbidity, mortality, and long-term adverse health outcomes. Key messages promoting optimal breastfeeding are integral to Essential Nutritional Action, aimed at improving children's nutritional status, especially those under the age of two. However, there is a dearth of data regarding the extent to which lactating mothers adhere to these key messages and the associated factors. Therefore, this study aimed to assess the level of practice of key messages for optimal breastfeeding and identify associated factors among lactating mothers living in the Boset District, Oromia, Ethiopia.

Methods: A community-based cross-sectional study was conducted among 418 lactating mothers from January 1st to February 28th, 2022. The participants were selected using a systematic random sampling technique, and data were collected through interviewer-administered questionnaires. The collected data were entered into Epi Info version 7 and exported to SPSS version 25 for analysis. Binary logistic regressions were performed to examine the association between independent and dependent variables. Adjusted Odds Ratios with a 95% confidence interval were used to estimate the strength of the associations and statistical significance was declared at a p -value < 0.05 .

Result: The overall level of practice of key messages for optimal breastfeeding was 63.9% (95% CI: 59.1–68.2). The odds of practicing key messages for optimal breastfeeding were higher for mothers who attended antenatal care four times or more (AOR = 2.7, 95% CI: 1.4–5.3), received counseling on breastfeeding during postnatal care (AOR = 3.7, 95% CI: 2.2–6.4), had a good knowledge of breastfeeding (AOR = 6.2, 95% CI: 3.6–10.7), and had a favorable attitude toward breastfeeding (AOR = 6.1, 95% CI: 3.5–10.6).

Conclusion: Breastfeeding key message practices among lactating mothers in the study area fell below the recommended universal coverage of 90%. Factors identified included the number of antenatal care visits, counseling on breastfeeding, level of knowledge, and attitude toward breastfeeding. Promoting regular antenatal visits, providing thorough postnatal counseling, and enhancing knowledge and attitudes are crucial for improving optimal breastfeeding practices.

Keywords

Essential nutritional action, Ethiopia, key messages, lactating mothers, optimal breastfeeding

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Introduction

Essential Nutritional Action (ENA) is a coordinated set of preventive nutritional interventions aimed at enhancing children's nutritional status, particularly those under the age of two.^{1–3} Breast milk is widely recognized to provide the highest quality and richest nutrition for newborns, with benefits to growth, immunity, development, and health, while also regulating body temperature and blood glucose levels in the immediate post-birth period.^{4,5}

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The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend exclusive breastfeeding for children up to 6 months of age, nourishing them with appropriate complementary foods, and continued breastfeeding from 6 months until 24 months or beyond.^{1,6} The key messages for optimal breastfeeding (OBF) are an integral part of Essential Nutritional Action consisting of initiating breastfeeding within a half hour after delivery, giving colostrum, exclusive breastfeeding for the first 6 months, breastfeeding day and night on demand at least 8–12 times a day, letting the baby finish one breast before switching to the other, correctly positioning and attaching the baby to the breast, introducing complementary feeding at 6 months, and continuing breastfeeding up to 24 months.^{7–9}

Infant and young child feeding (IYCF) practices directly impact the health, development, and nutritional status of children under the age of two, and ultimately on their survival.¹⁰ Globally, about 800,000 neonatal deaths are attributed to late initiation of breastfeeding and lack of exclusive breastfeeding. In low-income and middle-income countries, only 37% of children younger than 6 months of age are exclusively breastfed.^{11,12} Exclusive breastfeeding benefits infants by protecting against infection and a few chronic diseases and it leads to progressed cognitive improvement. It is taken into consideration as an unequaled way of providing the best meals for the healthy growth and development of infants.^{13,14} Approximately 2.7 million, or 50%, of child mortality worldwide, is due to inadequate breastfeeding and complementary feeding habits that lead to malnutrition.¹⁵ OBF and complementary breastfeeding practices prevent 13% and 6% of deaths in children under the age of five, respectively.^{16,17} Almost all Ethiopian children (97%) are breastfed at some point during their lives but only 58% of infants under the age of 6 months are exclusively breastfed.¹⁸ Several social and structural challenges to optimal breastfeeding have been identified, including poverty, livelihood and living arrangements, early and single motherhood, inadequate social and professional support, inadequate knowledge, myths, and misinformation.¹⁹

In Ethiopia, there are about 50,000 child deaths a year related to malnutrition. Of these, about 9000 (18%) deaths are linked to poor breastfeeding habits.²⁰ The promotion of correct positioning and proper attachment early in the process of adopting the breastfeeding habit, to ensure adequate milk transfer and prevent problems, plays a crucial role in establishing and maintaining the practice as a habit.^{21,22} Maternal healthcare in Ethiopia is available through a combination of public and private facilities, with antenatal and postnatal care offered, including outreach programs in rural areas. Despite efforts to promote attendance, barriers like financial constraints, distance, cultural factors, and perceptions of care quality remain, especially in remote regions. Different studies tried to assess the level of breastfeeding practices in Ethiopia. However, the level of adoption of the practice of key messages for OBF and its associated factors

among lactating mothers were not adequately studied particularly in the study area. Therefore, this study aimed to assess the level of practice of key messages for OBF and associated factors among mothers of children aged 6–24 months in the Boset district, Ethiopia.

Methods and materials

Study design, area, and period

A community-based cross-sectional study was conducted from January 1st to February 28th, 2022 in Boset district, Ethiopia. Boset district is found 125 km east of Addis Ababa (the capital city of Ethiopia). There are 42 kebeles (the lowest administrative unit in Ethiopia) of which 37 are rural and 5 are urban kebeles. According to the Boset district health office in September 2021, the total population of the district was about 220,326 with 45,909 households. Of the total population, 12,583 were children less than 2 years of age.

Population and eligibility criteria

The source population was all lactating mothers of children aged 6–24 months living in the Boset district. The study populations were mothers with children aged 6–24 months, living in Boset district. Mothers residing in the selected *kebeles* of the study area for more than 6 months were included and those, who were unable to speak due to illness, mothers of children who had feeding problems, and mothers who were not biological were all excluded from the study.

Sample size determination and sampling procedures

Sample size determination. The sample size was computed separately for both objectives (i.e., the level of practice for key messages of OBF and determinant factors) to determine the number of study participants to be included in the study. After calculating sample sizes for both objectives, the larger sample size was chosen and used as the final sample. Single population proportion formula was used to calculate the sample size for the level of practice of key messages using the following assumption: Proportion (P) of 45.4% from a previous study on OBF,²⁰ the expected margin of error (d) of 5%, and a 95% CI.

$$n = \frac{0.454(1-0.454)(1.96)^2}{0.05^2} \approx 381$$

The sample size for the second specific objective was determined using the StatCalc algorithm in Epi Info version 7, with the assumptions of 80% power, 95% confidence intervals, and the independent components of the practice of key messages for OBF as shown below (Table 1).

Finally, adding a 10% non-response rate to the largest sample size, the total sample size required becomes 423.

Table 1. Sample size determination for the first and the second objectives.

Variables	Assumptions: power = 80%, $r = 2$, and 95% confidence level	Sample size	Final sample size (after 10% NNR)	Reference
Counseling on optimal breastfeeding during PNC	P unexposed = 55.5% P exposed = 35.9%	$N1 = 83$ $N2 = 166$	277	23
Mothers' occupation	P unexposed = 70.8% P exposed = 29.2%	$N1 = 20$ $N2 = 39$	66	24
Proportion of OBF	$P = 45.4\%$	$N = 381$	423	20

Sampling procedures and technique

The kebeles in the district were stratified into urban and rural. Two kebeles from the urban and eleven from the rural were selected using a simple random sampling technique. The sampling frame was prepared from the lists of households with mothers of a child between 6 and 24 months from the family folder registration book obtained from health posts in each kebele. The study participants were allocated proportionally to each kebele and selected by using a systematic random sampling technique for every unit of the 10th household. A lottery method was used to select one mother from the households where more than one mother was available and the youngest child was selected where more than two under 2 years of children were found in the household.

Study variables

Dependent variable. Practice of key messages for optimal breastfeeding (Yes/No).

Independent variables. Socio-demographic characteristics: Age of mother, residence, ethnicity, marital status, educational status of the mother, mother's occupation, and husband's education.

Obstetrics characteristics: Antenatal care (ANC) follow-up, birth interval, mode of delivery, number of ANC follow-ups, place of delivery, postnatal care (PNC) visit, counseling during PNC, and number of previous pregnancies.

Child characteristics: Sex of the child, and age of the child.

Personal factors: Knowledge of optimal breastfeeding, and attitude toward optimal breastfeeding.

Operational definitions

Practicing key messages for OBF: The practice is considered "Yes" if the mother's score is greater than the mean value obtained from the eight ENA key messages for OBF, and "No" if below the average value.²⁵⁻²⁷

Correct positioning: Comprises the mother relaxed and comfortable, the mother sitting straight and well-supported back, trunk facing forward and lap flat, the baby's neck straight or bent slightly back and body straight, the baby's

body turned toward the mother, the baby's body close to mother body and facing breast, and the baby's whole body supported.²¹

Correct attachment: Mouth to the breast incorporates chin touching the breast, mouth wide and open, lower lip turned outward, and more areola seen above the baby's mouth.²¹

Knowledge about OBF: Knowledge was assessed by nine items based on WHO-recommended breastfeeding practices and those mothers, who had answered and scored above the mean for the knowledge-related questions were considered as having good knowledge.²⁸

Attitude: A 5-point Likert scale was used to indicate agreement with each attitude item, ranging from 1 (strongly disagree) to 5 (strongly agree). Those mothers who answered positively and scored above the mean of the attitude-related questions.²⁸

Early initiation of breastfeeding: Was defined as putting the neonate on the mother's breast to suckle within 1 h of birth as reported by the mother/caretaker of the child.²⁹

Exclusive breastfeeding: No other liquids or solids are given even water-with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals, or medicines until the children reach 6 months.³⁰

Complementary feeding: Starting foods and liquids along with breast milk when breast milk is no longer sufficient to meet the nutritional requirements of children.³¹

Data collection procedures and instruments

The data collection tool was adapted from the WHO/UNICEF global strategy on infant and young child feeding practices.¹⁰ Data were collected by a face-to-face interview using a pre-tested, semi-structured questionnaire, which has five sub-parts: socio-demographics, obstetrics characteristics, child characteristics, personal factors, and the practice of key messages for optimal breastfeeding. It consists of multiple-choice and yes-or-no questions for knowledge- and practice-related subjects, as well as Likert-type questions for attitude-focused questions. Mothers were asked to provide information about their socio-demographic characteristics, obstetric characteristics, child characteristics, knowledge of optimal breastfeeding, attitude toward optimal breastfeeding, and OBF key message practice questions. Appropriate attachment and position were determined using an observational checklist. The

data were collected by five midwives, with two public health officers serving as supervisors.

Data quality control

The data collection tool was translated into a regional official language (Afaan Oromoo) and then translated back to English by a proficient translator to ensure consistency and accuracy. Two days of training were given to data collectors and supervisors on data collection tools. The questionnaires were pre-tested on 5% of the calculated sample size on non-selected kebele and a correction was made accordingly. Strict supervision was implemented during the data collection process.

Data processing and analysis

The collected data were entered into Epi info version 7 (a free data management and analysis tool) and subsequently exported to Statistical Package for Social Sciences (SPSS) Version 25 for coding and categorizing raw data, as well as finding and repairing errors and inconsistencies in data sets so they can be used for analysis. Eight ENA key messages were used in the calculation of the composite indicator score. The participant received one point for each correct ENA key message and was given 1 point when they responded correctly (conducted recommended practice) and 0 points, when they responded incorrectly (conducted non-recommended practice). The Shapiro-Wilk test was used to check the normality assumptions for continuous variables. Descriptive statistics were employed to explain the study population and to display summary data in the form of tables and graphs. Binary logistic regression was used to model the association between the independent and the outcome variables. Those variables with a *p*-value less than 0.25 at bivariable analysis were included in the multivariable binary logistic regression model to determine the independent predictors of practice of key messages for OBF for children. Adjusted Odds Ratio (AOR) with a 95% confidence interval was used to estimate the strength of the association and a *p*-value less than 0.05 was used to decide the significance of the association. Data were verified for multi-collinearity using variance inflation factor (VIF) and Hosmer and Lemeshow test was used to test model goodness of fit.

Result

Socio-demographic characteristics

A total of 418 lactating women were included in the study making a response rate of 98.8%. The mean (\pm SD) age of study participants was 27 years (\pm 6 years). Regarding residency, 328 (78.5%) of the mothers were from rural areas. Of the total participants, 344 (82.3%) were from the Oromo ethnic group, and 211 (50.5%) attended primary-level education. In terms of maternal occupation, 343 (82.1%) of them were housewives (Table 2).

Obstetric characteristics

Among the mothers included in the study, 192 (45.9%) gave birth to 1–2 children. In this study, 413 (98.8%) lactating mothers had ANC follow-up for the last pregnancy of which 339 (81.1%) had four and above ANC visits. The result showed that 327 (78.2%) mothers had delivered at health facilities. In total, 393 (94%) had delivered by spontaneous vaginal delivery (SVD). Among those mothers who delivered at a health facility, 312 (74.6%) and 267 (63.9%) mothers received PNC and counseled on breastfeeding respectively (Table 3).

Child characteristics

The mean age of the children was 11.05 (\pm 6.05) months. Regarding the sex of the children, 247 (59.1%) were males. Whereas, 104 (24.9%), 159 (38.0%), and 155 (37.1%) were in the age group 6–11, 12–17, and 18–24 months respectively.

Mothers' knowledge and attitudes

In this study, 241 (57.7%) mothers had good knowledge about the key messages of OBF. In terms of their attitude, 221 (52.9%) had a favorable attitude toward OBF practices.

Practice of key messages for optimal breastfeeding

The overall level of practice of key messages for OBF was 63.9% (95% CI: 59.1–68.2). Participants' responses regarding key messages for OBF showed that 349 (83.5%) mothers started breastfeeding within 1 h after delivery, and 378 (90.4%) fed their infants with their first milk. Of the mothers, 282 (67.5%) breastfed their babies exclusively for 6 months and 279 (66.7%) started complementary breastfeeding at 6 months of age. Of all mothers who were observed, 290 (69.3%) children had good positioning and attachments during feeding breast milk (Table 4).

Factors associated with the practice of key messages for optimal breastfeeding

In Bivariable analysis, the age of mothers, number of previous pregnancies, ANC follow-up, number of ANC visits, mode of delivery, counseling on breastfeeding during PNC, knowledge level, and attitude level variables had a *p*-value of <0.25 and became candidates for multiple logistic regressions.

After fitting the above variables into a multiple logistic regression model and adjusting for confounders, only four variables; the number of ANC visits four and above, counseling on breastfeeding during PNC, having good knowledge of OBF, and having a favorable attitude toward OBF showed a statistically significant association with the practice of key messages for OBF.

Table 2. Socio-demographic characteristics of lactating mothers of children aged 6–24 months in the Boset district, Oromia, Ethiopia, 2022 (n=418).

Variables	Category	Frequency (N)	Percent (%)
Age of mother (years)	15–24	141	33.7
	25–34	214	51.2
	35 and above	63	15.1
Residence	Urban	90	21.5
	Rural	328	78.5
Ethnicity	Oromo	344	82.3
	Amhara	63	15.1
	Others*	11	2.6
Marital status	Married	394	94.3
	Divorced	19	4.5
	Widowed	5	1.2
Educational status of the mother	No formal education	133	31.8
	Primary (1–8) school	211	50.5
	Secondary (9–12) school	52	12.4
	Above secondary	22	5.3
Mothers occupation	Housewife	343	82.1
	Government employee	25	6.0
	Merchant	33	7.9
	Daily laborer	17	4.1
Husband education	No formal education	115	27.5
	Primary (1–8) school	195	46.7
	Secondary (9–12) school	80	19.1
	Above secondary	28	6.7

*Others (Gurage, Tigre, Wolaita).

Table 3. Obstetric characteristics of lactating mothers in the Boset district, Oromia, Ethiopia, 2022 (n=418).

Variables	Category	Frequency (N)	Percent (%)
ANC follow-up in last-child	Yes	413	98.8
	No	5	1.2
Mode of delivery	SVD	393	94.0
	CS	25	6.0
Number of ANC follow-ups, n = (413)	>4	336	81.4
	<4	77	18.6
Place of delivery	Health facility	327	78.2
	Home	91	21.8
PNC visit	Yes	380	90.9
	No	38	9.1
Counseling during PNC (n = 380)	Yes	245	64.4
	No	135	35.6
Number of previous pregnancy	1–2	192	45.9
	3–4	159	38.0
	5 and above	67	16.0
Birth interval (in years)	<2	79	18.9
	>2	339	81.1

ANC: antenatal care; SVD: spontaneous vaginal delivery; CS: cesarean section PNC; postnatal care.

Accordingly, mothers who attended four and above ANC had higher odds of practicing key messages for OBF (AOR=2.76, 95% CI: 1.44–5.31) compared to mothers who

attended less than four ANC. Similarly, mothers who were counseled on breastfeeding practices during post-natal follow-up had 3.7 times (AOR=3.71, 95% CI: 2.20–6.40)

Table 4. Mothers' responses regarding key messages for optimal breastfeeding in Boset district, Ethiopia, 2022 (n = 418).

Variables	Practice of key messages	
	Yes (%)	No (%)
Initiation of breastfeeding within 1 h	349 (83.5)	69 (16.5)
Colostrum milk feeding	378 (90.4)	40 (9.6)
Exclusive breastfeeding for up to 6 months	282 (67.5)	136 (32.5)
Breastfeeding 8–12 times per day	369 (88.3)	49 (11.7)
Offer the second breast after the infant releases the first	396 (94.7)	22 (5.3)
Currently breastfeeding	392 (93.8)	26 (6.2)
Complementary feeding initiated at 6 months	279 (66.7)	139 (33.3)
Correct positioning and attachment	290 (69.3)	128 (30.7)
The overall practice of key messages of optimal breastfeeding	267 (63.9%)	151 (36.1%)

greater odds of practicing key messages for OBF compared to their counterparts. In addition, the odds of practicing key messages for OBF were more than six times higher (AOR=6.25, 95% CI: 3.60–10.72) among mothers who had good knowledge of OBF compared to mothers who had poor knowledge about OBF practices. Moreover, mothers who had a favorable attitude toward OBF had higher odds (AOR=6.17, 95% CI: 3.58–10.60) of practicing key messages for OBF compared to mothers who had an unfavorable attitude toward OBF practices (Table 5).

Discussion

The present study was conducted to assess the practice of key messages for OBF among lactating mothers in the Boset district in Oromia Regional State in Ethiopia. In the current study, the overall level of practice of key messages OBF was 63.9% (95% CI: 59.1–68.2). The finding of the current study is comparable with the study findings in Dessie Town, South Wollo Ethiopia (63.7%).³² This similarity might be due to a similar study population, similar study design, and comparable sample size. On the other hand, the level of practice in this study is higher than studies done in Gondar town (35.6%),³³ Jimma Arjo Woreda Southwest Ethiopia (25.0%),³⁴ Silte Zone South Ethiopia (42.1%),²³ Misha District, Hadiya Zone, South Ethiopia (37.3%),²⁶ Bishoftu Town, East Shewa Zone of Oromia Region (50.9%).²⁴ The possible justifications might be that, in this study, a large proportion of mothers had good knowledge about key messages for optimal breastfeeding practices, which may give them an excellent opportunity to feed their children appropriately. Furthermore, the study population variation may have contributed to the inconsistency, as some studies were done on working women. Another explanation could be that the other studies' absence of antenatal care follow-up made it less likely that women would practice optimal breastfeeding.

Conversely, the finding of the current study is lower than the study result conducted in Dandi District, West Shewa Ethiopia (81.9%).³⁵ The potential causes of the discrepancies

between the findings could be attributed to the indicators employed to evaluate the practices. Additionally, variations in sample sizes as well as sociodemographic and cultural discrepancies could be another likely explanation for variations between the current study and earlier ones.

The finding of this study indicated that lactating mothers who had four and above ANC were more likely to practice key messages for OBF compared to those mothers with less than four ANC follow-up visits, which is similar to the study done in Hula District in Southern Ethiopia.³⁶ The possible explanation for this association might be explained by the fact that as ANC visits increase, it may allow mothers to understand the benefits of practicing key messages for OBF.

This study also demonstrated that counseling on breastfeeding PNC was positively associated with the adoption of key messages of OBF practices. Mothers who received counseling on breastfeeding during PNC follow-up had 3.7 times greater odds of practicing key messages for OBF. Similar findings were reported from Lahore in Pakistan, Silte zone, Hula district, and Bishoftu town which reported good levels of practices among mothers who visited health institutions for postnatal care during their last birth.^{23,24,36,37} Postnatal care is a good opportunity to educate mothers about basic care for their babies, including breastfeeding. Therefore, it is conceivable that mothers who attend PNC may practice key messages for OBF more than mothers who do not attend postnatal care.

In the current study, knowledge about OBF was found to be an independent predictor of OBF practices. This finding is consistent with studies in Silte Zone, Arba Minch, and Bishoftu Town in Ethiopia that found positive associations between mothers' knowledge and optimal breastfeeding practices.^{23,24} The plausible justification is that mothers who are well-versed in OBF's core messages can practice it more effectively than those who lack sufficient knowledge about key messages for OBF practices.

This study also showed a statistically significant association between mothers' attitudes and practices of key messages for OBF. Hence, mothers with favorable attitudes

Table 5. Factors associated with practices of key messages for optimal breastfeeding among lactating mothers in the Boset district Oromia, Ethiopia, 2022 (n = 418).

Variables	Category	Practice of key messages		COR with 95% CI	AOR with 95% CI
		Yes	No		
Age of the mother	15–24	93	48	0.9 (0.58–1.44)	0.92 (0.50–1.85)
	25–34	145	69	2.3 (1.24–4.16)*	1.89 (0.66–5.38)
	≥35	29	34		
Number of previous pregnancy	1–2	123	69		
	3–4	111	48	0.77 (0.49–1.20)	0.77 (0.38–1.56)
	≥5	33	34	1.8 (1.05–3.20)*	0.73 (0.27–1.94)
Number of ANC visits	>4	230	109	2.39 (1.45–3.90)*	2.76 (1.44–5.31)**
	<4	37	42		
Mode of delivery	SVD	257	136	2.83 (1.24–6.47)*	2.65 (0.94–7.43)
	CS	10	15		
Counseling on breastfeeding during PNC	Yes	180	65	2.98 (1.6–3.75)*	3.71 (2.20–6.40)**
	No	65	70		
Knowledge level of OBF key messages	Good	191	50	5.1 (3.30–7.81)*	6.25 (3.65–10.72)**
	Poor	76	101		
Attitudes toward OBF practice	Favorable	175	46	4.34 (2.90–6.60)*	6.17 (3.58–10.6)**
	Unfavorable	92	105		

ANC: antenatal care; AOR: adjusted odds ratio; COR: crude odds ratio; CI: confidence interval; OBF: optimal breastfeeding; PNC: postnatal care.

*Significant at p-value <0.25 in unadjusted logistic regression analysis, **Significant at p < 0.05 in adjusted logistic regression analysis, | = Reference.

toward breastfeeding practices were more likely to practice key messages for OBF compared to those with unfavorable attitudes. The finding is in line with a study done in Bangladesh that reported significant positive associations between positive attitudes and OBF practices.³⁸ Behavioral control toward good lactation practices may have a substantial role in determining how lactating mothers practice OBF.³⁸ Hence, it is reasonable to accept that women who have a positive attitude may have a higher likelihood of following recommended feeding practices than mothers who have a negative attitude about the importance of the essential key messages for OBF during lactation.

Strengths and limitations of the study

Being a community-based study, the results may be more representative. The positioning and attachment skills of the mother during breastfeeding practice were also practically assessed. Due to the study's cross-sectional design, it is challenging to determine whether independent and outcome factors are causally related. Furthermore, even though the researchers made an effort to minimize recall bias during data collection by using probing questions, it is impossible to eliminate biases as some responses were gathered based on mothers' prior experiences.

Conclusion

The level of practice of key messages for OBF practices in the study area was low as compared to universal coverage by

WHO which is above 90%.³⁹ The number of ANC visits, counseling on OBF during PNC, knowledge of OBF, and attitude toward OBF were independent predictors of OBF practices. Healthcare providers should continue to strengthen appropriate counseling on key messages for OBF for all PNC attendants and improve the knowledge of pregnant and lactating mothers on OBF. It is important to make efforts toward getting pregnant women who have had less than four ANC visits to at least four visits. Researchers should further conduct qualitative studies to adequately address the socio-cultural factors that affect OBF practices.

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Author contributions

BDL contributed to the study conception, design, data acquisition, and analysis. HAD and SKB advised on the study design, data acquisition, and statistical analysis. MSG, NTB, and YMN drafted the manuscript and wrote the final version to be published. All authors read and approved the final manuscript.

Data availability statement

All data and materials are available from the corresponding author without undue reservation.

Declaration of conflicting interests

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Ethics approval

Ethical approval and clearance were obtained from the Institutional Review Board (IRB) of Adama Hospital Medical College (AHMC/MPH/27/6/2015), and a letter was submitted to the Boset district health office administration. The data was collected after getting official permission from the Boset district health office administration.

Informed consent

During the data collection phase, participants were briefed on the study's purpose and potential benefits. As approved by the IRB of AHMC, informed verbal consent was subsequently obtained from lactating mothers to ensure their voluntary participation or refusal. Safeguards were implemented to uphold respondents' rights and guarantee confidentiality, anonymity, and privacy, with all procedures of the study adhering to the principles outlined in the Helsinki Declaration.⁴⁰

Trial registration

Not applicable.

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Supplemental material

Supplemental material for this article is available online.

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