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Determinants of early initiation of breast feeding among mothers of children aged less than 24 months in Ethiopia: A community-based cross-sectional study

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ABSTRACT

Objective This study aims to assess the prevalence of early initiation of breast feeding (EIBF) and associated factors among mothers having children less than 2 years of age in Ethiopia.

Design Community-based cross-sectional study.

Setting In this analysis, data from 2019 Ethiopia Mini Demographic and Health Survey (EMDHS) was used. The survey included all the nine regional states and two city administrations of Ethiopia.

Participants We extracted data of 2054 mothers who had last-born children and those mothers who ever breast fed or still breast feeding their children during the survey from the 2019 EMDHS datasets.

Main outcome measures We performed a two-stage multilevel mixed-effects logistic regression to identify individual and community-level determinants of EIBF. In the final model, variables with a p-value less than 5% and an adjusted OR with a 95% CI were reported as statistically significant variables with EIBF.

Result The prevalence of EIBF among mothers having children aged 0–23 months was 73.56% (95% CI: 71.65% to 75.47%). Women who delivered at a health facility (adjusted OR (AOR)=1.98; 95% CI: 1.39 to 2.79) and have children with birth order second–fourth (AOR=1.76; 95% CI: 1.24 to 2.49) were more likely to initiate early breast feeding than their counterparts. On the other hand, women who gave birth by caesarean section (AOR=0.21; 95% CI: 0.13 to 0.33), had multiple births (AOR=0.35; 95% CI: 0.13 to 0.92) and had postnatal check-up (AOR=0.62; 95% CI: 0.44 to 0.91) were less likely to practise EIBF as compared with their counterparts. Region of residence of women was also significantly associated with EIBF.

Conclusion In this study, the overall prevalence of EIBF was good. Place of delivery, mode of delivery, postnatal check-up, type of birth, birth order and region were factors significantly associated with EIBF. Therefore, government and stakeholders need to show commitment to improve access and utilisation of basic maternal health services to increase the practice of EIBF.

INTRODUCTION

Early breast feeding refers to the percentage of infants who have been breast fed, began breast feeding within 1 hour after birth, began

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The current study used most recent nationwide secondary data that show proportion of early initiation of breast feeding (EIBF) practice among women of children aged less than 24 months in Ethiopia.

⇒ We extracted data of 2054 mothers of children under 24 months from the 2019 Ethiopia Mini Demographic and Health Survey (EMDHS) dataset for this analysis.

⇒ Multilevel mixed-effects model was performed to overcome the hierarchical nature of EMDHS data and to identify both individual and community-level factors of EIBF.

⇒ Recall bias is the most relevant limitation of the study.

breast feeding within 1 day after birth and received breast milk pre-feeding.[1] The WHO recommends that breast feeding be started as early as 1 hour after birth. Although it is one of the core indicators for assessing infant and young child feeding,[1 2] it is far from universal practice. Data from 2002 to 2005 show that 46 low/middle-income countries have included early initiation of breast feeding (EIBF) in their population health surveys. Among them, 54% of the records indicate that less than half of newborns are breast fed within 1 hour after birth. In addition, no country has a baby breastfeeding rate of more than 80% within 1 hour after birth. Globally, it is estimated that less than half (42%) of newborns are breast fed within the first hour of life.[3]

Recent evidence showed that late initiation of breast feeding (2–23 hours) increases the probability of a baby dying in its first month by 40% and the risk doubles if delay exceeds a day or more. Unfortunately, recent global statistics show that three in five newborns are not breast fed within the first hour after birth, which increases the negative impact on the baby.[4 5] Other evidence suggests that starting breast feeding as early as 1 hour after birth

can reduce neonatal and early infant mortality by about 45%.[6] The survival of infants and children, especially children under 5 years of age, is an urgent issue that requires attention and has been on the global agenda since the 1978 Alma-Ata Declaration.

Therefore, breast feeding has been globally accepted as the easiest, cost-effective and successful intervention for the satisfactory physical and mental health of children.[7 8] The recent studies in Ethiopia, Ghana, Bolivia and Madagascar found that breast feeding could prevent 20%–22% of neonatal deaths.[9 10] Additionally, late initiation of breast feeding increases the risk of morbidity and mortality due to diarrhoea by fivefold.[7 9]

In some developing countries other than Ethiopia, the prevalence of EIBF has been recorded 41% in Ghana, 54.2% in Sudan, 70% in Zambia and other countries. It was 49.5% in Jordan, 86.6% in North Jordan, 72.2% in Nepal and 74% in Bolivia. In Ethiopia, one-third of babies are not breast fed within the first hour after birth. According to the records, the prevalence of breast feeding is low throughout the country and there are large regional differences.[2 7–9] Moreover, the coverage of EIBF in Ethiopia ranges from 47.3% to 81.8%.[11–15] According to the Demographic and Health Survey (DHS) report, there was progressive improvement in the country from 52% in 2011 to 72% in 2019.[16] The Ethiopian government is aware of the importance of starting breast feeding in a timely manner and developed guidelines for infant and young child feeding in 2004, adequately emphasising key information to begin breast feeding in a timely manner.[17]

Even though previously conducted studies examined different determinants of EIBF in the country, the coverage is still below the national target indicating the need for further investigation. Therefore, this study aims to assess the prevalence and determinants of EIBF among mothers who had children aged 0–23 months old in Ethiopia using secondary data from the 2019 Ethiopia Mini Demographic and Health Survey (EMDHS).

METHODS
Study design
This study used a secondary data of the 2019 EMDHS. Originally, the survey sample was stratified and selected in two stages. The country is stratified into nine regions and two city administrations. Then, each region was stratified into urban and rural areas. In the first stage of selection, 305 enumeration areas (EAs) were selected using probability proportional to EA size according to the sampling frame created for the upcoming Ethiopian population and housing census. Consecutively, a list containing household in all selected EAs was developed. In the second stage, a fixed number of households (30) per cluster was selected from the newly created household listing using an equal probability systematic selection. Additional data on survey sampling strategies are provided in the DHS handbook.[18]

Participants
Generally, all women in childbearing age (15–49 years) who were either permanent residents of the selected households or visitors who slept in the household the night before the survey were eligible for the survey. The source population for the present study were mothers who breast fed and had children less than 2 years of age.

Eligibility criteria
All mothers of last-born children born in the 2 years preceding the survey (both surviving and dead) were included in the analysis, whereas mothers who had never breast fed their children were excluded from the study. Hence, data of 2054 mothers who had last-born children and those mothers who ever breast fed or still breast feeding were extracted from the 2019 EMDHS datasets for this analysis. Figure 1 depicts the method of selection of study participants that we followed to identify eligible mothers for this study (figure 1).

Study setting
The data for this study come from a standardised community survey of the 2019 EMDHS data, which was conducted in Ethiopia from March 2019 to June 2019. It included all the nine regional states and two city administrations of Ethiopia.

Measurements of variables of the study

Dependent variable
EIBF is the outcome variable of the study. It is defined as giving breast milk within the first hour of birth to the last child born in the last 2 years preceding the survey.[18] During the survey, all women were asked how long after their babies were born to breast feed for the first time. According to the self-report of the child's mother, it is coded as '1' if the child is breast fed within the first hour after birth and '0' otherwise.

Independent variables
The covariates in this study include variables at the individual and community level. The selection of explanatory variables is based on data from previous similar studies and the availability of variables in the 2019 EMDHS dataset. Maternal age, educational level, marital status, religion, family size, wealth index and possession of radio/television were individual-level sociodemographic and economic characteristics of the mothers included in the analysis.

Obstetric and variables related to the use of health services were parity, number of antenatal care (ANC) visits, place of delivery, mode of delivery, type of delivery assistance, postnatal check-up, type of birth and counsel on breast feeding during the first 2 days of delivery.

Other individual-level factors included in the analysis were child-related characteristics. These were age of child in months, sex of child, number of living children, birth order, preceding birth interval and child lives with whom.
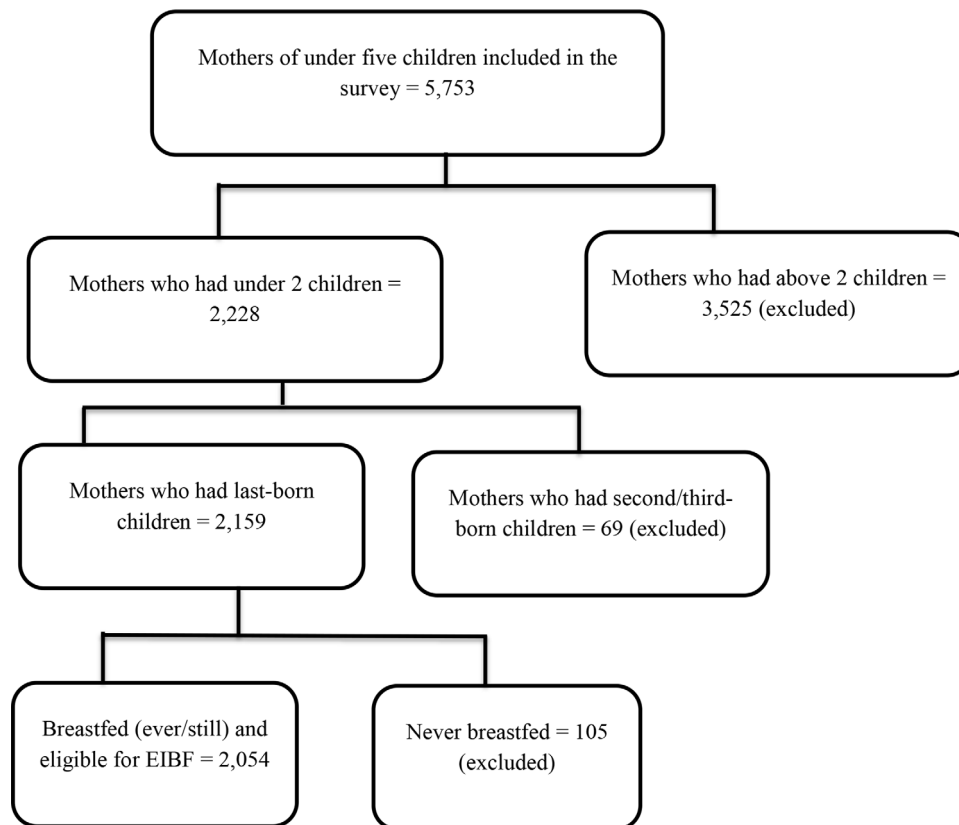
Figure 1 Eligibility assessment for early initiation of breast feeding (EIBF) among women having children aged 0–23 months in Ethiopia, 2019.

Place of residence, region, community-level women education, community-level health facility delivery, community-level ANC utilisation and community poverty level were community-level variables included in the analysis. Community-level factors, which were not directly obtained from the survey dataset, were derived by aggregating individual-level factors (table 1).

Data management and statistical analysis
STATA V.14 was used to clean, recode and analyse the 2019 EMDHS kids' data. Sample weight was applied to adjust for sampling error and for non-responses. Descriptive statistics were used to present the distribution of background characteristics among the study participants. We employed a two-level multilevel mixed-effects logistic regression analysis so as to account for the hierarchical nature of the EMDHS data and to identify the true association between the individual and community-level factors and EIBF. Consequently, four models containing variables of interest were fitted: null model (without any explanatory variables), model I (with only individual-level variables), model II (with only community-level variables) and model III (with both level variables). Intraclass correlation coefficient (ICC) and a proportional change in variance (PCV) were tested to determine the clustering effect and the degree to which community-level factors explain the unexplained variance of the null model. Moreover, goodness of fit of the model was assessed by the deviance and the model with the lowest deviance was

used as the best-fitted model. Finally, multicollinearity between explanatory variables was checked by variance inflation factor (VIF) and a mean value of VIF <10 indicates absence of multicollinearity. Both individual and community-level factors having a p-value of less than 0.2 in the bivariable analysis were selected as candidate variables for the multivariable multilevel mixed-effects logistic regression analysis. Likewise, variables with a p-value less than 5% and an adjusted OR (AOR) with a 95% CI were reported as statistically significant variables with EIBF in the final model.

Patient and public involvement
Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

RESULT
Sociodemographic characteristics of women and children
A total of 2054 women who had children aged 0–23 months at the time of survey were included in this analysis. Out of the total respondents, nearly half (51.70%) were aged 25–34 years, 992 (48.30%) did not attend formal education, the vast majority (94.69%) were married and slightly greater than half (55.01%) of the respondents had five to eight family members. Nearly two-thirds (63.88%) of households of the respondents did not own radio or television and almost half (48.30%) were from low-income

Table 1 Description of individual and community-level variables of early initiation of breast feeding among mothers of children under 2 years in Ethiopia, 2019

Variables	Description
Maternal age	It is the current age of respondents in years and categorised as 15–24, 25–34 and 35–49.
Marital status	This variable indicates the current marital status of the women. It is recoded as 'married' if a woman responds as 'married' or 'living with partner' otherwise 'unmarried'.
Religion	It is a religious group to which the woman associates herself and it was categorised as Orthodox, Protestant, Muslim and Other. Other category includes those women who were traditional or other religious followers.
Wealth index	In DHS, the wealth index is constructed using HH asset data via PCA following three steps. National-level wealth quintiles are obtained by assigning the HH score to each de jure HH member, ranking each person in the population by their score and then dividing the ranking into five equal parts as poorest, poorer, middle, richer and richest. In this study, the variable was recoded as poor, middle and rich.
Parity	It measures the number of deliveries where pregnancies reached viable gestational age. Parity was recoded as primiparous, multiparous and grand multiparous.
Number of ANC visits	DHS guideline categorises number of ANC visits in groups of none, 1–3, and 4 or more. In addition, WHO recommends a minimum of four ANC visits based on a review of the effectiveness of different models of ANC. Hence, we used the same.
Type of delivery assistance	We categorised delivery assistance in groups of health professionals, traditional birth attendants, others and no one.
Region	Region of residence is typically the first administrative level within the country, or a grouping of the first administrative level. It includes Tigray, Afar, Amara, Oromia, Somali, Benishangul-Gumuz, SNNPR, Gambela, Harari, Addis Ababa and Dire Dawa.
Community-level women education	We measured it based on the education level of the respondents. We categorised it as 'high' if more than 50% of the women in the cluster had at least attended primary school otherwise 'low'.
Community-level health facility delivery	This factor was generated using the proportion of women who gave birth in the health facilities. It was recoded as 'high' if more than 50% women of the cluster gave birth in the health facilities otherwise 'low'.
Community-level ANC utilisation	The variable was categorised as 'high' if more than 50% of women of the cluster had used four and above ANC visits otherwise 'low'.
Community wealth level	This community-level factor was derived from HH wealth index data and recoded as 'high' if more than 50% of the cluster women were in the middle and above wealth quintiles otherwise 'low'.

ANC, antenatal care; DHS, Demographic and Health Survey; HH, household; PCA, principal component analysis; SNNPR, Southern Nations, Nationalities, and People's Region.

family. In the current study, relatively one-quarter of the respondents (24.88%) were urban residents, 12.41% were from Oromia regional state and 49.22% were Muslim religion followers (table 2).

Obstetric and maternal healthcare service utilisation-related characteristics of the respondents

Of the participants, one-quarter has no ANC visits, 44.84% gave birth at home, 92.89% gave birth through vagina and almost all women (98.83%) gave single births. In addition, nearly one-tenth of women (12.37%) received postnatal care at least once and healthcare provider counselled 4 in 10 (40.21%) women on breast feeding within the first 2 days of delivery.

Majority of the respondents (73.03%) had one to four numbers of living children and about half of the children (49.81%) were male. Out of the total children, nearly one-quarter was first born, almost all (99.00%) lived with the respondents and 28.14% children were in the age group of 0–5 months at the time of the survey (table 3).

Prevalence of EIBF

In the current study, the prevalence of EIBF among women having children aged 0–23 months in Ethiopia was 73.56% (95% CI: 71.65% to 75.47%) (figure 2).

Factors associated with EIBF

From both individual and community-level variables, which were eligible (p<0.20) for multivariable multilevel analysis in the final model (model III), place of delivery,

mode of delivery, postnatal check-up, type of birth, birth order and geographical regions were significantly associated variables with EIBF among women having children aged 0–23 months in Ethiopia.

The likelihood of EIBF was nearly two (AOR=1.98; 95% CI: 1.39 to 2.79) times higher among women who delivered at a health facility than their counterparts. Concerning mode of delivery, mothers who delivered through caesarean section had 79% (AOR=0.21; 95% CI: 0.42 to 0.92) lower odds of EIBF as compared with their counterparts. Women who had postnatal check-up at least once had 38% (AOR=0.62; 95% CI: 0.42 to 0.92) lower odds of EIBF as compared with those who had no postnatal check-up. The odds of early initiation were 65% (AOR=0.35; 95% CI: 0.13 to 0.92) lower among mothers who gave multiple births as compared with those who gave a single birth. The odds of EIBF were 1.76 (AOR=1.76; 95% CI: 1.24 to 2.49) times higher among mothers whose children's birth order was between second and fourth than those with first-born children. Women who lived in Southern Nations, Nationalities, and People's Region (SNNPR) were two (AOR=2.06; 95% CI: 1.01 to 4.20) times more likely to practise EIBF than women who were from Tigray region. On the other hand, women from Somali region of Ethiopia were 52% (AOR=0.48; 95% CI: 0.24 to 0.96) less likely to practise EIBF (table 4).

Table 2 Sociodemographic characteristics of women with children aged 0–23 months in Ethiopia, 2019

Variables	Category	Weighted frequency (n)	Per cent
Respondent's current age (in years)	15–24	665	32.38
	25–34	1062	51.7
	35–49	327	15.92
Maternal highest educational level	No education	992	48.3
	Primary	725	35.3
	Secondary	202	9.83
	Higher	135	6.57
Current marital status	Married	1945	94.69
	Unmarried	109	5.31
Religion	Orthodox	627	30.53
	Catholic	13	0.63
	Protestant	379	18.45
	Muslim	1011	49.22
	Others	24	1.17
Family size	1–4	657	31.99
	5–8	1130	55.01
	9 and above	267	13
Possession of radio or TV	No	1312	63.88
	Yes	742	36.12
Wealth index	Poor	992	48.3
	Medium	286	13.92
	Rich	776	37.78
Region	Tigray	180	8.76
	Afar	223	10.86
	Amhara	200	9.74
	Oromia	255	12.41
	Somali	196	9.54
	Benishangul	184	8.96
	SNNPR	217	10.56
	Gambella	167	8.13
	Harari	156	7.59
	Addis Ababa	118	5.74
	Dire Dawa	158	7.69
Place of residence	Urban	511	24.88
	Rural	1543	75.12
Community-level women education	Low	1018	49.56
	High	1036	50.44
Community-level ANC utilisation	Low	1018	49.56
	High	1036	50.44
Community-level health facility delivery	Low	1010	49.17
	High	1044	50.83
Community wealth level	Low	1069	52.04
	High	985	47.96

ANC, antenatal care; SNNPR, Southern Nations, Nationalities, and People's Region.

Table 3 Obstetric and maternal healthcare service utilisation-related characteristics of women with children aged 0–23 months in Ethiopia, 2019

Variables	Category	Weighted frequency (n)	Per cent
Parity	Primiparous	477	23.22
	Multiparous	1019	49.61
	Grand multiparous	558	27.17
ANC visits	No visit	522	25.41
	1–3 visit/s	667	329.47
	4 and more visits	865	42.11
Place of delivery	Health facility	1133	55.16
	Home	921	44.84
Mode of delivery	Vaginal	1908	92.89
	Caesarean section	146	7.11
Type of delivery assistance	Health professionals	1166	56.77
	Traditional birth attendants	612	29.8
	Others	113	5.5
	No one	163	7.94
PNC check-up	No	1800	87.63
	Yes	254	12.37
Type of birth	Single	2.03	98.83
	Multiple	24	1.17
During first 2 days health provider counsel on BF	No	1228	59.79
	Yes	826	40.21
Current age of child in months	0–5	578	28.14
	6–11	509	24.78
	12–17	547	26.63
	18–23	420	20.45
Sex of child	Male	1023	49.81
	Female	1031	50.19
Number of living children	No child	14	0.68
	1–4	1500	73.03
	5–8	510	24.83
	9 and above	304	1.46
Birth order	First born	473	23.03
	Second–fourth	962	46.84
	Fifth or more	619	30.14
Preceding birth interval	<24 months	305	19.34
	≥24 months	1272	80.66
Child lives with whom	Respondent	1985	99
	Lives elsewhere	20	1

ANC, antenatal care; BF, breast feeding; PNC, postnatal care.

Random-effect analysis result

The results of random-effect estimates obtained after fitting the four models (null model, model I, model II and model III) were presented in table 4. The presence of likelihood of EIBF practice variation within the nine regions and two city administrations of Ethiopia was shown by the ICC of the null model (ICC=17.8%). This indicates that 17.8% of the variation in EIBF practice among mothers of children less than 2 years old was attributed to the difference between the regions. Additionally, the highest PCV (43.05%) in the final model (model III) implies the majority of variations of EIBF practice among
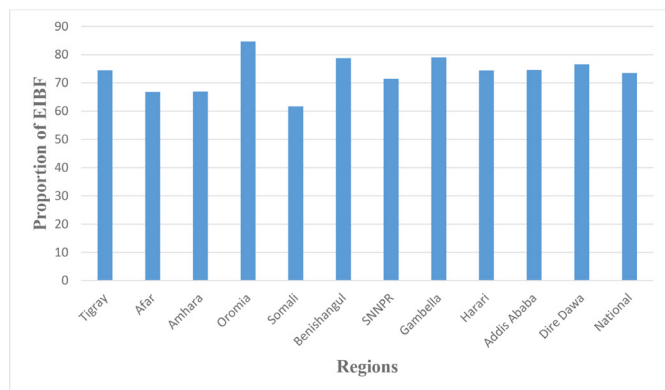
Figure 2 Prevalence of early initiation of breast feeding (EIBF) among mothers of children aged less than 24 months in Ethiopia, 2019.

mothers observed in the null model were explained by both individual and community-level factors. In addition, the lowest deviance in the last model showed that model III was the best-fitted model (table 5).

DISCUSSION

EIBF significantly reduces the risk of neonatal morbidity and mortality. It also lessens the risk of postpartum haemorrhage of mothers by stimulating contraction of uterus after delivery.[19–21] In this study, we examined the effect of individual and community-level factors on EIBF among women who have children 0–23 months in Ethiopia. The current study result showed that 73.56% of women having children aged 0–23 months in Ethiopia put their child to breast within the first hour of birth. The prevalence was higher when compared with studies conducted in Ethiopia,[11 22–27] other sub-Saharan African countries[28–35] and Papua New Guinea.[36] The finding was consistent with other study findings done in different parts of Ethiopia[13 37 38] and Malawi.[39] Conversely, the prevalence was lower than the studies conducted in South Ethiopia,[12 40–42] North Ethiopia[43] and Tanzania.[44] These discrepancies could be due to the variation of the study period, access and utilisation of health service and sociocultural conditions among the respondents. Moreover, the differences might be due to poor maternal educational status, access to various sources of health information and resistance to change in behaviour due to traditional beliefs.

The study at hand revealed that women who delivered at a health facility were more likely to initiate breast feeding within the first 1 hour of birth than their counterparts. This finding is in line with studies conducted in South Ethiopia,[41] Northwest Ethiopia,[26 38] Economic Community of West African States,[45] sub-Saharan Africa,[33] Peru[46] and Romania.[47] As it is stated in literature, initiation of breast feeding within the first hour of birth is an integral part of the safe delivery procedure. Accordingly, qualified health professionals attending the delivery can motivate, empower and assist to start breast feeding within the first hour of birth. This might be the possible explanation for

the discrepancy of EIBF among women who delivered at a health facility and at home.

In the present study, postnatal check-up was inversely associated with EIBF. Women who had postnatal check-up had lower odds of EIBF as compared with those who had no postnatal check-up. The reason behind this might be connected with the reverse sequence of the events. It is known that women usually receive postnatal service after breast feeding was initiated. Thus, it is difficult to directly relate EIBF to the outcome or effect of postnatal check-up.

It has been reported in previous work that one of the preconditions to early initiate breast feeding is keeping the mother with the newborn and putting the infant skin-to-skin contact on the mother's abdomen immediately after delivery.[48] This fact was also supported by our current study. Women who delivered via caesarean section had lower odds of EIBF as compared with those who had spontaneous vaginal delivery. This finding is in concordance with the findings of various studies conducted inside and outside Ethiopia. As it was documented in previous studies, long postoperative care delays skin-to-skin mother-to-baby contact for mothers who gave birth through caesarean section. This separation of mother to baby for a short period due to factors attributed to caesarean section results in delayed initiation of breast feeding. Similarly, production of inadequate milk because of reduced oxytocin release that comes after anaesthesia might also contribute to the delay.[26 37 38 46 48 49]

Consistent with studies done elsewhere,[26 33 46] the odds of EIBF were lower among women with multiple births when compared with women who gave a single birth. The reason behind this might be, in most cases, a woman with multiple pregnancies gave birth via caesarean section. As discussed earlier, delivery via caesarean section necessitates mother to baby separation resulting in delayed initiation of breast feeding. In addition, it could be due to the probability of giving preterm birth was higher among women who gave multiple births than those who gave single births.[50] As a result, there might be a delay in initiating breast feeding until the neonate is capable of sucking breast milk.

In this study, birth order of children was significantly associated with EIBF. This finding is in agreement with studies conducted in sub-Saharan Africa.[11 13 29 45 51] The possible explanation for this might be that women who had more birth experiences could have a better chance of receiving a health professional's advice on EIBF. Since women who gave birth more than once would be more exposed to and use maternal health services as compared with their counterparts.

Similar to reports from earlier studies,[28 38] the current study found that some variations on EIBF existed among the geographical regions of the country. Women from SNNPR had higher odds of EIBF practice, while women from Somali region of Ethiopia had lower odds of EIBF practice as compared with women from Tigray region. This might be due to the sociocultural and basic health

Table 4 Factors associated with EIBF among women having children aged 0–23 months in Ethiopia, 2019

Variables	Null model	Model I AOR (95% CI)	Model II AOR (95% CI)	Model III AOR (95% CI)
Respondent's current age				
15–24		1		1
25–34		1.05 (0.79 to 1.41)		1.04 (0.75 to 1.44)
35–49		1.12 (0.73 to 1.73)		1.23 (0.75 to 1.99)
Family size				
1–4		1		1
5–8		1.26 (0.96 to 1.66)		1.19 (0.88 to 1.61)
9 and above		1.33 (0.88 to 2.01)		1.13 (0.72 to 1.78)
ANC visit				
No visit		1		1
1–3 visit/s		1.36 (1.01 to 1.84)		1.11 (0.79 to 1.57)
4 and above visits		1.56 (1.12 to 2.18)		1.21 (0.83 to 1.77)
Place of delivery				
Health facility		1.81 (1.33 to 2.46)		1.98 (1.39 to 2.79)***
Home		1		1
Mode of delivery				
Vaginal		1		1
Caesarean section		0.25 (0.16 to 0.37)		0.21 (0.13 to 0.33)***
Postnatal check-up				
No		1		1
Yes		0.65 (0.45 to 0.94)		0.62 (0.42 to 0.91)*
Type of birth				
Single		1		1
Multiple		0.30 (0.13 to 0.69)*		0.35 (0.13 to 0.92)*
During 1st 2 days health provider counsel on BF				
No		1		1
Yes		1.62 (1.21 to 2.16)		1.42 (0.88 to 1.66)
Birth order				
First born		1		1
Second–fourth		1.60 (1.17 to 2.20)		1.76 (1.24 to 2.49)**
Fifth or more		1.48 (0.96 to 2.29)		1.56 (0.96 to 2.53)
Preceding birth order				
<24 months		1		1
≥24 months		0.78 (0.56 to 1.08)		0.71 (0.49 to 1.03)
Region				
Tigray			1	1
Afar			0.51 (0.28 to 0.95)	0.75 (0.39 to 1.46)
Amhara			0.69 (0.37 to 1.27)	0.82 (0.43 to 1.58)
Oromia			1.20 (0.65 to 2.23)	1.58 (0.81 to 3.10)
Somali			0.37 (0.20 to 0.68)	0.48 (0.24 to 0.96)*
Benishangul			1.05 (0.54 to 2.04)	1.43 (0.70 to 2.93)
SNNPR			1.06 (0.57 to 1.97)	0.06 (1.01 to 4.20)*
Gambella			0.90 (0.46 to 1.76)	1.03 (0.50 to 2.11)
Harari			0.58 (0.30 to 1.12)	0.68 (0.34 to 1.37)
Addis Ababa			0.87 (0.43 to 1.78)	1.06 (0.49 to 2.30)
Dire Dawa			0.85 (0.44 to 1.66)	1.30 (0.63 to 2.68)

***P<0.001, **p≤0.01 and *p<0.05.
ANC, antenatal care; AOR, adjusted OR; EIBF, early initiation of breast feeding; EMDHS, Ethiopia Mini Demographic and Health Survey; SNNPR, Southern Nations, Nationalities, and People's Region.

Table 5 Random-effect analysis result and model fitness for assessing factors associated with early initiation of breast feeding in Ethiopia, 2019

Parameters	Null model	Model I	Model II	Model III
Community-level variance (SE)	0.72	0.67	0.49	0.41
ICC (%)	17.86	16.89	13.15	11.14
PCV (%)	Reference	6.94	31.94	43.05
Log-likelihood	−998.22	−819.24	−981.96	−934.72
Deviance	1996.44	1638.48	1963.92	1869.44

ICC, intraclass correlation coefficient; PCV, proportional change in variance.

infrastructure variations among the regions. Women who live in the Somali region might not access basic maternal health services as compared with women who live in the Tigray region. Moreover, evidence revealed that prelacteal feeding practice is more common in Somali region than Tigray region.[52]

Strengths and limitations

The current study was conducted in Ethiopia and individual and community-level factors associated with EIBF were identified by using a multilevel analysis. As a result, policymakers and other stakeholders can use the findings of this study to plan and implement appropriate strategies and interventions. However, this study has some limitations. The study was subjected to recall and social desirability bias since the outcome variable was assessed based on the maternal report. In addition, we are unable to supplement our findings with qualitative data and unable to include some quantitative variables like access to mass media, size of the child at birth, obstetric and neonatal complications, early skin-to-skin contact, prematurity and other related variables since this study used secondary data of a national survey. Furthermore, establishing temporal relationship between EIBF and its determinants was impossible due to the type of the study design, cross-sectional, used for the survey.

CONCLUSION

According to the WHO infant and young child feeding rating, the overall prevalence of EIBF among women having children aged 0–23 months in Ethiopia was good. Place of delivery, birth order and geographical region (SNNPR) were factors positively associated with EIBF, whereas mode of delivery, postnatal check-up, type of birth and geographical region (Somali) were factors negatively associated with EIBF. Therefore, concerned bodies need to promote institutional delivery, give special care for mothers who gave multiple births and encourage mothers of first-born infants to initiate early breast feeding.

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