

Predictors of early initiation of breast feeding; Evidence from 2019 Ethiopian mini demographic and health survey

Tadele Abate lucha (✉ lucha.tadele@yahoo.com)

Kotebe Metropolitan University <https://orcid.org/0000-0002-6157-4310>

Admassu Ketsela Mengistu

Kotebe Metropolitan University

Research

Keywords: Breastfeeding, Early initiation of breast feeding, Ethiopia, Mother

Posted Date: November 9th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-1039172/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: World health organization (WHO) recommended all mothers should be supported to initiate breastfeeding as soon as possible after birth within the first hour. This study examined the determinants of early initiation of breastfeeding in Ethiopia by using data from 2019 Ethiopia mini demographic and health survey (EMDHS)..

Methods: The data for this study was extracted from 2019 EMDHS. A total of 3752 children born during the last 24 months at the time of survey were included for analysis from the nine regional states and two city administrations. Descriptive statistics was used to identify the proportion of children who had early initiation of breastfeeding (EIBF) after which multivariable logistic regression analysis was carried out to determine the predictors of EIBF. Results were presented using frequencies, percentages, p-value, crude and adjusted odds ratios. Statistical

significance was declared at $p < 0.05$ for the multivariable logistic regression analysis .

Result: The prevalence of Early Initiation of Breastfeeding (EIBF) in Ethiopia was remarked to be 73.7% (n = 2767). Place of delivery [AOR = 1.65, 95% CI: 1.39, 1.96] mother who deliveries at health facility had higher odds to practice early breast-feeding than those who deliveries at home, mode of delivery [AOR = 3.94, 95% CI: 2.99, 5.17] mother who had deliveries by vaginal had 3.9 times higher odds to practice early breast-feeding compared with cesarian section and parity [AOR = 1.57, 95% CI: 1.23, 2.00] mother who had more than five children had higher odds to practice early breastfeeding compared with first time babies. In addition, early breast-feeding initiation was also associated with region where mothers residing particularly in regions such as Oromia [AOR = 1.78, 95% CI: 1.26, 2.53] had higher odds to practice early breast feeding as compared with mothers residing in Tigray.

Conclusions: The overall prevalence of EIBF was determined to be 73.7%. EIBF in Ethiopia was found to be significantly associated with place of delivery, mode of delivery, parity and region. Focus should be given to expand institutional delivery and increase awareness of mothers with their first delivery .

Background

According to the world health organization (WHO) breast feeding indicator, Early initiation of breast feeding is defined as percentage of children born in the last 24 month who were put to the breast within one hour after birth [1]. WHO recommends all mothers should be supported to initiate breastfeeding as soon as possible after birth, specifically within the first hour [2].

Evidence indicates EIBF decreases the risk of infection, neonatal mortality and underweight [3, 4]. EIBF is associated with reduction in the incidence of non-specific gastrointestinal tract infections by 64%, otitis media by 23% and it also has short and long-term health benefit for the mother by decreasing postpartum blood loss and rapid involution of uterus [5]. A study from Malaysia has documented that 22% of neonatal deaths could have been prevented if all neonates were put on breastfeeding within the first hour

and around 16% neonatal death would have been prevented if all neonates were breastfed from the first day [6], in India 15% of all causes of neonatal mortality could have been prevented if all babies were exposed to early breastfeeding [7]. On the other hand, children who don't get an early initiation of breast feeding were more likely to be stunted than those who were breastfed early [8]. The reason behind this is the fact that early milk is enriched in antibiotics, immune and growth factors that help to ensure infant survival [9].

Though the importance of EIBF is recognized widely, the weighted global prevalence of early initiation of breastfeeding for the year between 2010 to 2018 was only 51.9% [10]. As the WHO infant and young child feeding indicator on EIBF practice shows that approximately 40% of mothers in Bangladesh, Haiti and Uganda initiated BF of their youngest child within one hour of birth. More than half of mothers reported EIBF in Kenya and Zambia (58% and 56%, respectively), and this percentage reached 67% in Ethiopia and Zimbabwe. Only 23% of mothers reported initiating BF early in India [4]. Research indicates that trends and prevalence of EIBF in Ethiopia was 51% in 2000, 69% in 2005, 52% in 2011 and 74.3% in 2016 [11, 12].

Despite improvement in the prevalence of EIBF from 51% in 2000 to 74.3% 2016, this percentage is still low as compared to the EIBF target of 92% by the end of the year 2020 set by Ethiopian ministry of health [13].

Although there are a number of studies investigating the factors associated with early initiation of breastfeeding in Ethiopia, the practice is still less than the target set by Ethiopian ministry of Health's and more effort is needed.

Therefore, this study aimed to use the 2019 EMDHS to determine factors that predict EIBF in mothers of infants aged less than 24 months. This may help to evaluate Ethiopian ministry of Health's Health sector transformation plan (HSTP) which targeted a decrease in neonatal mortality rate from 28–10%, stunting from 40–26% by the end of 2020 [4].

Methods

Data source, sampling and data collection

The data for this study was extracted from the 2019 EMDHS [15]. The 2019 EMDHS is the second EMDHS and the fifth DHS implemented in Ethiopia. The survey was conducted in nine regional states and two city administrations of Federal Democratic Republic of Ethiopia [15].

The 2019 EMDHS sample was stratified and selected in two stages. Each region was stratified into urban and rural areas, yielding 21 sampling strata. In the first stage, a total of 305 enumeration areas (93 in urban areas and 212 in rural areas) were selected with probability proportional to enumeration area size based on the 2019 Ethiopian Population and Housing Census (EPHC) frame and with independent selection in each sampling stratum [15]. In the second stage of selection, a fixed number of 30

households per cluster were selected with an equal probability systematic selection from the newly created household listing. All women aged 15-49, who were either permanent residents of the selected households or visitors who slept in the household the night before the survey were eligible to be interviewed [15].

The survey was conducted based on a nationally representative sample that provide estimate at the national and regional levels and for urban and rural areas. The survey interviewed 8,663 women of reproductive age (age 15-49) from a national representative sample of 8,663 households. Five questionnaires were used for the 2019 EMDHS: (1) the Household Questionnaire, (2) the Woman's Questionnaire, (3) the Anthropometry Questionnaire, (4) the Health Facility Questionnaire, and (5) the Fieldworker's Questionnaire. Our analysis only included children less than 24 months of age, living with an eligible respondent, in accordance with the denominator of the EIBF definition, which resulted in a total weighted sample of 3752.

Outcome Variable

Outcome variable

we used EIBF as the outcome variable using the recommended definition as children born in the last 24 month who were put to the breast within one hour [1], this indicator was self-reported by the mother.

Independent Variable

The main independent variables were mother's education, maternal age, wealth index of household, religion, place of residence, region of residence, professional antenatal and postnatal care, place of delivery, mode of delivery, type of birth, sex of child, marital status of the mother and parity was selected from the available similar studies on the subject [11, 16–19]. The DHS used five wealth quintiles. Households were given scores based on the number and kinds of consumer goods they own, ranging from a television to a bicycle or car, in addition to housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores were derived using principal component analysis. National wealth quintiles were compiled by assigning the household score to each usual (de jure) household member, ranking each person in the household population by her or his score, and then dividing the distribution into five equal categories, each comprising 20% of the population.

Statistical analysis

Descriptive characteristics of the subjects were presented as frequencies and percentages to summarize the distribution of selected background characteristics of mothers and children. To examine the socioeconomic and demographic factors associated with early initiation of breastfeeding the full model was run with those variables showing P value < 0.25 in the unadjusted analysis (odds ratios with their 95% confidence intervals). Meanwhile, the final model was reduced using the backward stepwise logistics

regression and all the variables in the final model were variables for which P value ≤ 0.05 . Both unadjusted and adjusted odds ratios (ORs) were reported with 95% confidence intervals (95% CI). All analyses were performed using statistical package for social science (SPSS), version 25.

Results

Bassline characteristics

The prevalence of EIBF in Ethiopia was remarked to be 73.7% (n = 2767). As summarized in Table 1, the principal percentage of the children lived in rural areas (74.5%), mainly in the regions of Oromia (12.3%) and SNNP (11%). 33.2% of the mothers had primary education.

Table 1
Background characteristics of mother and child < 24 month, EMDHS 2019 (n=3752)

Background characteristics of/covariates	Over all (n=3752) N (%)	Early initiation of breastfeeding in the 1st hour	
		Early initiation (n=2767)	Delayed (n=985)
		N (%)	N (%)
Region			
Tigray	337 (9.0)	248 (9.0)	89 (9.0)
Afar	367 (9.8)	257 (9.3)	110 (11.2)
Amhara	393 (10.5)	267 (9.6)	126 (12.8)
Oromia	463 (12.3)	381 (13.8)	82 (8.3)
Somali	316 (8.4)	198 (7.2)	118 (12.0)
Benishangul	357 (9.5)	278 (10.0)	79 (8.0)
SNNPR	413 (11.0)	305 (11.0)	108 (11.0)
Gambela	324 (8.6)	250 (9.0)	74 (7.5)
Harari	289 (7.7)	215 (7.8)	74 (7.5)
Addis Ababa	231 (6.2)	168 (6.1)	63 (6.4)
Dire Dawa	262 (7.0)	200 (7.2)	62 (6.3)
Place of residence			
Urban	958 (25.5)	708 (25.6)	250 (25.4)
Rural	2794 (74.5)	2059 (74.4)	735 (74.6)
Maternal Educational Level			
No education	1915 (51)	1390 (50.2)	525 (53.3)
Primary	1246 (33.2)	934 (33.8)	312 (31.7)
Secondary/higher	591 (15.8)	443 (16.0)	148 (15.0)
Religion			
Orthodox	1240 (33.0)	864 (31.2)	376 (38.2)
Protestant	728(19.4)	559 (20.2)	169 (17.2)
Muslim	1747 (46.6)	1315 (47.5)	432 (43.7)
Traditional	37 (1.0)	29 (1.0)	8 (0.8)

Background characteristics of/covariates	Over all (n=3752) N (%)	Early initiation of breastfeeding in the 1st hour	
		Early initiation (n=2767)	Delayed (n=985)
		N (%)	N (%)
Wealth index			
Poorest	1115 (29.7)	778 (28.1)	337 (34.2)
Poorer	647 (17.2)	507 (18.3)	140 (14.2)
Middle	549 (14.6)	400 (14.5)	149 (15.1)
Richer	501 (13.4)	378 (13.7)	123 (12.5)
Richest	940 (25.1)	704 (25.4)	236 (24.0)
Types of birth			
Single birth	3699 (98.6)	2730 (98.7)	969 (98.4)
Twine	53 (1.4)	37 (1.3)	16 (1.6)
Child sex			
Male	1931 (51.5)	1421 (51.4)	510 (51.8)
Female	1821 (48.5)	1346 (48.6)	475 (48.2)
Place of delivery			
Home	1660 (44.2)	1173 (42.4)	487 (49.4)
Health	2092 (55.8)	1594 (57.6)	498 (50.6)
Antenatal care			
No ANC visit	955 (25.5)	666 (24.1)	289 (29.3)
1-3	1198 (31.9)	886 (32.0)	312 (31.7)
4+	1599 (42.6)	1215 (43.9)	384 (39.0)
Post-natal check up			
No	3236 (86.2)	2389 (86.3)	847 (86.0)
Yes	516 (13.8)	378 (13.7)	138 (14.0)
Age of Mother			
<20	232 (6.2)	157 (5.7)	75 (7.6)
20-34	2698 (71.9)	1984 (71.7)	714 (72.5)

Background characteristics of/covariates	Over all (n=3752) N (%)	Early initiation of breastfeeding in the 1st hour	
		Early initiation (n=2767) N (%)	Delayed (n=985) N (%)
35-49	822 (21.9)	626 (22.6)	196 (19.9)
Parity			
1-2	1520 (40.5)	1083 (39.1)	437 (44.4)
3-4	984 (26.2)	734 (26.5)	250 (25.4)
5-6	698 (18.6)	525 (19.0)	173 (17.6)
7+	550 (14.7)	425 (15.4)	125 (12.7)
Currently marital status of mother			
Married	3450 (92.0)	2548 (92.1)	902 (91.6)
No longer living together/separated	302 (8.0)	219 (7.9)	83 (8.4)
Mode of delivery			
Normal (vaginal)	3485 (92.1)	2632 (95.1)	853 (86.6)
Cesarean section	267 (7.1)	135 (4.9)	132 (13.4)

Concerning mothers age, overall, 71.9% were between 20 and 34 years. Majority (92%) described themselves as currently married at the time of the survey. In terms of place of delivery 55.8 % mothers delivered at a health facility out of this 7.1% delivered by cesarean section. Regarding to the number of antenatal visits, about 31.9% of mothers reported to have made at least 1–3 antenatal clinic visits and 42.6% had made more than 4 visits during pregnancy. Only 13.8% of babies had postnatal checkup.

Factors associated with early initiation of breastfeeding in Ethiopia

In the bivariate logistics regression, EIBF showed an association (P value < 0.25) with age of mother, place of delivery, mode of delivery, antenatal care, parity, wealth index and region. After controlling for the confounder in the final model of multivariate regression mode of delivery, place of delivery, parity and region were the variable that were significantly associated with EIBF with p-value <0.05 (Table 2).

Mothers who delivered at a health facility [AOR =1.65, 95% CI: 1.39, 1.96] had higher odds to practice early breast-feeding than those mothers who delivered at home, mode of delivery mother who had deliveries by vaginal method [AOR = 3.94, 95% CI: 2.99, 5.17] had 3.9 times higher odds to practice early breast-feeding compared with cesarian section delivery and mothers who had more than five children [

AOR = 1.57, 95% CI: 1.23, 2.00] had higher odds to practice early breastfeeding when compared with mothers of single babies. In addition, early breast-feeding initiation was also associated with region where mothers residing particularly in regions such as Oromia [AOR = 1.78, 95% CI: 1.26, 2.53] had higher odds to practice early breast feeding as compared with mothers residing in Tigray region (Table 2).

Table 2
Factors associated with early initiation of breast feeding in Ethiopia, EMDHS 2019

Characteristics	Unadjusted odds ratio			Adjusted odds ratio		
	OR	P-value	95%CI	OR	P-value	95%CI
Age of Mother						
<20	1.00			1.00	0.245	
20-34	1.327	0.054	0.99-1.77	1.26	0.149	0.92, 1.72
35-49	1.526	0.009	1.11-2.09	1.38	0.095	0.94, 2.04
Place of delivery						
Home	1.00			1.00		
Health	1.32	0.000	1.14-1.53	1.65	0.000	1.39, 1.96*
Mode of delivery						
Normal	3.017	0.000	2.34-3.88	3.94	0.000	2.99, 5.17*
Cesarean section	1.00			1.00		
Antenatal care						
No ANC visit	1.00			1.00	0.539	
1-3	1.23	0.030	1.02, 1.48	0.569	1.060	0.85, 1.32
4+	1.37	0.001	1.14, 1.64	0.273	1.130	0.90, 1.43
Parity						
1-2	1.00			1.00	0.001	
3-4	1.18	0.067	0.98, 1.42	1.28	0.010	1.06, 1.55*
5-6	1.22	0.052	0.99, 1.50	1.35	0.006	1.08, 1.67*
7+	1.37	0.007	1.09, 1.72	1.57	0.000	1.23, 2.00*
Wealth index						
Poorest	1.00			1.00	0.106	
Poorer	1.56	0.000	1.25, 1.96	1.34	0.022	1.04, 1.72
Middle	1.16	0.194	0.92, 1.46	0.98	0.892	0.76, 1.27
Richer	1.33	0.020	1.04, 1.69	1.10	0.487	0.83, 1.45
Richest	1.29	0.010	1.06, 1.57	1.22	0.163	0.92, 1.61

*Significant at p-Value less than 0.05

Characteristics	Unadjusted odds ratio			Adjusted odds ratio		
Region						
Tigray	1.00			1.00	0.000	
Afar	0.83	0.294	0.60, 1.16	0.94	0.734	0.67, 1.32
Amhara	0.76	0.095	0.55, 1.04	0.82	0.257	0.59, 1.14
Oromia	1.66	0.003	1.18, 2.34	1.78	0.001	1.26, 2.53*
Somali	0.60	0.003	0.43, 0.84	0.62	0.008	0.44, 0.88
Benishangul	1.26	0.189	0.89, 1.78	1.22	0.270	0.85, 1.73
SNNPR	1.01	0.936	0.73, 1.40	1.06	0.723	0.76, 1.48
Gambela	1.21	0.287	0.85, 1.72	1.23	0.248	0.86, 1.77
Harari	1.04	0.819	0.72, 1.49	1.09	0.640	0.75, 1.57
Addis Ababa	0.95	0.819	0.65, 1.39	1.23	0.309	0.82, 1.83
Dire Dawa	1.15	0.443	0.79, 1.68	1.38	0.095	0.94, 2.04
*Significant at p-Value less than 0.05						

Discussion

In this study, we investigated the determinants of early initiation of breastfeeding among women aged 15–49 years in Ethiopia using secondary data from the EMDHS 2019, the overall prevalence of early initiation of breast feeding was 73.7%. According to the WHO classification, the reported EIBF prevalence in this study is categorized as good [20]. It is

still lower when compared to the previous studies of EIBF prevalence in other countries such as Zimbabwe (78%) [21], Angola (98.4%), Cuba (89.2%) and Sri Lanka (85.5%) [22], and also lower than the national 92% EIBF targeted by the health sector development program of Ethiopia [13]. However, the overall prevalence of EIBF in Ethiopia is much higher compared to economic community of west Africa state (ECOWAS) (43%) [23], Ghana (55.7%) [17], Tanzania (71.4%) [24], kingdom of Saudi Arabia (43.6%) [25], India (41.5%) [26], Indonesia (57%) [27] and Middle East (34.3%) [28]. The reason for the higher prevalence of EIBF in the current study compared to the previous study might be due to the successful health extension program implementation in Ethiopian primary health care system. The health extension workers identify pregnant mothers and refer them to the nearby health facilities for delivery this might enable the mothers to obtain information on the importance of EIBF from health care providers [29].

Mode of delivery was significantly associated with early initiation of breast feeding in the present study. A mother who delivered by vaginal delivery was around 3.9 times more likely to initiate breastfeeding within

one hour than those who gave birth via a cesarean section. This finding is supported by similar studies done in Ethiopia, a secondary analysis of EDHS 2016 [11, 16], different region in Ethiopia [30–33] and different countries such as Saudi Arabia [25], Sudan [34], Tanzania [35, 36], Uganda [37, 38], Ghana [17], Nigeria [18], Namibia [39], West Africa state [23], Nepal [40, 41], India [26], Indonesia [8, 27, 42], Bangladesh [43, 44], South Asia [45], Middle East [28], Turkey [46], Romania [47]. A secondary analysis of the WHO Global survey published in 2017 also showed EIBF to be significantly lower among women with caesarean section delivery [22]. This may be due to the procedure taking longer, pain after procedure, effects of anesthesia and tiredness that make it difficult to initiate breastfeeding early and the time of postoperative care which delays mother-baby contact [45].

Place of delivery was also significantly associated with early initiation of breastfeeding in the current study. A mother who gave birth at a health facility was 1.6 times more likely to initiate early breastfeeding than those delivered at home. This finding is similar with previous study reported in Ethiopia [11, 30, 31, 48], multiple African countries [18, 36, 37, 39], India [26, 49, 50], Nepal [41, 51], Bangladeshi [52], Rumania [47] and WHO global survey [22]. Mothers who delivered at a health facility may be supported and get information about the importance of early initiation of breastfeeding, and also health professionals tend to facilitate early initiation of breastfeeding compared to those who gave birth at home [29, 55].

Parity is also one of the associated factors of early initiation of breast feeding. We found positive relationship between greater parity and EIBF in the first hour after giving birth, mothers who had three or more children had higher odds of EIBF within one hour of birth compared to first time mothers. This is consistent with previous studies in Ethiopia [30] and different countries [21, 28, 39, 44, 45, 53, 54]. This may be lack of experience and knowledge about the importance of EIBF and the first pregnancy tend to have higher incidence of delivery complications which results in separation of the mother baby pair [21].

In this study, we observed the distribution of EIBF rate to be different among regional states in Ethiopia. Mother from Oromiya region had significantly higher odds of EIBF compared to mothers from Tigray region. This is supported by similar study done in Ethiopia, a secondary analysis of EDHS 2016 [16]. These regional variations could possibly be explained by the fact that there could be variations in health care utilization, culture and socioeconomic status of the study participants between regions.

One of the strengths of this study is that we used data from the 2019 EMDHS which is a national survey, Therefore, the study findings have great implications at person-level, community-level as well as policy-level. The major limitations were the study was subject to recall bias. The other weakness of the study was that some important possible factors that could affect the practice are missed due to incompleteness of information since we used a secondary data source .

Conclusions

The overall prevalence of EIBF was determined to be 73.7%., which can be classified as good as to the WHO classification. Parity, Place of delivery, mode of delivery and region where the mothers resided were found to be significantly associated with EIBF. The institutional delivery rate should be improved as these

would positively impact EIBF. Focus should be given to those mothers with their first birth to increase their awareness about EIBF .

Acronyms

AOR.....Adjusted Odds Ratio

CI.....Confidence Interval

COR.....Crude Odds Ratio

EIBFEarly Initiation of Breast Feeding

EMDHS.....Ethiopian Mini Demographic and Health Survey

EPHC.....Ethiopian Population and Housing Census

HSTP.....Health sector transformation plan

SNNP.....Southern Nations Nationalities and Peoples

WHO.....World health organization

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Data of the research can be obtained upon request from the corresponding author.

Competing interests

The authors declare that they have no conflict of interest.

Funding

The authors received no specific funding for this work.

Authors' contributions

TA and AK designed the study, performed analysis and interpretation of data and drafted the paper and revised the manuscript. Both authors read and approved the final manuscript.

Acknowledgements

We would like to extend our Heartfelt gratitude to the DHS project for providing us with the EMDHS 2019 dataset upon request.

Authors' information

Tadele Abate Lucha (B.Sc , MPH)¹ and Admassu Ketsela Mengistu (B.Pharm, MPH)²,

1. ¹Department of Neonatal Nursing, Menelik II Medical & Health Sciences College , Kotebe Metropolitan University, Addis Ababa, Ethiopia

2. Department of Pharmacy, Menelik II Medical & Health Sciences College , Kotebe Metropolitan University, Addis Ababa, Ethiopia

References

1. Organization, W.H., Indicators for assessing infant and young child feeding practices: Definitions and measurement methods. 2021.
2. Organization, W.H., Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. 2017: World Health Organization.
3. Edmond, K.M., et al., Effect of early infant feeding practices on infection-specific neonatal mortality: an investigation of the causal links with observational data from rural Ghana. *The American journal of clinical nutrition*, 2007. 86(4): p. 1126-1131.
4. Jones, A.D., et al., World Health Organization infant and young child feeding indicators and their associations with child anthropometry: a synthesis of recent findings. *Maternal & child nutrition*, 2014. 10(1): p. 1-17.
5. Breastfeeding, S.o., Breastfeeding and the use of human milk. *Pediatrics*, 2012. 129(3): p. e827-e841.
6. Berkat, S. and R. Sutan, The effect of early initiation of breastfeeding on neonatal mortality among low birth weight in Aceh Province, Indonesia: an unmatched case control study. *Advances in Epidemiology*, 2014. 2014.
7. Phukan, D., M. Ranjan, and L. Dwivedi, Impact of timing of breastfeeding initiation on neonatal mortality in India. *International breastfeeding journal*, 2018. 13(1): p. 1-10.
8. Muldiasman, M., et al., Can early initiation to breastfeeding prevent stunting in 6–59 months old children? *Journal of Health Research*, 2018.
9. Ballard, O. and A.L. Morrow, Human milk composition: nutrients and bioactive factors. *Pediatric Clinics*, 2013. 60(1): p. 49-74.

10. Wu, H., et al., Global prevalence of WHO infant feeding practices in 57 LMICs in 2010–2018 and time trends since 2000 for 44 LMICs. *EClinicalMedicine*, 2021. 37: p. 100971.
11. Woldeamanuel, B.T., Trends and factors associated to early initiation of breastfeeding, exclusive breastfeeding and duration of breastfeeding in Ethiopia: evidence from the Ethiopia demographic and health survey 2016. *International breastfeeding journal*, 2020. 15(1): p. 1-13.
12. Amare, T. and E. Dellie, Trends of inequalities in early initiation of breastfeeding in Ethiopia: Evidence from Ethiopian Demographic and Health Surveys, 2000-2016. 2021.
13. FMOH, E., Health Sector Development program IV. 2010.
14. Ethiopia, F., Health Sector Transformation Plan (HSTP): 2015/16-- 2019/20. 2015, Addis Ababa.
15. Ethiopian Public Health Institute - EPHI, Federal Ministry of Health - FMOH, and ICF, Ethiopia Mini Demographic and Health Survey 2019. 2021, EPHI/FMOH/ICF: Addis Ababa, Ethiopia.
16. John, J.R., et al., Determinants of early initiation of breastfeeding in Ethiopia: a population-based study using the 2016 demographic and health survey data. *BMC pregnancy and childbirth*, 2019. 19(1): p. 1-10.
17. Seidu, A.-A., et al., Determinants of early initiation of breastfeeding in Ghana: a population-based cross-sectional study using the 2014 Demographic and Health Survey data. *BMC pregnancy and childbirth*, 2020. 20(1): p. 1-11.
18. Adewuyi, E.O., et al., Rural-urban differences on the rates and factors associated with early initiation of breastfeeding in Nigeria: further analysis of the Nigeria demographic and health survey, 2013. *International breastfeeding journal*, 2017. 12(1): p. 1-11.
19. Acharya, P. and V. Khanal, The effect of mother's educational status on early initiation of breastfeeding: further analysis of three consecutive Nepal Demographic and Health Surveys. *BMC Public Health*, 2015. 15(1): p. 1-12.
20. Organization, W.H., Infant and young child feeding: a tool for assessing national practices, policies and programmes. 2003.
21. Mukora-Mutseyekwa, F., et al., Predictors of early initiation of breastfeeding among Zimbabwean women: secondary analysis of ZDHS 2015. *Maternal health, neonatology and perinatology*, 2019. 5(1): p. 1-7.
22. Takahashi, K., et al., Prevalence of early initiation of breastfeeding and determinants of delayed initiation of breastfeeding: secondary analysis of the WHO Global Survey. *Scientific reports*, 2017. 7(1): p. 1-10.
23. Ezeh, O.K., et al., Factors associated with the early initiation of breastfeeding in economic community of West African States (ECOWAS). *Nutrients*, 2019. 11(11): p. 2765.
24. Kiwango, F., et al., Prevalence and factors associated with timely initiation of breastfeeding in Kilimanjaro region, northern Tanzania: a cross-sectional study. *BMC pregnancy and childbirth*, 2020. 20(1): p. 1-7.

25. Ahmed, A.E. and O.A. Salih, Determinants of the early initiation of breastfeeding in the Kingdom of Saudi Arabia. *International breastfeeding journal*, 2019. 14(1): p. 1-13.
26. Senanayake, P., E. O'Connor, and F.A. Ogbo, National and rural-urban prevalence and determinants of early initiation of breastfeeding in India. *BMC Public Health*, 2019. 19(1): p. 1-13.
27. Gayatri, M. and G.L. Dasvarma, Predictors of early initiation of breastfeeding in Indonesia: A population-based cross-sectional survey. *PloS one*, 2020. 15(9): p. e0239446.
28. Alzaheb, R.A., A review of the factors associated with the timely initiation of breastfeeding and exclusive breastfeeding in the Middle East. *Clinical medicine insights: pediatrics*, 2017. 11: p. 1179556517748912.
29. Ruducha, J., et al., How Ethiopia achieved millennium development goal 4 through multisectoral interventions: a countdown to 2015 case study. *The Lancet Global Health*, 2017. 5(11): p. e1142-e1151.
30. Bisrat, Z., A. Kenzudine, and T. Bossena, Factors associated with early initiation and exclusive breastfeeding practices among mothers of infant's age less than 6 months. *J Pediatr Neonatal Care*, 2017. 7(3): p. 00292.
31. Belachew, A., Timely initiation of breastfeeding and associated factors among mothers of infants age 0–6 months old in Bahir Dar City, Northwest, Ethiopia, 2017: a community based cross-sectional study. *International breastfeeding journal*, 2019. 14(1): p. 1-6.
32. Gebremeskel, S.G., et al., Early initiation of breastfeeding and associated factors among mothers of aged less than 12 months children in rural eastern zone, Tigray, Ethiopia: cross-sectional study. *BMC research notes*, 2019. 12(1): p. 1-6.
33. Gedefaw, G., et al., Effect of cesarean section on initiation of breast feeding: Findings from 2016 Ethiopian Demographic and Health Survey. *PloS one*, 2020. 15(12): p. e0244229.
34. Tongun, J.B., et al., Factors associated with delayed initiation of breastfeeding: a cross-sectional study in South Sudan. *International breastfeeding journal*, 2018. 13(1): p. 1-7.
35. Lyellu, H.Y., et al., Prevalence and factors associated with early initiation of breastfeeding among women in Moshi municipal, northern Tanzania. *BMC pregnancy and childbirth*, 2020. 20: p. 1-10.
36. Exavery, A., et al., Determinants of early initiation of breastfeeding in rural Tanzania. *International breastfeeding journal*, 2015. 10(1): p. 1-9.
37. Mukunya, D., et al., Factors associated with delayed initiation of breastfeeding: a survey in northern Uganda. *Global health action*, 2017. 10(1): p. 1410975.
38. Bbaale, E., Determinants of early initiation, exclusiveness, and duration of breastfeeding in Uganda. *Journal of health, population, and nutrition*, 2014. 32(2): p. 249.
39. Ndirangu, M., et al., Trends and factors associated with early initiation of breastfeeding in Namibia: analysis of the Demographic and Health Surveys 2000–2013. *BMC pregnancy and childbirth*, 2018. 18(1): p. 1-10.

40. Khanal, V., et al., Factors associated with early initiation of breastfeeding in Western Nepal. *International journal of environmental research and public health*, 2015. 12(8): p. 9562-9574.
41. Ghimire, U., The effect of maternal health service utilization in early initiation of breastfeeding among Nepalese mothers. *International breastfeeding journal*, 2019. 14(1): p. 1-8.
42. Hadisuyatmana, S., et al., Women's empowerment and determinants of early initiation of breastfeeding: a scoping review. *Journal of Pediatric Nursing*, 2021. 56: p. e77-e92.
43. Islam, M.A., et al., Prevalence and factors associated with early initiation of breastfeeding among Bangladeshi mothers: a nationwide cross-sectional study. *PloS one*, 2019. 14(4): p. e0215733.
44. Raihana, S., et al., Factors associated with delayed initiation of breastfeeding in health facilities: secondary analysis of Bangladesh demographic and health survey 2014. *International Breastfeeding Journal*, 2021. 16(1): p. 1-13.
45. Sharma, I.K. and A. Byrne, Early initiation of breastfeeding: a systematic literature review of factors and barriers in South Asia. *International breastfeeding journal*, 2016. 11(1): p. 1-12.
46. Yilmaz, E., et al., Early initiation and exclusive breastfeeding: Factors influencing the attitudes of mothers who gave birth in a baby-friendly hospital. *Turkish journal of obstetrics and gynecology*, 2017. 14(1): p. 1.
47. Cozma-Petruț, A., et al., Determinants of early initiation of breastfeeding among mothers of children aged less than 24 months in northwestern Romania. *Nutrients*, 2019. 11(12): p. 2988.
48. Tariku, A., et al., Only half of the mothers practiced early initiation of breastfeeding in Northwest Ethiopia, 2015. *BMC research notes*, 2017. 10(1): p. 1-7.
49. Sarkar, T.K., et al., Early initiation of breast feeding in tribal children. *Int J Community Med Public Health*, 2016. 3(11): p. 3081-5.
50. Sharma, A., et al., Factors associated with early initiation of breastfeeding among mothers of tribal area of Madhya Pradesh, India: a community based cross sectional study. *International Journal of Community Medicine and Public Health*, 2016. 3(1): p. 194-199.
51. Adhikari, M., et al., Factors associated with early initiation of breastfeeding among Nepalese mothers: further analysis of Nepal Demographic and Health Survey, 2011. *International breastfeeding journal*, 2014. 9(1): p. 1-9.
52. Ahmmed, F. and M.M.R. Manik, Trends in early initiation of breastfeeding in Bangladesh and a multilevel analysis approach to find its determinants. *Scientific Reports*, 2021. 11(1): p. 1-9.
53. Ali, F., et al., Prevalence of and factors associated with early initiation of breastfeeding among women with children aged < 24 months in Kilimanjaro region, northern Tanzania: a community-based cross-sectional study. *International Breastfeeding Journal*, 2020. 15(1): p. 1-10.
54. Duodu, P.A., et al., Consistency of the determinants of early initiation of breastfeeding in Ghana: insights from four Demographic and Health Survey datasets. *International health*, 2021. 13(1): p. 39-48.

55. Biks GA, Tariku A, Tessema GA. Effects of antenatal care and institutional delivery on exclusive breastfeeding practice in Northwest Ethiopia: a nested case – control study. *Int Breastfeed J.* 2015;1–6