Research article

Prelacteal feeding practice and associated factors among mothers of children less than two years of age in Ethiopia: A multilevel analysis

Sewunet Sako [*]

Department of Health Informatics, School of Public Health, College of Medicine and Health Sciences, Arba Minch University, Arba Minch, Ethiopia

A B S T R A C T

Background: Prelacteal feeding is the main obstacle for exclusive breastfeeding and the major causes of neonatal morbidity and mortality. The practice is one of a deep-rooted public health problem of Ethiopia that needs further investigation. Therefore, this study aimed to assess the prevalence and independent predictors of prelacteal feeding practice in Ethiopia.

Methods: This study used data from the 2019 Ethiopia Mini Demographic and Health Survey. A two-stage multilevel mixed-effects logistic regression model was conducted to identify individual and community-level predictors of prelacteal feeding practice of mothers. In the multivariable analysis, variables with a p-value less than 5% and an adjusted odds ratio with a 95% confidence interval were reported as statistically significant variables with prelacteal feeding practice.

Result: The prevalence of prelacteal feeding practice among mothers of children less than 2 years old in Ethiopia was 16.31% (95% CI: 14.7%, 17.9%). Women who had multiple births [AOR = 4.62; 95%CI: 1.63, 13.08], delivered through cesarean section [AOR = 2.66; 95%CI: 1.63, 4.33], initiated breastfeeding after 1 hour of delivery [AOR = 3.16; 95%CI: 2.25, 4.47] and mothers who were from pastoralist region [AOR = 2.12; 95%CI: 1.22, 3.68] were more likely to practice prelacteal feeding than their counterparts.

Conclusion: This study revealed that the prevalence of prelacteal feeding practice remained a great public health concern of the country. Type of birth, mode of delivery, initiation of breastfeeding and geographic region where the mothers reside were factors that were positively associated with prelacteal feeding practice. Therefore, behavior change communication need to be applied using a variety of communication channels to halt this harmful traditional practice. In addition, promotion of institutional delivery and early initiation of breastfeeding practice using the existing strategies need to be strengthened with special emphasis given to marginalized women in order to diminish the practice in Ethiopia.

1. Introduction

In 2015 the world leaders approved 17 goals for sustainable development, of which two are directly related to breastfeeding [1]. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommends exclusive breastfeeding to infants for the first six months as the single most effective and affordable feeding practice that can protect them from common childhood illnesses like diarrhea and respiratory infections. Hence,-exclusive breastfeeding should be immediately initiated within the first hour of birth up to six months of the infant [2]. Early initiation of breastfeeding has several health benefits for both the mother and infant.

Generally, breast milk is not only an ideal, natural and renewable food for newborns but it is a potent medicine for disease prevention [3]. Evidence indicate that appropriate breastfeeding practices by itself can prevent nearly half of all diarrhea episodes and one third of all respiratory infections in low-and middle-income countries [4]. However, universally 60% of newborns are not breastfed in the first hour of life and only about 44% of infants 0–6 months old are exclusively breastfed [5]. Similarly, the 2019 Ethiopia mini demographic and health survey (EMDHS) report revealed that about 59% of Ethiopian infants are exclusively breastfed [6].

Prelacteal feeding is foods, substances or drinks other than breast milk provided to a newborn before initiating breastfeeding during the

---

first three days of life [7, 8]. Most of such practices were supported by the community's traditional beliefs, norms, and faiths [9, 10, 11]. The prelacteal feeding practice results in avoidance of colostrum and hence deprives the newborn from essential nutrients, opening an opportunity for infection [12]. Fresh butter, plain water, milk other than breast milk, sugar or glucose water are common substances given for the newborns as a prelacteal feed in Ethiopia [13]. Consequently, these substances are the main obstacle for exclusive breastfeeding practice and one of the major causes of infant mortality and morbidity [14]. Prelacteal feeding practice has numerous impacts on child survival and growth. It causes diarrhea and pneumonia, lactation failure, inadequate production of breast milk, and under nutrition [15].

Different studies conducted in the country showed that lack of breastfeeding counseling, avoidance of colostrum, birth spacing, Antenatal care (ANC) visit, wealth index, mode of delivery, initiation of breastfeeding, place of delivery, type of residence, and type of birth are factors that affect prelacteal feeding practice [8, 12, 13, 16, 17]. In Ethiopia, the prevalence of prelacteal feeding practice was ranged 10.1%-56% [7, 9, 12, 13, 14, 18, 19, 20].

The government of Ethiopia underlines the importance of nutrition in its development plans and acknowledges the role of nutrition to propel sustainable development by implementing different national and international strategies and programmes [11,12]. As part of this initiative, Infant and Young Child Feeding (IYCF) practices strategy that focuses on health, development and nutritional status of children 0-23 months of age has been implementing as of 2004 [19]. Studies conducted in the country also revealed that prelacteal feeding practice remained as one of the major obstacle for the promotion of exclusive breastfeeding practices and child survival [14, 21, 22, 23, 12]. Therefore, examining the magnitude and predictors of prelacteal feeding practice is crucial to halt morbidity and mortality of neonates attributed to the practice. The current study used the most recent nationally representative data, which helps for policy makers and planners to design appropriate strategies and intervention program in promoting exclusive breastfeeding and timely initiation of breastfeeding. In addition, the study used multilevel mixed-effects logistic regression model, which can help to identify both individual and community-level factors that affects the practice of PLF.

2. Methods

2.1. Data source and sampling procedures

This study used the 2019 Ethiopian mini demographic and health survey (EMDHS) data. The data is a nationally representative household survey that has been implemented by the Ethiopian Public Health Institute (EPHI), in partnership with the central statistical agency (CSA) and the federal ministry of health (FMOH), under the overall guidance of the technical working group. It was funded by the World Bank, the United States Agency for International Development (USAID) and the United Nations Children's Fund (UNICEF). Technical assistance was provided by ICF through The DHS Program. EMDHS covered all the nine geographical regions and two city administrations of Ethiopia. The survey was conducted from March 2019 to June 2019. It used a stratified two stage cluster sampling technique to select participants for the interview. All women aged 15–49 and either permanent residents of the selected households or visitors who slept in the household the night before the survey were eligible for the interview. In our study, all mothers of children aged 0–23 months were the source population. Whereas, all mothers having children aged 0–23 months and ever breastfed but not currently breastfeeding and still breastfeeding were the study population. Accordingly, the current study included 2,054 women who had last-born children born in the past 2 years preceding the survey. Detailed information on the survey sampling procedures and techniques are published in the EMDHS report [24].

2.2. Study variables

2.2.1. Outcome variable

The dependent variable of this study was prelacteal feeding practice among mothers of children aged 0–23 months. Prelacteal feeding is foods, substances or drinks other than breast milk provided to a newborn during the first three days of life [7, 25]. It was measured based on the self-report of mothers for the question "given child anything other than breast milk". If the response is "yes" it was coded "1" and if no it was coded "0".

2.2.2. Independent variables

The explanatory variables for this study were classified into two levels; namely individual-level and community-level factors.

2.3. Individual-level factors

Maternal age, educational status, religion, marital status, family size, household wealth index, mother's age at birth, child's age, sex of the child, type of birth, birth interval, and birth order are mothers and children socio-demographic variables. Variables related with healthcare service utilization are ANC visit, time of first ANC visit in month, type of delivery assistant, mode of delivery, place of delivery, counsel on breastfeeding during first 2 days of delivery, initiation of breastfeeding, and Postnatal care (PNC) checkup.

2.4. Community-level factors

Place of residence and region were the two non-aggregate community-level factors. Whereas, community women education, community poverty, community ANC visit, and community health institution delivery were variables derived by aggregating individual-level variables. Each aggregate variable was categorized as "high" or "low" based on the distribution of the average values calculated for each cluster. Since, DHS data were not normally distributed the median value was used for aggregated variables as a cut off point for the categorization. Consequently, these variables were measured as follows.

Community-level women education: it was measured based on the education level of the respondents. If more than 50% of the women in the cluster have at least attended primary school, then the variable was categorized as "high", otherwise "low".

Community health institution delivery: This factor was generated using the proportion of women who gave birth in the health facility. If more than 50% women of the cluster gave birth in the health facility, it was re-coded as "high", otherwise "low".

Community ANC visit: If more than 50% women of the cluster have utilized 4 and above ANC visits, this variable is re-coded as "high", otherwise "low".

Community poverty: This community level factor was derived from household wealth index data and re-coded as "high" if more than 50% of the cluster women were in the middle and above wealth class, otherwise "low".

2.5. Data management and statistical analysis

STATA version 14 was used to process and analyze the 2019 EMDHS kid's data. Sample weight was applied to adjust for sampling error and for non-responses. The study used descriptive statistics to report the frequency and proportion of independent variables. A two level multilevel mixed-effects logistic regression analysis was employed to account for the hierarchical nature of the EMDHS data and to identify the true association between the individual- and community-level factors and early prelacteal feeding practice. In this model, the author fitted four models containing variables of interest: 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).

Intra-class 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. Akaike information criterion (AIC), Bayesian information criterion (BIC), and deviance (-2 log-likelihood) was used to compare and select the best fitted model. Accordingly, the model with the lowest deviance, Model III, was chosen as the best-fitted model. Multicollinearity between explanatory variables were also checked by the variance inflation factor (VIF) and the mean VIF was found to be 7.17, indicating absence of significant collinearity among explanatory variables. 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 multi-level mixed-effects logistic regression analysis. Likewise, variables with a p-value less than 5% and an adjusted odds ratio (AOR) with a 95% confidence interval were reported as statistically significant variables with prelacteal feeding practice in the final model.

2.6. Ethics approval and consent to participate

This study was used a secondary data of the EMDHS. Hence, consent to participate is not applicable.

3. Result

3.1. Socio-demographic characteristics of mothers and children

A total of 2,054 mothers of children aged less than two years were included in the analysis. Out of the total respondents, 102 (5.07%) attended higher education, almost half (49.35%) were in the age range of 25–34 years, and the majority (95.07%) were currently in union. Most of the mothers were from Orthodox religion (36.02%), a poor household (43.13%) and from households that had ≥ 4 numbers of children (84.03). Out of the total children, nearly one-fifth (22.39%) were aged 18–23 months, half (50.50%) were male in sex and the majority (98.86%) were single births. From the total participants, more than one quarter (27.02%) of mothers resided in urban areas and 1,782 (93.30%) mothers were from agrarian regions (Table 1).

3.2. Healthcare service utilization related characteristics of mothers

Regarding ANC service, almost one quarter (24.63%) of the mothers had no ANC visit and relatively one tenth (9.11%) of the mothers received their first ANC service at their 3rd trimester. Of the respondents, 909 (45.22%) were delivered at home, less than half (43.33%) were assisted by skilled delivery assistants, and the majority (93.78%) were delivered through spontaneous vaginal delivery (Table 2).

3.3. Prevalence of prelacteal feeding practices

The prevalence of prelacteal feeding practices in this study was 16.31% (95% CI: 14.7%, 17.9%). Six out of ten mothers (60.95%) did not receive counsel on breastfeeding during the first 2 days of delivery from a health provider. Almost one quarter (24.63%) of mothers gave breast milk to their newborn after 1 h of delivery.

3.4. Factors associated with prelacteal feeding practice

In the bivariable analysis, marital status, religion, family size, type of birth, preceding birth interval, birth order, timing of 1st ANC check, ANC visits, place of delivery, mode of delivery, type of delivery assistant, initiation of breastfeeding, geographical regions, community women education, community poverty, community ANC visit and community health institution delivery were variables associated with prelacteal feeding practice at a p-value of less than 0.2. But in multivariable analysis, type of birth, mode of delivery, initiation of breastfeeding, and geographic regions were variables significantly associated with

Table 1. Socio-demographic characteristics of mothers and children in Ethiopia, 2019.

Variables	Category	Frequency	Percentage
Maternal age	15–24	649	32.29
	25–34	992	49.35
	35–49	369	18.36
Highest educational level	No education	917	45.62
	Primary	810	40.30
	Secondary	181	9.00
	Higher	102	5.07
Religion	Orthodox	724	36.02
	Protestant	532	26.47
	Muslim	721	35.87
	Other	33	1.64
Marital status	In union	1,911	95.07
	Not in union	99	4.93
Family size	< 4	321	15.97
	≥ 4	1,689	84.03
Household wealth index	Poor	867	43.13
	Medium	373	18.56
	Rich	770	38.31
Mother's age at birth	≤ 19	300	14.93
	20–34	1,438	71.54
	≥ 35	272	13.53
Child's age	<6 months	542	26.96
	6–11	479	23.83
	12–17	539	26.82
	18–23	450	22.39
Sex of the child	Male	1,015	50.50
	Female	995	49.50
Type of birth	Single	1,987	98.86
	Multiple	23	1.14
Birth interval	<24 months	292	14.53
	≥ 24 months	1,718	85.47
Birth order	First-born	477	23.73
	Second to third	691	34.38
	Fourth to sixth	575	28.61
	Seventh and more	267	13.28
Region	Agrarian	1,782	93.30
	Pastoralist	53	2.77
	City	75	3.93
Place of residence	Urban	543	27.02
	Rural	1,467	72.98
Community women education	Low	543	27.01
	High	1,467	72.99
Community poverty	Low	494	24.58
	High	1,516	75.42
Community ANC visit	Low	470	23.38
	High	1,540	76.62
Community health institution delivery	Low	522	25.97
	High	1,488	74.03

prelacteal feeding practice. The odds of prelacteal feeding practice were higher among mothers who had multiple births [AOR = 4.62; 95%CI: 1.63, 13.08] as compared to mothers who had single births. Also, mothers who were delivered through cesarean section were 2.66 times more likely to practice prelacteal feeding [AOR = 2.66; 95%CI: 1.63, 4.33] than their counterparts. There is an increased odds of prelacteal feeding practice among mothers who initiated breastfeeding after 1 h of delivery [AOR = 3.16; 95%CI: 2.25, 4.47] as compared to those mothers who early initiated breastfeeding their newborn. Furthermore, mothers who were from pastoralist regions were 2.12 times more likely to practice prelacteal feeding [AOR = 2.12; 95%CI: 1.22, 3.68] than mothers from agrarian regions of Ethiopia (Table 3).

3.5. Random effect analysis

As shown in Table 4, the presence of significant variations of prelacteal feeding practices between clusters was supported by the ICC in the

Table 2. Healthcare service utilization related characteristics of mothers of children less than 2 years old in Ethiopia, 2019.

Variables	Category	Frequency	Percentage
ANC visit	No ANC visit	495	24.63
	1–3	606	30.15
	4+	909	45.22
Time of first ANC visit in month	1st trimester	552	36.44
	2nd trimester	825	54.45
	3rd trimester	138	9.11
Type of delivery assistant	Health professionals	871	43.33
	Non- health professionals	1,139	56.67
Mode of delivery	Vaginal	1,885	93.78
	Caesarean section	125	6.22
Place of delivery	Home	909	45.22
	Health institution	1,101	54.78
Counsel on BF during first 2 days of delivery	No	1,225	60.95
	Yes	785	39.05
Initiation of breastfeeding	Within 1 h	1,515	75.37
	After 1 h	495	24.63
PNC checkup	Yes	1,810	90.05
	No	200	9.95

Table 3. Multivariable multilevel mixed-effects logistic regression analysis of factors associated with prelacteal feeding practices among mothers of children aged less than 2 years in Ethiopia, 2019.

Variables	Null model	Model I AOR (95% CI)	Model II AOR (95% CI)	Model III AOR (95% CI)
Marital status				
In union		1		1
Not in union		0.69 [0.30, 1.57]		0.62 [0.27, 1.41]
Religion				
Orthodox		1		1
Protestant		0.92 [0.54, 1.57]		0.70 [0.40, 1.22]
Muslim		1.68 [1.12, 2.52]		1.16 [0.75, 1.79]
Others		2.13 [0.58, 7.83]		1.69 [0.46, 6.17]
Family size				
<4		1		1
≥ 4		0.85 [0.50, 1.44]		0.87 [0.52, 1.47]
Type of birth				
Single		1		1
Multiple		5.24 [1.83, 14.95]		4.62 [1.63, 13.08]**
Preceding birth interval				
<24 months		1		1
≥ 24 months		1.20 [0.69, 2.09]		1.25 [0.73, 2.17]
Birth order				
First-born		1		1
Second to third		0.90 [0.55, 1.49]		0.89 [0.55, 1.45]
Fourth to sixth		0.90 [0.51, 1.56]		0.91 [0.52, 1.58]
Seventh and more		0.60 [0.28, 1.25]		0.57 [0.27, 1.21]
Timing of 1st ANC check				
1st trimester		1		1
2nd trimester		0.90 [0.63, 1.30]		0.99 [0.69, 1.43]
3rd trimester		1.38 [0.72, 2.65]		1.44 [0.74, 2.79]
ANC visits				
No ANC visit		1		1
1–3		0.90 [0.62, 1.31]		0.85 [0.58, 1.24]
4+		Omitted		
Place of delivery				
Home		1		1
Health institution		1.19 [0.39, 3.60]		1.19 [0.39, 3.55]
Mode of delivery				
Vaginal		1		1
Caesarean section		3.14 [1.93, 5.12]		2.66 [1.63, 4.33]***
Type of delivery assistant				
Non-health professionals		1		1
Health professionals		0.53 [0.17, 1.61]		0.49 [0.16, 1.47]
Initiation of breastfeeding				
Within 1 h		1		1
After 1 h		3.19 [2.26, 4.52]		3.17 [2.25, 4.47]***
Region				
Agrarian			1	1

Table 3 (*continued*)

Variables	Null model	Model I AOR (95% CI)	Model II AOR (95% CI)	Model III AOR (95% CI)
Pastoralist			5.37 [3.55, 8.12]	2.12 [1.22, 3.68]**
City			1.66 [1.01, 2.73]	1.19 [0.72, 1.99]
Community women education				
Low			1	1
High			0.38 [0.17, 0.85]	0.55 [0.23, 1.30]
Community poverty				
Low			1	1
High			1.82 [0.14,24.00]	0.95 [0.07, 12.31]
Community ANC visit				
Low			1	1
High			0.80 [0.09, 6.91]	0.69 [0.02, 19.88]
Community health institution delivery				
Low			1	1
High			0.79 [0.06, 0.16]	0.78 [0.07, 8.77]

*** P-value<0.0001 ** P-value<0.001 * P-value<0.05.

Table 4. Variability at community-level and Model comparison for prelacteal feeding practice among mothers of children age less than 2 years old in Ethiopia, 2019.

Parameters	Null model	Model I	Model II	Model III
S.E	1.49***	0.31*	0.64***	0.12
ICC	31%	9%	16%	3.4%
AIC	1694.38	1089.19	1626.66	1073.71
BIC	1705.64	1190.55	1671.68	1207.07
PCV	Reference	79.19%	57.05%	91.95%
Model comparison				
Log likelihood	-845.19	-525.59	-805.33	-511.85
Deviance	1,690.38	1,051.18	1,610.66	1,023.70

*** P-value<0.0001 ** P-value<0.001 * P-value<0.05.

empty model (null model). About 31% of the variation in prelacteal feeding practices among mothers of children aged less than 2 years was due to the variation between clusters. The value of PCV was highest in the last model and this indicates that most of the variations of prelacteal feeding practices observed in the null model was explained by both individual and community-level variables. Moreover, the smallest value of deviance observed in the last model implies that model-3 (final model) was the best explanatory model able to explain the variation in prelacteal feeding practices between the clusters (Table 4).

4. Discussion

The overall objective of this study was to assess the prevalence and determinants of prelacteal feeding practice among mothers of children aged less than 2 years in the country. In Ethiopia, the prevalence of prelacteal feeding practice was 16.31% (95% CI: 14.71% - 17.91). This finding was lower than the pooled prevalence of prelacteal feeding practice among Ethiopian children (26.95% and 25.29%) [19, 20] and the -findings from Northwest Ethiopia (19.1%, 56%) [18, 26], North-eastern Ethiopia (38.8%, 24.7%) [23, 27], North-central Ethiopia (20.2%) [28], Eastern Ethiopia (45.4%, 46.4%) [7, 21], Southern Ethiopia (20.6%, 25.5%) [12, 9], Ethiopia [13, 29], sub-Saharan Africa (32.2%) [8], Southwest Nigeria (23) and south Sudan (53%) [16]. The difference might be associated with the increment of exclusive breast-feeding practice from 49% in 2005 to 59% in 2019 [6]. Similarly, findings of the previous studies showed the decrement of prelacteal feeding practice from 29% in 2005 EDHS to 26.95% in 2016 EDHS [6, 19] Also, this variation could be due to differences in study setting, study periods, and due to activities focused on women empowerment by the government of Ethiopia.

This study evidenced that the odds of prelacteal feeding practice were higher among mothers who had multiple births as compared to mothers who had single births. This finding is similar to studies conducted in different parts of Ethiopia [13, 14, 21, 17]. This could be due to the probability of giving preterm birth was higher among women who gave multiple births than those who gave single births [30]. As a result, there might be delay in initiating breastfeeding until the neonate is capable of sucking breast milk.In addition, as stated in litrature mothers who gave multiple births usually undergo cesarean section. Consequently, long postoperative care delays skin-to-skin mother to baby contact and this separation of mother to baby for a short period of time due to factors attributed to cesarean section results in delayed initiation of breast-feeding. Therefore, the newborn is expected to feed prelacteal foods during this time period. Likewise, the present study showed that mothers who were delivered through caesarean section were more likely to practice prelacteal feeding than their counterparts. This finding is similar with the findings of studies conducted in Southwest Ethiopia [31], Indonesia [32], Southwest Nigeria [10], and sub-Saharan Africa [8]. As described earlier, the initiation of breastfeeding for pregnant women who delivered via cesarean section will be delayed until she becomes stable and transferred to the postpartum ward. So, this gives a chance for the family of the newborn to give prelacteal foods.

In most African countries, colostrum is considered as a "hot milk" or "bad milk" which can cause diarrhea and stomach pain to the newborn [13, 33, 34]. Therefore, mothers were likely to discard it and instead give some prelacteal foods until the color of breast milk turned from yellowish to white [11]. This fact was also supported by our current study. In this study, the odds of prelacteal feeding practice was higher among mothers who initiated breastfeeding after 1 hour of delivery as compared to those who early initiated breastfeeding their newborns. This finding is in congruence with previous studies done in Northwest Ethiopia [18, 35], Eastern Ethiopia [7, 21], sub-Saharan Africa [8], and Southwest Nigeria [10]. This might be due to lack of awareness about the correct time to initiate breastfeeding after delivery since a quarter of the mothers (25.41%) included in the study did not utilized ANC services at all [36]. Postpartum complications such as eclampsia and postpartum bleeding may also affect timely initiation of breastfeeding [34, 36].

Prelacteal feeding practice of a mother is also determined by the lifestyle of the community where a mother is living. In this study, mothers who were from pastoralist regions were more likely to practice prelacteal feeding than mothers from agrarian regions of Ethiopia. This result is in agreement with the findings from secondary data analysis of Ethiopian Demographic and Health Survey 2011 [13]. This might be due to differences in lifestyle of pastoralist and agrarian mothers, access to maternal and child health services, and due to socio-cultural variation.

The current study was conducted in Ethiopia and individual and community-level factors associated with prelacteal feeding practice were identified by using a multilevel analysis. As a result, policy makers 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 self-report. In addition, the author is unable to supplement the findings with qualitative data and unable to include some quantitative variables like access to mass media, size of the child at birth and other relevant variables since the study used secondary data from a national survey. Furthermore, the current study was not out of the limitations of cross-sectional study.

5. Conclusion

This study revealed that -the prevalence of prelacteal feeding practice remained a great public health concern of Ethiopia. Type of birth, mode of delivery, initiation of breastfeeding and geographic region where the mothers reside were factors that were positively associated with prelacteal feeding practice. Therefore, behavior change communication need to be applied using a variety of communication channels for women in the childbearing age to halt this harmful traditional practice. In addition, promotion of institutional delivery and early initiation of breastfeeding practice using the existing strategies need to be strengthened with special emphasis given to marginalized women in order to diminish the practice in Ethiopia.

Declarations

Author contribution statement

Sewunet Sako: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data associated with this study is available at http://www.dhsprogram.com/data/.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

References

[1] United Nations, The Sustainable Development Goals Report 2019, United Nations Publ issued by Dep Econ Soc Aff, 2019, p. 64 [Internet].Available from: https://undocs.org/E/2019/68.

[2] WHO. Infant and Young Child Feeding : Model Chapter for Textbooks for Medical Students and Allied Health Professionals, WHO, Geneva, 2009 [Internet] Available from: https://apps.who.int/iris/handle/10665/44117.

[3] U.S. Department of Health and Human Services. The Surgeon General's Call to Action to Support Breastfeeding, U.S. Department of Health and Human Services, Office of the Surgeon General, Washington, DC, 2011.

[4] U.N.C.F. UNICEF, From the First Making the Case for from the First [Internet], 2016, pp. 1–104. Available from: https://data.unicef.org/resources/first-hour-life-new-report-breastfeeding-practices/.

[5] Global Breastfeeding Collective. GLOBAL BREASTFEEDING SCORECARD, Tracking Progress for Breastfeeding Policies and Programmes, 2017. Available from, https://www.who.int/nutrition/publications/infantfeeding/global-bf-scorecard-2017.

[6] Ethiopian Public Health Institute (EPHI) and ICF [Ethiopia]. Ethiopia Mini Demographic and Health Survey 2019: key indicators, Rockville, Maryland, USA, 2019.

[7] A. Adem, N. Assefa, M. Deresa, M. Yuya, G.M. Ayana, B. Negash, et al., Prelacteal feeding practices and its associated factors among mother of children less than 2 Years of age in Kersa district, eastern Ethiopia, Glob. Pediatr. Health 8 (2021).

[8] A.S. Berde, H. Ozcebe, Risk Factors for Prelacteal Feeding in Sub-saharan Africa : a Multilevel Analysis of Population Data from Twenty-Two Countries 20, 2017, pp. 1953–1962 (11).

[9] N. Chea, A. Asefa, Prelacteal Feeding and Associated Factors Among Newborns in Rural Sidama , South Ethiopia : a Community Based Cross- Sectional Survey 1–8, 2018.

[10] O. Access, Determinants of Prelacteal Feeding Practices Among Mothers of Children Aged Less than 24 Months in Ile-Ife Southwest Nigeria: a Community Cross-Sectional Study 8688, 2019, pp. 1–11.

[11] I.J. Semega-janneh, E. Bøhler, H. Holm, I. Matheson, Promoting Breastfeeding in Rural Gambia : Combining Traditional and Modern Knowledge 16, 2001, pp. 199–205 (2).

[12] E.A. Amele, B. Demissie, K.W. Desta, Prelacteal Feeding Practice and its Associated Factors Among Mothers of Children Age Less than 24 Months in Old in, 2019, pp. 1–8.

[13] A.B. Belachew, A.B. Kahsay, Y.G. Abebe, Individual and community-level factors associated with introduction of prelacteal feeding in Ethiopia, Arch. Publ. Health (2016) 1–11 [Internet].Available from:.

[14] G. Tekaly, M. Kassa, T. Belete, H. Tasew, T. Mariye, T. Teshale, Pre-lacteal feeding practice and associated factors among mothers having children less than two years of age in Aksum town, Tigray, Ethiopia, 2017: a cross-sectional study, BMC Pediatr. 18 (1) (2018) 1–10.

[15] M. Gedefaw, R. Berhe, Determinates of childhood pneumonia and diarrhea with special emphasis to exclusive breastfeeding in North Achefer district , northwest Ethiopia, Case Contr. Study (May) (2015) 107–112.

[16] J.B. Tongun, M.B. Sebit, G. Ndeezi, D. Mukunya, T. Tylleskar, J.K. Tumwine, et al., Prevalence and determinants of pre-lacteal feeding in South Sudan : a community-based survey, Glob. Health Action 11 (1) (2018) [Internet] Available from:.

[17] T.Y. Birhan, N.A. Birhan, M. Alene, Pooled prevalence and determinants of prelacteal feeding practice in eastern africa evidence from demographic and health survey data: a multilevel study, Risk Manag. Healthc. Pol. 14 (2021) 1085–1095.

[18] D. Supplements, Determinants of Prelacteal Feeding Practice Among Postpartum Mothers in Debre Markos Town , Amhara Regional State, Ethiopia 2017, 2016, pp. 97–102.

[19] W. Worku, A. Tariku, F. Wagnew, et al., Magnitude of prelacteal feeding practice and its association with place of birth in Ethiopia: A systematic review and meta-analysis, 2017, Arch. Publ. Health 76 (2018) 63.

[20] T. Habtamu, N. Ayenew, W. Wubetu, G. Temesgen, Y. Molla, Prelacteal feeding and associated factors in Ethiopia: systematic review and meta- analysis, Int. Breastfeed. J. 13 (2018) 49.

[21] Y. Bekele, B. Mengistie, F. Mesfine, Prelacteal Feeding Practice and Associated Factors Among Mothers Attending Immunization Clinic in Harari Region Public Health Facilities, Eastern Ethiopia, 2014, pp. 529–534 (July).

[22] G.A. Alemayehu, A. Fekadu, M. Yitayal, Y. Kebede, S.M. Abebe, T.A. Ayele, et al., Prevalence and determinants of contraceptive utilization among married women at Dabat Health and Demographic Surveillance System site, northwest Ethiopia, BMC Wom. Health 18 (1) (2018) 1–7.

[23] S.G. Gebremeskel, T.T. Gebru, S.S. Kassahun, B.G. Gebrehiwot, Magnitude of Prelacteal Feeding and its Associated Factors Among Mothers Having Children Less than One Year of Age : A Community-Based Cross-Sectional Study in Rural Eastern Zone , Tigray , Ethiopia 2020, 2020, pp. 8–10.

[24] Ethiopian Public Health Institute (EPHI) and ICF, Mini Demographic and Health Survey 2019: Key Indicators 2019, EPHI and ICF, Rockville, Maryland, USA, 2019, p. 35.

[25] Trevor N. Croft, M.J. Aileen, Courtney K. Marshall, Allen, et al., Guide to DHS Statistics. Rockville, Maryland, USA ICF 22–51, 2018.

[26] T. Derso, G.A. Biks, A. Tariku, N.B. Tebeje, Z. Gizaw, K.F. Muchie, et al., Correlates of Early Neonatal Feeding Practice in Dabat HDSS Site , Northwest Ethiopia 1–7, 2017.

[27] M. Legesse, M. Demena, F. Mesfin, D. Haile, Prelacteal Feeding Practices and Associated Factors Among Mothers of Children Aged Less than 24 Months in Raya Kobo District , North Eastern Ethiopia : a Cross-Sectional Study 1–8, 2014.

[28] A.H. Dagne, K.T. Anteneh, M.B. Badi, H.H. Adhanu, M.A. Ahunie, H.D. Tebeje, et al., Appropriate complementary feeding practice and associated factors among mothers having children aged 6-24 months in Debre Tabor Hospital, North West Ethiopia, 2016, BMC Res. Notes 12 (1) (2019) 1–6 [Internet] Available from:.

[29] H. Temesgen, A. Negesse, W. Woyraw, T. Getaneh, M. Yigizaw, Prelacteal feeding and associated factors in Ethiopia: systematic review and meta-analysis, Int. Breastfeed. J. 13 (1) (2018) 1–12.

[30] H.M. Whitford, S.K. Wallis, T. Dowswell, H.M. West, M.J. Renfrew, Breastfeeding education and support for women with twins or higher order multiples, Cochrane Database Syst. Rev. (2) (2017), CD012003.

[31] T.F. Wolde, A.D. Ayele, W.W. Takele, Prelacteal feeding and associated factors among mothers having children less than 24 months of age, in Mettu district, Southwest Ethiopia: a community based cross-sectional study, BMC Res. Notes 12 (1) (2019) 3–9 [Internet] Available from:.

[32] L.D.R. Id, C. Carson, M.A. Quigley, Prevalence of Prelacteal Feeding and Associated Risk Factors in Indonesia : Evidence from the 2017 Indonesia Demographic Health Survey 1–19, 2020. Available from:.

[33] I.J. Semega-Janneh, E. Bøhler, H. Holm, I. Matheson, G. Holmboe-Ottesen, Promoting breastfeeding in rural Gambia : combining traditional and modern knowledge, Health Policy Plan. 16 (2001) 199–205.

[34] A.-H. El-Gilany, D.M. Abdel-Hady, Newborn first feed and prelacteal feeds in Mansoura, Egypt Abdel-Hady, BioMed Res. Int. (2014), 258470.

[35] T. Tewabe, Prelacteal Feeding Practices Among Mothers in Motta Town , Northwest Ethiopia : A Cross-Sectional Study, 2018.

[36] L.D. Rahmartani, C. Carson, M.A. Quigley, Prevalence of prelacteal feeding and associated risk factors in Indonesia: Evidence from the 2017 Indonesia Demographic Health Survey, PLoS ONE 15 (2020).