





Prelacteal Feeding Practices and Its Associated Factors among Mother of Children Less Than 2 Years of Age in Kersa District, Eastern Ethiopia

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Abstract

Background. Prelacteal feeding is defined as administration of any substances other than breast milk to newborn babies during the first 3 days after birth. Despite its negative health outcomes, it is commonly practiced in developing countries. Therefore, this study aimed at assessing the prevalence of pre-lacteal feeding practices and associated factors among mothers of children aged less than 2 years of age in Kersa district, Eastern Ethiopia. **Method.** A community-based cross-sectional study design was conducted among 465 mothers having children aged less than 2 years in Kersa district. A multistage sampling technique was used to select study participants. Binary logistic regression analysis was fitted to identify factors associated with prelacteal feeding practices. Variables with a *P*-value < .05 were identified as statistically significant factors. **Results.** The prevalence of pre-lacteal feeding in Kersa district was 46.4% (95% CI: 42.0%, 51.5%). Initiating breastfeeding after 1 hour of delivery (AOR = 10.80, 95% CI: (5.79, 20.17)), giving birth at home (AOR = 2.77, 95% CI: (1.41, 5.46)), not knowing risks associated with pre-lacteal feeding (AOR = 3.25, 95% CI: (1.72, 6.15)) and perceiving pre-lacteal feeding as beneficial (AOR = 9.56, 95% CI: (4.45, 20.52)) were factors significantly associated with practice pre-lacteal feeding practices. **Conclusion.** Significant proportions of mothers were practicing pre-lacteal feeding in the study area. Late initiation of breastfeeding, home delivery, not knowing risks of prelacteal feeding, and perceiving pre-lacteal feeding as beneficial were contributing factors for practicing of pre-lacteal feeding. Therefore, promoting institutional delivery and timely initiation of breastfeeding would reduce prelacteal feeding in Kersa district.

Keywords

prelacteal feeding, infant feeding, Kersa district, Ethiopia

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Background

Breastfeeding is a vital part of child health care for the healthiest start to life and a critical first step on a child's path to a healthy future and a baby's first vaccine and the best source of

nutrition as well as offers mothers health benefits.¹ Infants who are exclusively breastfed have a substantially lower risk of death from diarrhea, pneumonia, and other infectious diseases. It also supports infants' immune systems and

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may protect them later in life from chronic conditions such as obesity and diabetes.² Thus, the first 2 years of a child's life are particularly important, as optimal breastfeeding could save over 820 000 under-five children every year, if all children 0 to 23 months were optimally breastfed.³

Prelacteal feeding is the feeding practices in which any substances other than breast milk given to newborns before breastfeeding initiation, usually in the first 3 days of life.⁴ Prelacteal feeding deprives the child of the valuable nutrients and protection of colostrum and exposes the newborn to the risk of infection.⁵

Globally about 51.0% of newborns fed prelacteal feeds, which are mainly common in Asia and Middle East that represents 59.0% and 46.3% respectively.⁶ In Sub-Saharan Africa, the overall prevalence of prelacteal feeding (PLF) was 32.2% and prevalence was highest in Côte d'Ivoire (67.0%) and lowest in Malawi (2.5%).⁷ In Ethiopia, the overall prevalence of prelacteal feeding practice was 28.92%. The most common prelacteal feeds were fresh butter (43.7%), plain water (15.2%), milk other than breast milk (12.4%), and sugar or glucose water (11.23%).⁸

It is estimated that sub-optimal breastfeeding, especially non-exclusive breastfeeding in the first 6 months of life results in 1.4 million deaths and 10% of the disease burden in children younger than 5 years.⁹ Pre-lacteal feeds were also associated with increased mortality risk in infants aged 2 to 28 days by threefold and higher perinatal mortality rate.^{10,11} A study also indicated that among infants who had been given pre-lacteal feeds almost 50% of them died during the neonatal period.¹²

This practices were predominantly associated with socio-demographic and economic factors (Maternal age, occupation, income, education, residence, Child's age, child's sex, and birth order), maternal health care service utilization, mode of delivery, Place of giving birth, breast feeding counseling). Other factors such as maternal related factors like breast feeding problem, parity and maternal illness, time of initiation of breast feeding as well as types of family and cultural factors.^{7,8,13}

Although prelacteal feeding is widely practiced in Ethiopia, prelacteal feeding focused research studies are limited especially as one goes down to zonal and district levels, particularly in Kersa district its factors were not well studied. Therefore, this study is aimed at assessing the prevalence of prelacteal feeding practice and its associated factors among mothers of children less than 2 years of age in Kersa district, East Hararge zone, Oromia region, Eastern Ethiopia.

Methods

Study Design, Area, and Period

Community based cross sectional study design was employed among mothers having children aged less than

2 years of age in Kersa district. Kersa is one of the districts of East Hararge Zone, which is located 475 km away from Addis Ababa; capital city of Ethiopia. District consists of 38 kebeles and has a total population of 243 544 of which 122 854 are males and 120 690 are females. Out of all female population, 53 823 of them are women in the reproductive age group (15-49 years). About 13 906 of the total population are accounted by children less than 2 years of age. The district comprises of 7 health center, 37 health post, 8 private clinic that provide curative care as well as preventive services.¹⁴ The study was conducted during the period of March 14 to March 29, 2020.

Study Population and Eligibility Criteria

All mothers of children aged less than 2 years living in Kersa district during the study period were the source population. Randomly selected mothers of children aged less than 2 years who are living in selected kebeles of the district were study population. Those mothers who are seriously ill or unable to communicate were excluded from the study.

Study Variables

Dependent variable. Prelacteal feeding practice.

Independent Variables

Socio-demographic variables: maternal age, educational status, occupation, religion, marital status, child's sex, birth order, socio-economic (Wealth index), and family size.

Maternal health service utilization: Antenatal care, place of delivery, mode of delivery.

Maternal related factors: parity, medical illness, and breast feeding problem.

Breastfeeding practices: knowledge on the risk of prelacteal feeding, colostrum avoidance, breastfeeding initiation time, perceived benefits of prelacteal feeding

Operational Definition

Prelacteal feeding: Administration of foods and drinks to a newborn baby within the first day of delivery.⁹

Breastfeeding problems: Defined as whether a mother had experienced one or more of the following: she has insufficient breast milk; the infant has difficulty attaching or suckling, and/or pain, engorgement, or cracked nipples.¹⁵

Good level of information about breastfeeding: Those mothers who told 2 or more components of breastfeeding counseling during their ANC visit (benefits of breastfeeding, positioning of the baby, exclusive breastfeeding, management of breast problem, expression of breast milk).¹⁶

Poor level of information about breastfeeding: Those mothers who told one or none components of breastfeeding counseling during their ANC visit (benefits of breastfeeding, positioning of the baby, exclusive breastfeeding, management of breast problem, expression of breast milk).¹⁶

Sample Size Determination and Sampling Procedure

Sample size determination. The sample size was determined based on the formula used to estimate a single population proportion with the following assumptions; the prevalence of pre-lacteal feeding practice in the district from previous study which was 75.8%,¹⁷ confidence level of 95%, marginal error 5%, and 10% nonresponse rate.

$$n = \frac{Z^2 a/2 p(1-q)}{d^2}$$

n=282, considering design effect of 1.5% and 10% of non-response rate. Then a final sample size is determined to be 465 participants.

Multi-stage sampling technique was employed to select the study participants. In the first stage of selection, from a total of 38 kebeles (35 rural and 3 urban kebeles), 6 kebeles (5 rural and 1 urban kebeles) were selected by a lottery method. In the second stage of selection, household with a child less than 2 years of age were selected by systematic random sampling using the Kersa demographic health surveillance system (KDH-SS) as sampling frame. The required sample size was proportionally allocated to each selected kebele. Finally, the recruited mothers of child from each sampled household were interviewed.

Data Collection Tools and Procedures

A structured questionnaire adopted from Ethiopian Demographic and Health Survey (EDHS) and national nutrition survey were used to collect data on variable pertaining to the socio demographic and economic characteristics of participants and child feeding practice.^{18,19} The questionnaire was prepared first in English, translated into Afaan Oromo, and again it was translated back to English version for maintenance of its consistency by a person who speaks both languages fluently.

The data were collected by 4 female BSc degree holder nurses. Two public health experts supervised the data collection. Training was given for the supervisor and data collectors about the main purpose of the study, data collection tools, and how to approach the study participants. Face-to-face interview was used to collect

data. For mothers with more than 1 eligible child, the youngest was selected.

Data Quality Control

The questionnaires were pre-tested a week before the actual data collection days on 5% of the sample size and necessary modifications were done accordingly. Principal investigator trained data collectors and supervisors. During data collection, trained supervisor checked in the field how the data collectors were doing their task. At the end of each data collection day, the principal investigator checked manually for the completeness of filled questionnaires. Data were double entered.

Data Processing and Analysis

The collected data were checked for completeness and consistencies. It was also coded, entered, and cleaned using Epi Data Version 3.1 and then it was exported to SPSS version 22 software for analysis. Descriptive analysis including frequency distribution and the percentage was made to determine the prevalence of the prelacteal feeding, to describe socioeconomic and demographic and other determinants. Bivariate logistic regression analysis was conducted for crude odds ratio (COR), and all factors with a *P*-value $\leq .25$ were the candidate to a multivariable logistic regression to control confounding effects. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were used to measure the strength of the association between outcome variables and its determinant factors. Finally, at *P*-value $< .05$ declared a significant association. Hosmer–Lemeshow was used to test the model goodness of fit.

Results

Socio-Demographic Characteristics of the Study Population

A total of 433 mother-child pairs were included in the study. Among this 258 (59.6%) mothers were in age group between 21 and 34 years, 399 (92.1%) were currently married, 400 (92.4%) were rural residents, 423 (97.7%) were Islam in religion, 206 (47.6%) were farmers in occupation, 312 (72.1%) mothers, and 231 (53.3%) fathers were having no formal education. More than half (55.2%) of the children were male and 116 (26.9%) children were in age group of 12 to 17 months, 155 (35.8%) were second to third birth order for their family. About 243 (56.1%) mothers were gave birth with birth spacing greater than or equal to 24 months. Majority of the mothers 240 (55.4) had 3 or less number of children (see Table 1).

Table 1. Socio-Demographic Characteristics of the Mothers of Children Aged <2 Years in Kersa District, Eastern Ethiopia, 2020.

Variables	Frequency	Percentage (%)
Mother age (years)		
≤20	92	21.2
21-34	258	59.6
≥35	83	19.2
Marital status		
Currently unmarried	34	7.9
Currently married	399	92.1
Maternal resident		
Rural	400	92.4
Urban	33	7.6
Maternal religion		
Islam	423	97.7
Orthodox	10	2.3
Occupation		
Farmer	206	47.6
Housewife	194	44.8
Others	33	7.6
Maternal educational status		
No formal education	312	72.1
Formal education	121	27.9
Maternal educational status		
No formal education	231	53.3
Formal education	202	46.7
Monthly income		
≤1000	243	56.1
1001-2500	124	28.6
≥2500	66	15.2
Size of the family		
≤3	70	16.2
≥4	363	83.8
Age of index child (months)		
<6	104	24.1
6-11	111	25.7
12-17	116	26.9
18-23	101	23.4
Sex of index child		
Male	239	55.2
Female	194	44.8
Birth order of index child		
First	77	17.8
Second to third	155	35.8
Fourth to sixth	126	29.1
Seventh and more	75	17.3

Breastfeeding Practices of Mothers Having Children Less Than 2 Years of Age in Kersa District

Of the total respondents 201 (46.4%) were reported giving pre-lacteal feeds to their infants within the first 3 days before giving breast milk. The most common

Table 2. Feeding Practices of Mothers of Children Aged <2 Years in Kersa District, 2020 (n=433).

Variables	Frequency	Percentage (%)
Types of prelacteal feeding ^a (n=201)		
Plain water	100	50.5
Cow milk	65	32.8
Glucose water/sugar	42	21.2
Butter	17	8.6
Other	12	6.0
Breastfeeding initiation time (n=433)		
Within 1 hour	224	51.7
After 1 hour	209	48.3
Reason for prelacteal feeding (n=201)		
Inadequate breastfeed	30	14.9
Breastfeeding problem	18	9.0
Cultural practice	91	45.3
To calm/sooth baby	22	10.9
To clean infants bowel/thorax/mouth	25	12.4
Maternal medical illness	15	7.5

^aMultiple responses are possible.

types of pre-lacteal feeding were plain water; 100 (50.5%) followed by cow milk 65 (32.8%) and Glucose water/sugar 42 (21.2). Butter, goat milk, powdered milk and others were accounts for 17 (8.6%), 7 (3.5%), 3 (1.5%), and 2 (1.0%), respectively (Table 2).

The major reason for PLF were; 91 (45.3%) cultural practice, 33(16.4%) to clean infant's bowel/throat/Mouth, 32 (15.9%) breastfeed only is not adequate for newborns, 27 (13.4%) to calm or sooth baby, 18 (9.0%) breast feeding problem, and 15 (7.5%) maternal medical illness.

Regarding to influence/advice to provide such type of PLF; majority of the respondents 74 (36.8%) provide pre-lacteal feeding for their newborn with their own decision followed by grandmother advice 66 (32.8%) and traditional birth attendant 36 (17.9%).

Regarding colostrum feeding of the newborns; of the total respondents 386 (89.15%) feed colostrum for their infants within the first 5 days after delivery and 47 (10.85%) discarded colostrum. Out of those who gave colostrum for their infants, 224 (58.2%) initiated breastfeeding within 1 hour. The main reasons for colostrum avoidance were mother's perception as colostrum causes abdominal discomfort 18 (37.5%) and insufficient breast milk

Maternal Healthcare Service Utilization Characteristics

From all participants, 247 (57.0%) have utilized ANC services, of which 141 (57.1%) of women utilize ANC 2 to 3 times. Among mothers who attended an antenatal visit, 138 (55.9%) reported to have received counseling on breastfeeding. From these who had gotten breastfeeding counseling at ANC clinic, 122 (88.4%) of them

Table 3. Maternal Health Service Utilization of Mothers of Children <2 Years of Age in Kersa District, 2020 (n=433).

Variables	Frequency	Percentage (%)
Antenatal care follow up during pregnancy (n=433)		
No	186	43.0
Yes	247	57.0
Number of antenatal care follow up (n=247)		
First	50	20.2
Second to third	141	57.1
Fourth and more	56	22.7
Breast feeding counseling at antenatal care clinic (n=247)		
No	109	44.1
Yes	138	55.9
Information on breastfeeding counseling ^a (n=138)		
Benefit of breastfeeding counseling	43	31.2
Positioning of the baby	9	6.5
Exclusive breastfeeding	122	88.4
Management of breast problem	9	6.5
Expression of breast milk	10	7.2
Place of birth of index child (n=433)		
Home	291	67.2
Health facility	142	32.8
Mode of delivery of index child (n=433)		
Vaginal delivery	425	98.2
Cesarean section delivery	8	1.8

^aMultiple responses are possible.

were counseled about exclusive breastfeeding. About 291 (67.2%) of respondents gave birth to their index child at home, while the remaining 142 (32.8%) delivered at a health facility. About 425 (98.2%) delivered through spontaneous vaginal delivery (see Table 3).

Maternal Level of Information on Pre-Lacteal Feeding

About 100 (72.5%) mothers were at the poor level of information by which they were able to mention none or only one components of breastfeeding counseling during their ANC visit. In this study, 146 (33.7%) mothers believe in the purported advantage of pre-lacteal feeding. Of these 46 (31.5%) respondents believe that pre-lacteal feeding was important for children as to clean infants bowel/thorax/mouth. About 234 (54.0%) mothers were having information on the risk associated with giving of pre-lacteal feeding to the infant and the rest 199 (46.0%) mothers did not know the risks of pre-lacteal feeding. The problems associated with pre-lacteal feeding include 109 (46.8%) infection, 88 (37.8%) diarrhea, 76 (32.6%) poor growth, and 68 (29.2%) vomiting (see Table 4).

Factors Associated with Prelactal Feeding Practice

In multivariable logistic analysis initiating breastfeeding after 1 hour of delivery, giving birth at home, perceiving

Table 4. Level of Information on Pre-Lacteal Feeding Among Mothers Having Children <2 Years of Age, in Kersa District, Ethiopia, 2020.

Variables	Frequency	Percentage (%)
Level of information about breast feeding (n=138)		
Poor	100	72.5
Good	38	27.5
Perceive PLF as beneficial (n=433)		
No	287	66.3
Yes	146	33.7
Know the risk of purported PLF (n=433)		
No	199	46.0
Yes	234	54.0
Information on risk of PLF ^a (n=234)		
Diarrhea	88	37.8
Poor growth	76	32.6
Infection	109	46.8
Vomiting	68	29.2

Abbreviation: PLF, prelacteal feeding.

^aMultiple responses are possible.

pre-lacteal feeding as beneficial, and not knowing the risks associated with prelacteal feeding were found to be statistically significant positive predictors of prelacteal feeding practice.

Mothers who initiated breastfeeding after 1 hour of delivery were 10.8 times more likely to practice prelacteal feeding compared to mothers who initiated breastfeeding within 1 hour of delivery (AOR=10.802, 95% CI: (5.786, 20.168)). Those mothers who gave birth at home were 2.8 times more likely to practice prelacteal feeding as compared to mothers who gave birth at health institution (AOR=2.770, 95% CI: (1.406, 5.456)). Mothers who perceived pre-lacteal feeding as beneficial were 9.6 times more to give pre-lacteal feeding than those who did not perceive pre-lacteal feeding as beneficial (AOR=9.560, 95% CI: (4.454, 20.521)). Mothers who did not know the risks associated with prelacteal feeding were 3 times more likely to practice prelacteal feeding than their counterparts (AOR=3.254, 95% CI: (1.722, 6.150)) (see Table 5).

Discussion

The study showed that breastfeeding practices were sub-optimal in the district due to high pre-lacteal feeding. The prevalence of prelacteal feeding in the area was 46.4% (95% CI; 42.0%, 51.5%). The finding of this study was in agreement with the study in Damot pulara Woreda of Southern region of Ethiopia (49.8%)²⁰ and Wonago town of Southern region of Ethiopia (43.0%).²¹ It was also consistent with the study done in Senegal (44.7%),²² Sudan (53.0%),²³ and Himachal Pradesh, India (49.5%).²⁴

The prevalence of prelacteal feeding of the study area is found to be higher than findings from the study done

Table 5. Multivariable Logistic Regression of Factors Associated with Prolactal Feeding Practice of Participants in Kersa District, Eastern Ethiopia, 2020 (n=433).

Variables	Prolactal feeding		COR (95% CI)	AOR (95% CI)
	Yes	No		
Marital status				
Currently unmarried	22	12	2.25 (1.09, 4.68)	1.18 (0.28, 5.03)
Currently married	179	220	Ref	Ref
Birth space				
No previous child	31	45	0.92 (0.55, 1.54)	0.88 (0.38, 2.05)
<24 month	66	48	1.84 (1.17, 2.88)	1.87 (0.93, 3.74)
≥24 month	104	139	Ref	Ref
Mothers educational status				
No formal education	156	156	1.69 (1.10, 2.60)	1.25 (0.61, 2.53)
Formal education	45	76	Ref	Ref
ANC follow up				
No	110	76	2.48 (1.68, 3.67)	1.36 (0.68, 2.70)
Yes	91	156	Ref	Ref
Colostrum feeding				
No	43	4	15.51 (5.46, 44.08)	3.259 (0.98, 10.90)
Yes	158	228	Ref	Ref
Breastfeeding initiation time				
Within 1 hour	32	192	Ref	Ref
After 1 hour	169	40	25.35 (15.24, 42.16)	10.80 (5.79, 20.17)*
Place of delivery				
Home	160	131	3.01 (1.96, 4.63)	2.77 (1.41, 5.46)*
Health facility	41	101	Ref	Ref
Perceive prolactal feeding as beneficial				
No	70	217	Ref	Ref
Yes	131	15	27.07 (14.88, 49.26)	9.56 (4.45, 20.52)*
Know health risks of prolactal feeding				
No	150	49	10.98 (7.02, 17.18)	3.25 (1.72, 6.15)*
Yes	51	183	Ref	Ref

* significant at $p < 0.05$

in North Wollo zone (11.1%),²⁵ Bahirdar city (15%),²⁶ Aksum town (10.1%).¹³ The discrepancy could be from difference in study setting and respondents. The current study gives due emphasis for both rural and urban residence whereas those studies focus only on urban residence in which study participants were from the town and nearby to health institutions and would have more information. The finding was also more prevalent in the study area as compared to Uganda (29.0%),²⁷ Rupandehi district of Nepal (30.6%)²⁸ and in 8 districts of Bihar of India (26.0%).²⁹ The differences could be attributed to difference in culture and local beliefs.

This study showed that mothers who initiated breastfeeding after 1 hour of delivery were more likely to practice prolactal feeding compared to those initiated within an hour. This is consistent with studies from Harari region and in Raya Kobo district, North Eastern Ethiopia.^{30,31} This might be explained as the time interval between delivery and breastfeeding initiation

increases, there will be more time for infant feeding malpractices like prolactal feeding. In fact, the prolactal feeding might be also the reason for late initiation of breastfeeding.

Mothers who delivered the index child at home had higher odds of practicing prolactal feeding compared to mothers who gave birth at health institutions. This is consistent with a study from Mettu district.³² Other study from Nigeria also depicts association between place of birth and prolactal feeding practices.³³ This could be due to giving birth at home creating a favorable environment for local community members who may advise the use of prolactal feed, thus affecting newborn feeding practices. In contrast, attending an institutional delivery would have an added benefit to receive immediate obstetric care, such as early initiation of breastfeeding that reduces the likelihood of giving pre-lactal.

Mothers who perceive pre-lactal feeding as beneficial were more likely to give pre-lactal feeding compared to

those who didn't perceive pre-lacteal feeding as beneficial. This is in line with the studies done in the Aksum town, Tigray region.¹³ Other study from Vietnam is in support of this finding that misconception about breastfeeding determines prelacteal feeding practices.³⁴ This could be due to mistaken belief that prelacteal feeding cleans infant's stomach and helps the children to take the behavior of the person.³¹

Not knowing the risks associated with prelacteal feeding were found to be associated with prelacteal feeding. This is consistent with study done in Raya Kobo, North Eastern Ethiopia.³¹ This might be due to the lower maternal knowledge about breastfeeding increases the risk of introducing prelacteal fed to their newborns. In addition, it could be due to lower institutional delivery influences maternal level of information about breastfeeding that further affects proper infant feedin+g.

Study Limitations

Despite of its substantial contribution to the promotion of optimal breastfeeding practices which plays a role in reducing child mortality; the study might have some limitations. The study employed cross sectional study design which makes it difficult to establish temporal relationship between the outcome and response variables. Pre-lacteal feeding practices were self-reported which is subject to recall bias.

Conclusion

Pre-lacteal feeding is commonly practiced among mothers of children less than 2 years of age in Kersa district. Initiating breastfeeding after 1 hour of delivery, giving birth at home, perceiving pre-lacteal feeding as beneficial, and not knowing the risks associated with prelacteal feeding were factors significantly associated with pre-lacteal feeding practice. In order to promote optimal breastfeeding practices, interventions that focus on promoting institutional delivery and timely initiation of breastfeeding should be emphasized. In addition mothers should be counseled on the potential health risks of prelacteal feeding.

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Author Contributions

All authors made a substantial contribution to the conception, design, acquisition, and interpretation of data. All authors have revised the article critically for important intellectual content. All authors read and approved the final version of the manuscript.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Statements

Ethical clearance was obtained from Haramaya University College of Health and Medical Sciences, conducted following the Declaration of Helsinki, and approved by the institutional review board. A support letter was written to Kersa district health office. All participants were informed well about the purpose and the procedures of the study. All responses were kept confidential and anonymous. Participation was fully voluntary, and written informed consent was obtained from each participant.

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Data Availability

All data analyzed are available from corresponding author up on reasonable request.

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