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Factors Associated with Pre-lacteal Feeding in Eastern Ethiopia, 2021

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Abstract

Introduction: Pre lacteal feeds are foods and/or drinks other than human milk, given to newborn babies before breastfeeding initiation. It is a common neonatal feeding problem in developing country like Ethiopia, where infant and child mortality rate is quite high.

Objective: The aim of this study was to assess the proportion and factors associated with pre lacteal feeding among mothers who attended the child immunization clinic in the public health facilities of Dire Dawa city, Eastern Ethiopia.

Method: Health facility based cross-sectional study was employed from February 1–30/2021 in the public health facilities of Dire Dawa city among 308 mothers-child pairs. The data were collected by systematic random sampling technique, then entered into Epi data 4.2 and analysed using statistical package for social science 25.0 version. Bivariate and multivariate logistic regression analyses was employed to estimate the crude odds and adjusted odds ration with a CI of 95% and a P value of < 0.05 considered statistically significant.

Result: In this study, the proportion of pre lacteal feeding was 15.7%, [95% CI: 11.8-19.6%]. Mothers age 15-24 years [AOR=3.39, 95% CI= 1.21-9.51], having no history of antenatal visit [AOR=4.71, 95% CI=1.32-16.81], home delivery [AOR=3.50, 95% CI=1.12-10.97], caesarean section delivery [AOR=4.23, 95% CI=1.27-14.13], not counselled on exclusive breastfeeding [4.10, 95% CI=1.03-16.27], delayed initiation of breastfeeding [AOR=3.08, 95% CI=1.01-9.48], poor practice of colostrum feeding [AOR=3.80, 95% CI=1.20-12.04], and poor knowledge of colostrum and breastfeeding [AOR=4.31, 95% CI=1.54-12.10] were associated with pre lacteal feeding.

Conclusion: In the present study, mothers who had practiced pre lacteal feeding was high compared to the 2016 Ethiopian demographic health survey report. Socio-demographic, reproductive, knowledge and practice related factors were predictors of pre lacteal feeding. Therefore, there is a need of educating and counselling the mothers on the danger of pre lacteal feeding.

Keywords: Bahir dar university; Dire dawa; Knowledge; Pre lacteal feeding; Practice

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Abbreviations: ANC: Ante Natal Care; AOR: Adjusted Odd Ratio; CI: Confidence Interval; EBF: Exclusive Breast Feeding; EDHS: Ethiopian Demographic Health Survey; PLF: Pre Lacteal Feeding; World Health Organization

Background

Breast milk is the natural first food for the babies [1], and has short and long-term benefits for both the mother and her baby [2]. Breastfeeding initiation and duration rates are variable and influenced by the circumstances of the mother and her infant as well as by individual, group and society level factors [3].

World Health Organization (WHO) and United Nation Children's Emergency Fund recommended to practice early initiation of breastfeeding, exclusive breastfeeding (EBF), and continued breastfeeding until 24 months or beyond [4,5].

However, this recommendation is not fully practiced as evidenced by the different malpractice of breastfeeding. Among these malpractices of breastfeeding the common and dangerous one is pre lacteal feeding (PLF). PLF are foods and/or drinks other than human milk, given to newborns before breastfeeding initiation usually on the first three days of life [5,6]. Globally, about 2.6 million neonates die each year, most of which occurred within

the first 7 days after birth, and two-thirds of, which occur in South-East Asia and sub-Saharan Africa [7].

Breastfeeding is recognized as the first and vital step toward reducing mortality in infants and under-five children and it has the potential to prevent around 20% of newborn and 13% of under-five deaths [8]. The scaling up of breastfeeding can prevent an estimated 823 000 child deaths [9]. Breastfeeding is nearly universal in Ethiopia. However, large proportions of mothers, do not practice optimal infant feeding behaviors [10,11].

In Ethiopia according to EDHS 2016 report, the prevalence of PLF was 8% [12]. Even though the WHO and United Nation Children's Emergency Fund recommended that the breast milk should be the first taste of the baby within an hour, hence any PLF should be avoided, still a higher number of mothers practice PLF [4]. In developing countries like Ethiopia introduction of dirty and unsound artificial feeding of infants are common. PLF is a major barrier to first fundamental rights of EBF [13].

The medical community defines PLF as potentially dangerous, which had no any recognized benefit [14]. PLF practice deprives newborn of colostrum rich in nutrients and immunoglobulin's [15]. Avoiding PLF and starting breastfeeding within one hour of delivery encourages bonding between the mother and her newborn [16]. Increasing a mother's knowledge of infant and young child feeding is a cornerstone to improve appropriate feeding practices [17]. By the year 2030, the Sustainable Development Goals target is reducing neonatal deaths to 12 per 1000 live births, and under-five deaths to less than 25 per 1000 live births through eliminating preventable child deaths [18]. Therefore, this study was aimed to assess the proportion and factors associated with PLF.

Methods

Study design and period

A health facility based cross-sectional study design was employed from February 1–30/2021 at the public health facilities of Dire Dawa city.

Study area

The study was conducted in Dire Dawa city health facilities. Dire Dawa is located in the Eastern part of the country. It is located about 515 km away from the capital city of Ethiopia, Addis Ababa. The city has ten public health facilities (hospitals and eight of them are health centers). Dire Dawa had about 506,936 total population consists of 258,638 females [19].

Source population

The source population was mothers who were visiting the child immunization clinic at the public health facilities of Dire Dawa city.

Study population

The study population was all mothers who attended child the immunization clinic in selected the public health facilities of Dire Dawa city during the study period.

Inclusion and exclusion criteria

All mothers who had babies less than or equal to twelve months and attended the child immunization clinic at selected public health facilities of Dire Dawa city were included, while those who were unwilling to participate were excluded.

Dependent variable

Pre lacteal feeding (the mothers were asked whether they have ever breastfed, and if they have ever given any other substance to their children other than breast milk during the first three days of their lives. Pre lacteal feeding question was assigned a code of "1" was given if they have given pre lacteal foods, and "0" if they not given pre lacteal foods).

Independent variables

Socio-demographic characteristics, Reproductive and obstetrics factors and Knowledge and practice related factors of colostrum and breastfeeding practice were independent variables.

Operational definitions

Pre lacteal feeding: Defined as giving fluid or semisolid food before breastfeeding to an infant during the first 3 days after birth. A mother who gives any food/fluid without the breast milk regardless of the frequency is considered as PLF [20].

Knowledge: In this study, refer to knowledge of mothers about colostrum breast milk and

In this study, included the timing of initiation of breastfeeding, and an awareness and understanding of the mothers, about colostrum and its advantage. It was evaluated by the mother's answer to the knowledge related questions. A mother was considered to have good knowledge, if she correctly answered greater than or equal to 60 % of the total knowledge assessing questions [21,22].

Practice: In this study, refer to the behaviour, habit or custom of mothers of infants on colostrum feeding to their index infants. A mother was considered to have a good practice of colostrum feeding, if she correctly answered $\geq 60\%$ of the total practice of colostrum feeding assessing questions [21].

Sample size determination

The sample size was calculated using a single population proportion formula by considering the following assumptions: the proportion of PLF among mother having children less than two years in Aksum town was 10.1% (20), $Z_{\alpha/2}$ =critical value for normal distribution at 95% confidence level, which is equal to 1.96 (Z value of $\alpha=0.05$) or 5% level of significance ($\alpha=0.05$) and a 5% margin of error ($\omega =0.05$). The sample size was adjusted by adding 10% non-response rate and design effects of 2, the final sample size was 308 mothers-child pairs.

Sampling procedure and technique

Multistage sampling technique was done to select the study population. The city has two hospitals and eight health centers. Then by simple random sampling method one hospital and three health centers were selected. The total sample size

was proportionally allocated for each health facility of the administrative city based on their expanded program of immunization unit flow. The average numbers of mothers who visited the expanded program of immunization unit per month at all selected health facilities was 1405. The numbers of mothers who visited the expanded program of immunization unit monthly, 570, 310, 251 and 274 in Dill Chora referral hospital, Genda kore health center, Gende Gerada health center, and Goro health center respectively. The total sample size after proportional allocation was 125, 68, 55, and 60 mothers respectively in Dill Chora referral hospital, Genda kore health center, Gende Gerada health center, and Goro health center. Eligible mothers in each facility selected by using systematic random sampling techniques. The sampling interval or the K^{th} units ($1405/308=5$) were obtained by dividing the numbers of mothers who visited the expanded program of immunization unit monthly by the sample size. The starting unit was selected by using the lottery method among the first K^{th} units in each health facility.

Data collection tools and procedures

A structured interviewer administered questionnaire was used to collect the data which were adapted from relevant literatures and modified to local context. Questionnaires were first prepared in the English language, then it was translated into Amharic by an individual who has good ability of these languages, then retranslated back into English to check consistency. The questionnaire consisted of Socio-demographic characteristics, Reproductive and obstetric characteristics, knowledge and practice of breast and colostrum feeding. Pre-tested structured interviewer administered questionnaire was used for data collection purposes. The data were collected by four BSc midwives, and supervised by one public health officer.

Data quality control

Data was collected by trained data collectors and pretesting of the instrument was done before the actual data collection. The questionnaire was pre-tested before the actual data collection period on 5% [15] mothers who attended child immunization clinic in Sabian general Hospital, which is not selected in this study. Data collectors and the supervisors trained for two days by the investigator. After necessary modifications and correction was done to standardize and ensure its reliability and validity additional adjustments was made based on the results of the pre-test. Daily supervision was done for data completeness by supervisors.

Data processing and analysis

The data were entered into Epi data 4.2, edited and cleaned for inconsistencies, missing values and outliers, then exported to SPSS version 25.0 for analysis. During analysis, all explanatory variables which have significant association in bivariate analysis with a P value <0.20 was entered into a multivariate logistic regression model to get AOR and those variables with 95% of CI and a P value of <0.05 was considered as statistically significant with PLF. The multi collinearity test was done using variance inflation factor and there was multicollinearity between the place of delivery and birth attendants. But, after removing

birth attendant there was no collinearity exists between the independent variables. The model goodness of the test was checked by using Hosmer- Lemeshow goodness of the fit and the P-value of the model fitness of the test was 0.611. Frequency tables, and descriptive summaries were used to describe the study variables.

Result

Socio demographic characteristics

A total of 306 mothers participated in the study with a response rate of 99.3%. The mean age of the mothers was 24.85 years with (\pm SD=4.64). Of these, 141 (46.1%) found in the age group of 20-25 years. About, 80%% (n=244) of the mothers lived in urban and 119 (38.9%) of the mothers had primary educational level (Table 1).

Reproductive and obstetric characteristics

In this study, 224 (73.2%) of the mothers were multigravida and 249 (81.4%) had a history of the ANC visit in their most recent

Table 1 Socio-demographic characteristics of the mothers who attended the child immunization clinic in the public health facilities of Dire Dawa administrative city, Eastern Ethiopia, 2021, (n=306).

Variables	No. (%)
Age, y	
15-19	20 (6.5)
20-25	141 (46.1)
36-30	109 (35.6)
>31	36 (11.8)
Residence	
Rural	62 (20.3)
Urban	244 (79.7)
Religion	
Muslim	157 (51.3)
Orthodox	135 (44.1)
Others*	14 (4.6)
Marital status	
Married	290 (94.8)
Others**	16 (5.2)
Educational level	
No formal education	50 (16.3)
Primary education	119 (38.9)
Secondary education	79 (25.8)
Diploma and above	58 (19.0)
Occupational status	
House wife	175 (57.2)
Merchants	80 (26.1)
Employed	51 (16.7)
Partner educational level (n=290)	
No formal education	37 (12.7)
Primary education	82 (28.3)
Secondary education	89 (30.7)
Diploma and above	82 (28.3)
Mother living with	
Partner	264 (86.3)
With other else	42 (13.7)

* Protestant and Catholic, ** Single, Divorced and Widowed

pregnancy. Among mothers who had a history of ANC visit, 197 (79.1%) counselled on EBF during their ANC visit. Of the mothers, 262 (85.6%) gave child birth at health facility and 265 (86.6%) gave birth vaginally (Table 2).

Knowledge of the mothers on colostrum and breastfeeding

In our study, most of the mothers obtaining their information on colostrum and breastfeeding from health care professionals 156 (51.0%). About, 88.9% (n= 272) responded that colostrum is the mother's breast milk during the first three days of delivery and 300 (98.0%) knew that colostrum is yellow in colour. Over 70% of the mothers responded that breastfeeding should start within an hour after delivery and 165 (53.9%) knew that colostrum's is nutritious and hygienic. Overall in this study, 192 (62.7%) mothers had good knowledge on colostrum and breast feeding (Table 3).

Pre lacteal feeding

Pre lacteal feeding was practiced by 48 (15.7%) [95% CI: 65.0-75.2%] of the mothers. Cultural practice was responded with 17 (35.4%) of the mothers as a reason of PLF and 21 (43.8%) were gave infant formula milk. In this study, 269 (87.9%) of the mothers gave colostrum to their last delivered baby immediately after delivery (Table 4).

Factors associated with pre lacteal feeding

In bivariate analysis; age of the mother, residency, educational level of the mothers, parity, history of ANC visit, counselling on;

Table 2 Reproductive and obstetric characteristics of the mothers who the attended the child immunization clinic in the public health facilities of Dire Dawa administrative city, Eastern Ethiopia, 2021, (n=306).

Variables	No. (%)
Parity	
Primipara	82 (26.8)
Multi para	224 (73.2)
History of ANC visit	
Yes	249 (81.4)
No	57 (18.6)
Counselled on TIBF during your ANC visits (n=249)	
Yes	198 (79.5)
No	51 (20.5)
Counselled on EBF during your ANC visits (n=249)	
Yes	197 (79.1)
No	52 (20.9)
Place of delivery	
Home	44 (14.4)
Health facility	262 (85.6)
Mood of delivery	
Vaginal delivery	265 (86.6)
Caesarean section	41 (13.4)
Birth attendant	
Health care professional	265 (86.4)
Traditional birth attendants/family	41 (13.6)
Counselled on BF immediately after delivery	
Yes	243 (79.4)
No	63 (20.6)

Table 3 Knowledge measuring question on colostrum and breast feeding among mothers who attended the child immunization clinic in the public health facilities of Dire Dawa administrative city, Eastern Ethiopia, 2021, (n=306).

Variables	No. (%)
Source of information	
Health professional	156 (51.0)
Mass media	73 (23.8)
Family/Friends	77 (25.2)
Colostrum is the mother breast milk during the first three days of delivery	
Yes	272 (88.9)
No	34 (11.1)
Color of colostrum	
Yellow	300 (98.0)
White	6 (2.0)
Breast feeding should be started within an hour after delivery	
Yes	218 (71.2)
No	88 (28.8)
Colostrum's is nutritious and hygienic?	
Yes	165 (53.9)
No	141 (46.1)
Colostrum is the best first milk given to the baby	
Yes	253 (82.7)
No	53 (17.3)
Timely initiation of breastfeeding strengthen baby-mother bonding	
Yes	286 (93.5)
No	20 (6.5)
Early initiation of breastfeeding with prevents breast pain/ engorgement after birth	
Yes	174 (56.9)
No	132 (43.1)
Early initiation of breastfeeding with within one hour prevents vaginal bleeding after birth	
Yes	144 (47.1)
No	162 (52.9)
The baby should feed colostrum and breast milk on demand day and night	
Yes	210 (68.6)
No	96 (31.4)
Colostrum important for growth and development of baby	
Yes	161 (52.6)
No	145 (47.4)
Colostrum gives natural immunity for the baby	
Yes	114 (37.3)
No	192 (62.7)
Should child feed breast when the mother is sick	
Yes	212 (69.3)
No	94 (30.7)
Should child feed breast when he/she is sick	
Yes	241 (78.8)
No	65 (21.2)
Colostrum protect the newborn from diseases	
Yes	106 (34.6)
No	200 (65.4)
Knowledge on colostrum and breast feeding	
Good knowledge	192 (62.7)
Poor knowledge	114 (37.3)

Table 4 Pre lacteal and colostrum feeding practice among mothers who attended the child immunization clinic in the public health facilities of Dire Dawa administrative city, Eastern Ethiopia, 2021, (n=306).

Variables	No. (%)
Did you feed colostrum to the baby immediately after birth	
Yes	269 (87.9)
No	37 (12.1)
If no reason for not feeding colostrum (n=37)	
It causes abdominal discomfort and diarrhea	10 (27.0)
My breast has no milk	9 (24.3)
Colostrum is not clean	8 (21.6)
I was sick	5 (13.5)
Baby unable to suck	5 (13.5)
Pre Lacteal Feeding (PLF)	
Yes	48 (15.7)
No	258 (84.3)
Reason for PLF (n=48)	
It is cultural practice	17 (35.4)
Not having enough milk	16 (33.3)
Breast pain	10 (20.8)
I was sick	5 (10.4)
Types of PLF (n=48)	
Formula milk	21 (43.8)
Cow milk	11 (22.9)
Plain water	7 (14.6)
Sugar solution	5 (10.4)
Honey	4 (8.3)
Timing at which breast feeding was initiated	
Within hour	215(70.3)
After an hour	91 (29.7)
Did you gave the baby breast milk within the first three day after delivery	
Yes	299 (97.7)
No	7 (2.3)
Did you put the baby to the breast immediately after delivery	
Yes	223 (72.9)
No	83 (27.1)
Practice of colostrum feeding	
Good practice of colostrum feeding	208 (68.0)
Poor practice of colostrum feeding	98 (32.0)

timely initiation of breastfeeding, and EBF as well as place and mode of delivery, counselled on breastfeeding immediately after delivery, timing at which breast feeding was initiated, practice of colostrum feeding and knowledge on colostrum and breast feeding were significant associated with PLF at a P value of <0.20. In a multivariate logistic regression analysis; age of the mother, history of ANC visit, counselled on EBF, place of delivery, mode of delivery, timing at which breastfeeding was initiated, practice of colostrum feeding and knowledge on colostrum and breast feeding remained significantly associated with PLF.

Mothers who are found in the age group of 15-24 years were 3.39 times more likely practiced PLF than mothers who are found in the age group 25-40 years old [AOR=3.39, 95% CI= 1.21-9.51] and having no history of ANC visits were increase the chance of PLF by 4.71 relative to mothers who had an ANC visit [AOR=4.71, 95% CI=1.32-16.81]. Mothers who gave birth at home were 3.50

times more likely practiced PLF relative to mothers who gave birth at health facility [AOR=3.50, 95% CI=1.12-10.97] and giving birth by caesarean section increase the practice of PLF by 4.23 times than mothers who gave birth vaginally [AOR=4.23, 95% CI=1.27-14.13]. Mothers who are not counselled on EBF were 4.10 times more likely practiced PLF compared to mothers who are counselled on EBF [4.10, 95% CI=1.03-16.27] and delayed initiation of breastfeeding increased the practice of PLF by 3.08 times than mothers who are started breastfeeding timely within one hour [AOR=3.08, 95% CI=1.01-9.48]. Mothers who had a poor practice of colostrum were 3.80 times more likely practiced PLF than mothers who had a good practice of colostrum feeding [AOR=3.80, 95% CI=1.20-12.04] and having poor knowledge of colostrum and breastfeeding were increased the practice of PLF by 4.31 times relative to mothers who have good knowledge of colostrum and breastfeeding [AOR=4.31, 95% CI=1.54-12.10] (Table 5).

Discussion

In this study, 15.7% [95% CI: 11.8-19.6%] of the mothers practiced PLF. The finding in this study, is in line with studies conducted in the Debre Berhan district (14.2%), Jimma zone (17%), Debre Markos town (19.6%), Dembecha district (11.9%), Mettu district (14.2%, and Jinka Town (12.6%) [22-27]. This also in line with a study conducted in India, (16.9 %) [28].

The practice of PLF was lower than studies conducted in Bahir Dar city (27%) [29], in selected region of Ethiopia (28.9%) [30], Fitch town (24.4%) [31], Harari region public health facilities 45.4% [15], Raya Kobo district Northwest Ethiopia (38.8%) [32], rural population of northwest Ethiopia (26.8%) [33], rural community of Sidama south Ethiopia (41%) [34], Mizan Aman town (21.9%) [35], Sodo zuria district of Wolaita zone (20.6%) [36], and Motta town (20.3%) [37]. This difference might be due to the difference in the studies setting. This could be due to the residency of the study participant as in this study about 80% of the study participants were living in urban and this could make them to have more accesses to get health institution.

The finding is also lower than from studies conducted in Uganda (31.3%) [38], Nepal (26.5%) [39], Egypt (58%) [40] and India (40.1%) [41]. The probable reason for this discrepancy might be the cultural difference of the study participant and the study sitting.

In our study, PLF is higher than the 2016 EDHS report, which shows that 8% of children received PLF [12]. The possible reason for this difference might be the sample size of the study, as EDHS were conducted on the large sample size. PLF practice in this study, is also higher than studies conducted in North Wollo (10.8%) [42], Aksum town (10.1%) [20], and North-eastern Ethiopia (11.1%) [43]. The probable reason might be the difference in cultural practice between the ethnic groups. The finding also slightly higher than studies conducted in Nigeria (11.7%) [44], and India (10.2%) [45]. The possible reason for this discrepancy might be the difference in the study participants, the study area and the cultural beliefs of the population between the countries may be different.

Table 5 Logistic regression analysis for pre lacteal feeding among mothers who attended the child immunization clinic in the public health facilities of Dire Dawa administrative city, Eastern Ethiopia, 2021

Variables	PLF		COR (95%-CI)	AOR (95%-CI)	P- value
	Yes	No			
Age, y					
15-24	37	125	3.58 (1.75-7.32)	3.39 (1.21-9.51)	0.020*
>25-40	11	133	1	1	
Residency					
Rural	18	44	2.92 (1.50-5.69)	0.82 (0.23-2.88)	0.756
Urban	30	214	1	1	
Educational level					
No-formal education	13	37	3.66 (1.54-8.70)	1.38 (0.33-5.75)	0.661
Primary education Secondary and above	23	96	2.50 (1.18-5.27)	2.84 (0.82-9.78)	0.099
	12	125	1	1	
Parity					
Primipara	22	60	2.79 (1.48-5.28)	0.35 (0.11-1.12)	0.077
Multipara	26	198	1	1	
History of ANC visits					
No	35	22	28.88 (13.34-62.51)	4.71 (1.32-16.81)	0.017*
Yes	13	236	1	1	
Counselled on timely initiation of breastfeeding					
No					
Yes	39	69	11.87 (5.47-25.78)	0.89 (0.19-4.10)	0.884
	9	189	1	1	
Counselled on EBF					
No	43	66	25.02 (9.51-55.82)	4.10 (1.03-16.27)	0.045*
Yes	5	192	1	1	
Place of delivery					
Home	18	26	3.54 (2.63-10.90)	3.50 (1.12-10.97)	0.031*
Health institution	30	232	1	1	
Mode of delivery					
Caesarean section	16	25	4.66 (2.25-9.65)	4.23 (1.27-14.13)	0.019*
Vaginal delivery	32	233	1	1	
Timing at which breast feeding was initiated					
After one hour					
Within hour	40	51	20.29 (8.95-46.01)	3.08 (1.01-9.48)	0.049*
	8	207	1		
Counselled on breast feeding immediately after delivery					
No					
Yes	17	46	2.53 (1.29-4.95)	0.48 (0.14-1.39)	0.163
	31	212	1	1	
Practice of colostrum feeding					
Poor	40	58	17.24 (7.64-38.89)	3.80 (1.20-12.04)	0.023*
Good	8	200	1	1	
Knowledge on colostrum and breast feeding					
Poor	36	78	6.92 (3.42-10.02)	4.31 (1.54-12.10)	0.005*
Good	12	180	1	1	

*Indicates that (Significant at a P-value of <0.05)

In our study, socio-demographic and reproductive characteristics, practice and knowledge related factors were significantly associated with PLF. Mothers who are found in the age group of 15-24 years were 3.93 times more likely practiced PLF. This finding is in line with a study conducted in India [41]. The possible reason might be mothers who are found in the age group of greater than 25 years may have more experience on breastfeeding as majority

of them are multiparous.

Mothers who have no history of ANC visits were 4.71 times more likely gave PLF. The possible reason might be having more ANC visits may increase the chance of getting information about breastfeeding in the form of health education or counselling [15,20,34].

Mothers who are not counselled on EBF were 4.10 times more likely give PLF. This finding is supported by studies conducted in Fitch town, Sodo zuria district, Wolaita zone, north eastern Ethiopia and 2016 EDHS secondary data analysis [31,36,43,46]. The other probable explanation might be having ANC visits may increase their chance of getting information regarding to the advantage of EBF starting from the first day of delivery for the next six months by avoiding PLF. Lack of receiving counselling about breastfeeding associated with the practice of PLF [27].

Giving child birth at home increase the chance of giving PLF by 3.50 times. This is in line with the EDHS 2016 secondary data analysis, report and studies conducted in Debre Berhan district, Ray Kobo, Debre Markos town, Mettu district, Harari Region Public Health Facilities, systemic review and meta-analysis in Ethiopia and a study in India shows that mother who were gave birth at home were more likely practiced PLF [15,23,25,26,32,41,47,48]. The possible reason might that mothers who gave birth at home may practice colostrum avoidance and when they try to avoid the colostrum they may also practice PLF until the breast milk become white. Home deliveries are usually attended by traditional birth practitioners whom mostly lack knowledge about the ill effects of PLFs, and these attendants may promote this practice.

Mothers who gave child birth by caesarean were 4.27 times more likely practice PLF. This finding is consistent with EDHS 2016 secondary data analysis and studies conducted Aksum town and Mettu district [20,26,47]. The result is also consistent with studies conducted in Uganda, Egypt and India [28,38,40]. The possible reason might be caesarean section may hamper immediate colostrum feeding due to post anaesthesia or postoperative effects [28]. The anaesthetic effects of the operation and the pain may delay the recovery of mothers and during this interval, the caretakers may provide alternative feeding for the babies [20].

Mothers who are started breastfeeding after one hour of delivery were 3.08 times more likely practiced PLF. This finding is in line with a secondary data analysis on EDHS 2016 and a study conducted in Harari Region Public Health Facilities shows that late initiation of breastfeeding was positively associated with the practice of PLF [15,46]. The possible reason might those mothers who practiced PLF may have less information about breastfeeding and because of this, may practice PLF by delaying timely intention of breastfeeding [25].

Having a poor practice of colostrum feeding increase the chance of giving PLF by 3.80 times. The probable reason might be those who have poor knowledge on colostrum feeding were discarding it and instead they may practice PLF until the colour of the breast milk becomes white. There are supporting evidence from studies conducted in Aksum town, North Wollo, rural eastern zone of Tigray, north eastern Ethiopia, Sodo zuria district, Wolaita zone and Jinka town [20,27,36,42,43,49]. This might be because those mothers may believe that PLF has some advantages and/or have cultural practice to feed other than breast milk, thus make them more likely to feed pre-lacteals [17].

Mothers who had poor knowledge on colostrum and breast feeding were 4.31 times more likely give PLF. The possible reason might be having poor knowledge on breastfeeding and on the

possible risk of PLF may increase the chance of practicing PLF. There is a supporting finding from a study conducted in Fitch town shows that mothers who are not knowledgeable about the risk of PLF were more likely practiced PLF compared to knowledgeable mothers [31]. Additionally, a study conducted in Jinka town also shows that having poor knowledge on breast feeding practice associated with the practice of PLF [27].

Limitation

Since this study included mothers whose index child age was up 12 months, recall bias might be occurred.

Conclusion and Recommendation

In our study, practice of PLF among mothers who have an infant less than twelve months of age was high when compared to the 2016 EDHS report (8.0%). Among the predictors: age of the mother, having no history of ANC visit, not counselled on EBF during ANC visit, primiparity, home delivery, cesarean section delivery, poor practice on colostrum feeding and poor knowledge on colostrum and breast feeding were significantly associated with PLF. Even if in our study less than one fifth of the mothers gave PLF, still its gap is wide with the WHO recommendation on breast feeding. Therefore, a massive awareness creation on the dangers of PLF and discouraging it is needed. As well as promoting ANC visit for all pregnant women, because ANC visit is a good opportunity to promote to have a skilled attendance at birth and to counsel and educate mothers on essential healthy behaviours like newborn feeding.

Ethical Approval

Ethical clearance was obtained from the Institutional Review Board of Bahir Dar University, School of Chemical and Food Engineering Department of Applied Human Nutrition and letter of permission was obtained from the Dire Dawa administrative city health Bureau. The purpose of the study was explained for each mother. A written consent was obtained from each study participants for those ages greater than or equal to 18 years and from parents/guardians for those ages less than 18 years. All respondents assured that the data would not have any negative consequence on any aspects of their life.

Competing Interests

The author declares that they have no conflict of interest.

Authors' Contributions

All authors contributed to the conception of the research idea, study design, data collection and supervision, analysis and interpretation of the result, and manuscript write-up. All authors have read and approved the final manuscript.

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