

Magnitude and associated factors of prelacteal feeding practices among mothers of under one-year-old children in rural pastoralist communities of Afar, North Eastern Ethiopia: A community based cross-sectional study

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Abstract

Background

In Ethiopia, inappropriate feeding, including prelacteal feeding, is one of the immediate causes of undernutrition. The objective of this study was to assess the magnitude and associated factors of prelacteal feeding practices among mothers of children aged less than one year in Rural Pastoralist Communities of Afar, Ethiopia.

Methods

A cross-sectional study was conducted in the Afar Region, Ethiopia from May to June 2016. A total of 424 mothers were included in the study. A two-stage cluster sampling technique was used to select sample clusters and households. A pre-tested and structured questionnaire was used as a data collection instrument. SPSS version 25 was used to analyze the data. Model goodness of fitness was assessed using Hosmer and Lemeshow test. Multi-collinearity between independent variables was checked. Binary logistic regression analysis was used to identify the association between the explanatory variables and prelacteal feeding practices. Multivariable logistic regression was also used to determine the independent predictors of prelacteal feeding practices.

Result

In this study, 75.7% (95 % CI 71.1%, 79.7 %) of mothers gave prelacteal feeds to their newborns. The odd of prelacteal feeding was 2.32 times higher in mothers whose husbands didn't attend formal education as compared to their counterpart (AOR = 2.32, 95% CI: 1.18-4.5). The odds of prelacteal feeding was 7 times higher for infants delivered at home compared to infants delivered at a health facility (AOR = 7.52, 95% CI:3.44, 16.45). Failure to have skin to skin contact between the mother and the newborn increases the odds of prelacteal feeding by 5 times than their counterparts (AOR=5.12, 95%CI: 2.14, 12.21).

Conclusion: Three-fourth of the children in Rural Pastoralist Communities of Afar received prelacteal feeding. Home delivery, no husband education and failure of skin to skin contact immediately after birth were found to be independent predictors of prelacteal feeding in the pastoralist communities. Strengthening the behavior change communication on optimal infant and young child feeding, promotion of husband education and institutional delivery and skin to skin contact immediately after birth are the recommendations to minimize prelacteal feeding practice.

Keywords: Children, Mothers, Prelacteal, Feeding, Pastoralist, Afar, Ethiopia

Background

According to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), children have to initiate breastfeeding within the first hour of birth, feed colostrum, exclusively breastfeed for the first six months of life, introduce appropriate complementary feeding at 6 months of age and should continue breastfeeding up to 2 years and beyond. From birth to 6 months of age, children should take only breast milk, no other foods or liquids even water except medicines prescribed by health professionals [1,2]. The early initiation of breastfeeding is critical to newborn survival and to establishing breastfeeding over the long term. If the initiation of breastfeeding is delayed or if prelacteal is given, the consequences can be life-threatening. Improving breastfeeding practices could save the lives of more than 800,000 children under 5 every year. Breastfeeding boosts children's brain development and mother will be less risk for breast cancer, ovarian cancer and type 2 diabetes [2]. Optimal infant and young child feeding practices rank among the most effective interventions to improve child health [3]. Adequate diets and related feeding practices are essential to ensure the health, growth, and development of children to their full potential. The first breast milk contains colostrum, which is highly nutritious and has antibodies that

protect the newborn from diseases. Prelacteal feeding is feeding of newborn anything other than breast milk before breast milk is initiated. It deprives the child of the valuable nutrients and protection of colostrum and exposes the newborn to the risk of infections [4]. Prelacteal feeding practice is a worldwide problem which ranges from 10.8% in Malawi to 75.2% in Burkina Faso in Sub-Saharan Africa, from 40.9% in Nepal to 93.9% in Cambodia in South Asia and from 26.7% in Nicaragua to 46.2% in Dominican in Latin America and the Caribbean [5]. Over two-thirds of deaths among under-five children are associated with inappropriate feeding practices that occur during the first year of life [6]. In Ethiopia, 8% of children received prelacteal feeding [7]. Systematic review and meta-analysis on prelacteal feeding practice was conducted in Ethiopia and found a pooled magnitude of prelacteal feeding practice 26.95% but the magnitude in the primary studies were ranging from 6.1% (SNNPs) to 75.8% (Oromo Region) [8]. Inappropriate feeding including prelacteal feeding is one of the immediate causes for undernutrition. According to the global nutrition report of 2017, globally about 22.2% (150.8 million) of under-five children were stunted, 7.5 % (50.5 million) were wasted [5]. By the same token, about 37%, 21%, and 7% of under-five children in Ethiopia are stunted, underweight and wasted respectively. This high

burden of undernutrition contributes to the high child mortality rate. According to mini EDHS, 2019 neonatal mortality, infant mortality and under-five mortality are 30, 43 and 55 per 1,000 live births respectively [9]. By considering the burden and consequences of the problem, the government of Ethiopia established the National Nutrition Programme II (NNP II) and the National Guideline on Adolescent, Maternal, Infant, and Young Child Nutrition (AMIYCN) in 2016 and nutrition and food policy in 2019 to promote optimal feeding and care practices in all Regional States of Ethiopia [7]. Of course the practice of prelacteal feeding decreased from 29% in 2005 to 27% in 2011 and dropped further to 8% in 2016 but despite this effort and reduction, still prelacteal feeding is highly practiced in Ethiopia. Prelacteal feeding predisposes newborns for acute respiratory tract infections and diarrhea. Furthermore, prelacteal

feeding was linked with poor breastfeeding outcomes such as higher odds of delayed initiation, non-exclusive breastfeeding and early cessation of breastfeeding, and delayed secretion of breast milk. Despite the negative health and nutritional consequences of prelacteal feeding, little is known about it in the Afar region. It is crucial to study prelacteal feeding practices as a barrier to optimal breastfeeding practices, especially for exclusive breastfeeding. Thus, this study was aimed to assess the magnitude and associated factors of prelacteal feeding practices among mothers of children aged less than one year in Rural Pastoralist Communities of Afar, Ethiopia. The finding of this study could help health professionals, program managers and implementers to design and implement interventions to reduce prelacteal feeding and promote optimal breastfeeding practices.

Methods

Study area

The study was conducted in the Afar Regional State, Ethiopia. Afar Regional State is one of the nine regional states of Ethiopia and has a total surface area of 97, 256 km². Afar is bordered by Eritrea and Tigray in the North, Oromia regional state in the South, Republic of Djibouti in the East and Amhara regional state in the West. Afar is classified under the desert and semi-desert agro-ecological zone. The majority of the area in the region is low land having an altitude of 200 meters Below Sea Level to 1500 meters Above Sea Level. Administratively, the region is divided into 5 zones, 32 woredas, 2 city administrations and 402 rural kebeles with a total population of 1.769 million as projected for the year 2015. The female population in the reproductive age group contributes 22.8% (404,017) of the total population and 50,857 numbers of live births are expected per year with an under-five population of 10.1% (178,972). The study was conducted in all woredas of zone one.

Study design and period

The study design was community-based cross-sectional and it was conducted from May to June 2016.

Study population

The study populations were women of 15–49 years of age who had given birth (excluding stillbirths) in the previous one year preceding the study.

Sample size and sampling technique

A sub-sample of all women (n = 424) with 0 – 11 months old children and answered the questionnaire about prelacteal feeding practice were included from the Integrated Community based Case Management of Childhood illness (ICCM) baseline survey for Emory University. Zone one of the Afar region was purposively selected as it was a site for the ICCM and community based new born care (CBNC) project of Emory University. All of the eight Woredas in the zone were included in the study and it is believed that these can be representatives of the whole context of the Afar region with respect to child health care and other characteristics of mothers and children. A two-stage cluster sampling technique was used to select sample clusters and households. The primary sampling units (PSU) for the study were Kebeles which are located in the woredas and the secondary sampling units were households. The total number of households with children were chosen from each woreda as determined by proportion to population size (PPS) using the number of children as the measure of size. The kebeles (clusters) from each woreda and the households

from the clusters were randomly selected and this information is found somewhere published [10].

Data collection instrument and procedure

A structured questionnaire was used as data collection instruments. The questionnaire was translated to Amharic and field-tested before the actual data collection. Prior to the actual study, the data collectors, supervisors, and coordinators were made to receive five days of training on the objective of the study and data collection tools. Moreover, the designed questionnaire was tested in the field level at a location that has not been selected for the actual study. Based on the result of the pre-test, the data collection tools were reviewed and revised for data collection. Twelve data collectors and six supervisors were deployed.

Data quality assurance procedures

The core team implemented its standard data quality control procedures at each critical stage of the survey design and implementation. Quality assurance started at the very beginning, with the training of data collectors, supervisors and pre-testing of data collection instruments, and covers each stage of the implementation, the physical handling of survey instruments and data, to the final data entry and analysis.

Data entry and cleaning process

The quality of data was further ascertained during the data entry and cleaning process. There was strict supervision throughout the entire period of the data entry process. Ranges and necessary rules for variables were set during data entry, so that unlikely values are rejected. Template and codebook before data entry were checked. Finally, all entered data were visually checked for outliers.

Data management and analysis

SPSS version 25 was used to analyze the data. Descriptive statistical analysis was made to compute the mean, frequencies and percentages Factor (VIF) and there was no Multicollinearity ($VIF < 8$). The data are presented by using textual descriptions and tables.

Result

Socio-demographic and Economic characteristics

A total of 424 mothers participated in this study. The mean age of the respondents was 26.2 years (standard deviation (SD) \pm 5.2 years). Almost all (99.1%) of the participants were Muslims, 97.4% had ethnicity of afar and 98.7% of them were married. The majority (82.8 %) of the husbands and 90.6% of mothers did not attend any formal education. Three hundred thirty-two (78.3%) of them had a monthly income of less than 500 Birr (local currency).

on selected variables. The outcome variable which is prelacteal feeding practice was dichotomized into yes = 1 and no = 0. Binary logistic regression was applied to identify the associated factors. Accordingly, bivariate logistic regression was performed and variables with a p-value < 0.25 were transferred to multivariate logistic regression to identify the risk factors. In the multivariate logistic regression analysis, variables with p-value < 0.05 were taken as statistically significant factors. Adjusted odds ratio with its 95% confidence intervals was also considered to assess the association of the factors with prelacteal feeding. Model goodness of fit was assessed by using Hosmer and Lemeshow test and the p-value for the Hosmer and Lemeshow test was >0.05 which suggests a good model. Multicollinearity between independent variables was checked by using variance inflation

Maternal health service-related factors

The majority (85.4 %) of mothers did have health facilities in their kebele but only 27.6% of mothers had antenatal visits, in which about 53.3 % had ANC follow up at health center and greater than one third (37.4%) had ANC visit greater or equal to four visits. About one-third (32.5%) of the mothers got nutrition information

Table 1: Socio-demographic and economic characteristics of mothers of under one-year-old children in Rural Pastoralist Communities of Afar, Ethiopia, 2016

variables		Frequency	Percentage
Age of respondents	<20 years	43	10.1
	20-34 years	352	83.0
	>34 years	29	6.8
Age at first marriage	<=16 years	279	65.8
	>16 years	129	30.4
Radio in house	No	326	76.9
	Yes	98	23.1
TV in house	No	418	98.6
	Yes	5	1.2
Total monthly income of the household	<=500Birr	332	78.3
	501-999Birr	39	9.2
	>=1000Birr	53	12.5
Maternal formal education	No	384	90.6
	Yes	40	9.4

during ANC visits. Above 60% of mothers start ANC follow up during their second and third trimester period and the majority (88.9%) of the mothers gave birth at home.

Early neonatal feeding practices

In this study, 75.7% (95 % CI 71.1%, 79.7 %) of mothers gave prelacteal feeds to their newborns. The most common prelacteal foods given were non-human milk (44.8 %), butter (23.1%), sugar and water (5.2%), date (1.7%) and water

(0.5%).. The reasons for giving prelacteal feeding were traditions (63.7%), no enough breast milk (20.9%) and advice by friends or relatives (4%).

Table 2: Health services characteristics of mothers of under one-year-old children in Rural Pastoralist Communities of Afar, Ethiopia, 2016			
variables		Frequency	Percentage
The health facility in the kebele	No	61	14.6
	Yes	358	85.4
ANC follow up	No	307	72.4
	Yes	117	27.6
ANC visit at a health post	No	82	67.2
	Yes	40	32.8
ANC visit at home by a health extension worker	No	119	97.5
	Yes	3	2.5
ANC visit at a health center	No	57	46.7
	Yes	65	53.3
ANC visit at a governmental hospital	No	106	86.9
	Yes	16	13.1
Frequencies of ANC follow up	Only a visit	18	14.9
	Two visits	28	23.1
	Three visits	33	27.3
	4+ visits	42	34.7
At what trimester ANC follow up started	First trimester	45	37.2
	Second trimester and above	76	62.8
Nutrition information received during ANC follow up	No	83	67.5
	Yes	40	32.5
	Yes	38	9.0
Counseling on breastfeeding	No	3	7.5
	Yes	37	92.5
Skin to skin contact between mother and newborn immediately after delivery	No	388	91.9
	Yes	34	8.1
Place of delivery	Home	377	88.9
	Health facility	47	11.1

Factors associated with prelacteal feeding practice

Binary logistic regression analysis was done to identify possible associated factors for prelacteal feeding practice. Initially bivariate logistic regression analysis was applied to identify variables for multivariate logistic regression analysis at a p-value of < 0.25 . In the bivariate analysis, place of delivery, age at first marriage, presence of health facility in the kebele, maternal education status, availability of radio, paternal education status, ANC visit, skin to skin contact between mother and the newborn immediately after birth had p-value < 0.25 . Then, these variables were transferred to the multivariable logistic regression model.

In the multivariable logistic regression analysis women of husbands without formal education, home delivery, and failure to make the skin to skin contact between the mother and the newborn immediately after birth were found to be independent predictors of prelacteal feeding practice at a p-value of < 0.05 . The odd of prelacteal feeding was 2.32 times higher among mothers whose husbands didn't attend formal education as compared to their counterpart

(AOR = 2.32, 95% CI: 1.18-4.5). The odds of prelacteal feeding was 7 times higher for infants delivered at home compared to infants delivered at a health facility (AOR = 7.52, 95% CI: 3.44 – 16.45). No skin to skin contact between the mother and the newborn increases the odds of prelacteal feeding practice by 5 times than their counterparts (AOR=5.12, 95%CI: 2.14-12.21). *significant at p-value <0.05 , COR= crude odds ratio, AOR= adjusted odds ratio

Table 3: Bivariate and multivariate logistic regression of factors associated with prelacteal among mothers of under one-year-old children in Rural Pastoralist Communities of Afar, Ethiopia, 2016.

Variables		Prelacteal feeding practice		COR (95%CI)	AOR (95%CI)
		No	Yes		
Formal education of the husband	No	68	283	3.72(2.18-6.34)	2.32(1.18-4.55)*
	Yes	34	38	1	
Formal education of Mother	No	82	302	4.07(2.09-7.93)	1.672(0.705-3.96)
	Yes	21	19	1	
Age at first marriage	≤ 16 years	61	218	0.723(0.448-1.166)	0.22(0.29-1.645)
	> 16 years	36	93	1	
Availability of radio	No	74	252	1.43(0.86-2.37)	1.53(0.84-2.77)
	Yes	29	69	1	
Availability of health facility in the kebele	No	8	53	2.39(1.09-5.21)	2.02(0.81-5.05)
	Yes	48	69	1	
ANC visit	No	55	252	3.18(1.99-5.09)	1.47(0.82-2.62)
	Yes	48	69	1	
Place of delivery	Health facility	35	12	1	
	Home	68	309	13.25(6.54-26.857)	7.52(3.44-16.45)*
Skin to skin contact	No	79	309	8.17(3.8-17.48)	5.12(2.1-12.21)*
	Yes	23	11	1	

Discussion

This study revealed that the magnitude of pre-lacteal feeding practice in Afar Regional State was 75.7%. This practice interferes with colostrum feeding and exclusive breastfeeding in the first few days after birth. This affects optimal breastfeeding of the child and it has a serious negative implication on child nutrition and health. The magnitude in this study was in line with the finding of study conducted in Vietnam [11] which was 73.3%. However, this magnitude was higher as compared to magnitude reported from studies conducted in Aksum town [12], Raya Kobo district [13], rural Sidama [14], Wolaita zone [15], Mettu district [16], Harari Region [17], Motta Town [18], Bahir Dar City [19], DebreBerhan district [20], DebreMarkos town [21], Ethiopia [22] which was 10.1%, 38.8%, 25.5%, 20.6%, 14.2%, 45.4%, 20.3%, 26.3%, 14.2%, 19.1%, 28.9%, respectively. The difference might be due to the discrepancies in socio-demographic and economic status, health service availability and utilization. Similarly, this finding is higher than findings from studies conducted in the same regional state (Afar) but the urban area which includes Dubati town 16.8% [23] and Semera city 62.5% [24]. However, the current study includes both urban and rural areas. Again this magnitude was higher than magnitude reported from studies conducted in South Sudan [25], India [26], Nepal [27]

which was 53%, 22.4%, 32.7%, respectively. This might stem from differences in cultural beliefs and practices, study setting, health and nutrition policy, and strategies. But, it is lower as compared to the magnitude reported from studies conducted in rural Nigeria 85.2% [28]. In this study, the most frequently used type of pre-lacteal feed was non-human milk (44.8%) and butter (23.1%) which is similar to the findings of other studies [11, 12,29,30].

The odds of practicing pre-lacteal feeding among mothers who gave birth at home were 7 times higher than mothers who gave birth at a health facility (AOR=7.52; 95% CI: 3.44,16.45). This finding is similar to a study conducted in Raya Kobo district [13], Mettu district [16], Harari Region[17], Debre Berhan district [20], Debre Markos town [21], Bahir Dar City [19], Ethiopia [8]. Those mothers who gave birth at health institutions could get information on the advantage of optimal breastfeeding and disadvantage of pre-lacteal feeding from health professionals which can result in avoidance of pre-lacteal feeding. Those mothers who gave birth at home could be influenced by family/relatives and friends to practice pre-lacteal feeding. This study showed that nearly two-thirds (63.7%) of mothers practiced pre-lacteal feeding by the influence of tradition. Again, this could be due to the low literacy rate of the mothers in the region which was in this study

9.4% and a little less than three fourth (72.4%) of the mothers didn't have ANC follow up.

Women whose husbands did not attend formal education were about 2 times more likely to practice prelacteal feeding as compared to those whose husbands attended formal education (AOR=2.32;95%; CI:1.18, 4.55). This might be due to the fact that women of husbands who attended formal education might have good knowledge of optimal breastfeeding and increased utilization of health services. A similar finding was found from a study conducted in the Afar regional state [31]. Failure to make the skin to skin contact between the mother and newborn immediately after delivery was found to increase prelacteal feeding by five times as compared to their counterparts. This study had some limitations. First, this study used a cross-sectional study design, making it difficult to establish causal relationships. Secondly, since the information gained was based on the recall, there could be a possibility to have recall bias and lastly but not least there was no assessment of knowledge and attitude of mothers towards prelacteal feeding.

Conclusion

Three-fourth of the children in Rural Pastoralist Communities of Afar received prelacteal feeding. Home delivery, lack of husband education and failure of skin to skin contact immediately after birth were found to be independent predictors of prelacteal feeding in the pastoralist communities. Strengthening the

behavior change communication on optimal infant and young child feeding, promotion of husband education and institutional delivery and skin to skin contact immediately after birth are the potential recommendations helping to minimize prelacteal feeding practice.

Abbreviations

AMIYCN	National Guideline on Adolescent, Maternal, Infant, and Young Child Nutrition
CBNC	Community Based New Born Care
EDHS	Ethiopia Demographic and Health Survey
ICCM	Integrated Community based Case Management of Childhood illness
NNP II	National Nutrition Programme II
SNNP	South Nation, Nationalities and Peoples
TBA	Traditional Birth Attendant
UNICEF	United Nations International Children Emergency Fund
WHO	World Health Organization

Competing of interest:

The authors declare that they have no competing interests

Authors' contributions

AM, HM, and AG were involved in conceptualization, data collection, analysis, and manuscript writing. KB, HT, and GG were involved in data cleaning, analysis, manuscript writing and reviewing. All authors read and approved the final manuscript. All authors contribute equally.

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