



Assessment of Knowledge, Attitude, and Practice of Colostrum Feeding Among Lactating Women in Northeast Ethiopia

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Abstract

Background: Early initiation of breastfeeding along with colostrum is the key pathway for reducing malnutrition and preventing child mortality. World Health Organization (WHO) recommends every newborn baby to feed breast milk within 1-hour of birth and feed colostrum. However, in Ethiopia, colostrum feeding is poorly practiced and culture makes a difference in the acceptability of colostrum. Thus, the study aimed to assess the knowledge, attitude, and practice of colostrum feeding among lactating women in Northeast Ethiopia, 2021.

Methods: An institution-based cross-sectional study was done in Debre Berhan town from May to June 2021. A systematic random sampling technique was used to recruit 308 participants. The data was cleaned, coded, and entered into Epi-Info software version 7.2.1 and exported to SPSS version 24.0 statistical software for analysis. Univariable analysis was computed and the finding was summarized using frequency tables. For continuous variables, means and standard deviations were computed.

Result: The overall prevalence of good knowledge, favorable attitude, and good practice of colostrum feeding among participants was 74%, 69.4%, and 56.2%, respectively. Believe that colostrum feeding causes abdominal pain and diarrhea (51.2%), and culture (30%) were the main reasons for avoidance of colostrum. About 26.9% of mothers initiate prelacteal feeding. Butter and non-human milk were the commonest prelacteal feedings.

Conclusion: The knowledge, attitude, and practice of colostrum feeding were very low. Health education dissemination should be given to all reproductive age groups, pregnant and postnatal mothers, and community members regarding the importance of colostrum and avoidance of prelacteal feeding. Besides, emphasis should be placed on harmful cultural practices to increase the level of practice.

Keywords

Knowledge, Attitude, Practice, Colostrum, Ethiopia

List of abbreviations/Acronyms

ANC: Antenatal Care; CSA: Central Statistical Agency; EDHS: Ethiopia Demographic and Health Survey; EPI: Expanded program of immunization; KAP: Knowledge, Attitude and Practice; UNICEF: United Nation Children's Fund; WHO: World Health Organization

Introduction

Colostrum is the first milk produced by the mammary glands of mammals immediately following the birth of the newborn and continuing through the early days of breastfeeding [1]. This is the most suitable food for the newborn and ensures the neonate's adaptation and successful transition to independent postnatal life. This special milk is thick, sticky, and yellow to orange in color [2]. It is very rich in proteins, carbohydrates, immunoglobulins, vitamin A and sodium chloride, but contains lower amounts of lipids, fat,

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and potassium than normal milk. Thus, it helps to fight against various viral, bacterial, fungal, and protozoal infections. Besides, it protects against childhood and adolescent illnesses, i.e., pneumonia, diarrhea, overweight, obesity, various cancers, asthma, allergies, and autoimmune diseases that are difficult to treat [3].

Early initiation of breastfeeding (provision of breast milks to infants immediately/within 1-hour of birth) is important for both the mother and the child and confirms that the infant receives the protective milk, the colostrums [4]. Early initiation of breastfeeding protects the newborn from diseases, encourages bonding between the mother and her newborn, facilitates the production of regular breast milk, and helps the uterus contract, reducing the postpartum hemorrhage [5]. In addition, colostrum has a laxative effect that encourages passage of the baby's first stool (meconium) which in turn helps to clear excess bilirubin produced in large quantities at birth and helps prevent jaundice [2]. For most children breastfeeding makes the difference between life and death and is the infants' "passport to life". Colostrum is also considered the first vaccine for newborns. Even if it is secreted in small amounts (30-100 ml per day), the mothers need to be explained that this small amount of colostrum is adequate for the infant and must not be discouraged [5].

A secondary analysis of the WHO Global Survey on Maternal and Perinatal Health indicated that the prevalence of early initiation of breastfeeding (EIBF) ranges from 17.7% to 98.4% (average 57.6%) [6]. According to data from 35 Sub-Saharan Africa (SSA) Demographic and Health Surveys (DHS), the timely initiation of breastfeeding in SSA is 58%, ranging from 24% in Chad to 86% in Burundi [7]. In Ethiopia, 73% of children begin breastfeeding within 1 hour after birth, 92% of infants breastfed within 1 day of birth, and 8% of children receive prelacteal feeding. Amhara region is the third-lowest region in the level of early initiation of breastfeeding (66%) [5].

Malnutrition has been a cause directly or indirectly for millions of deaths annually among under-five children. Globally in 2020, over 149 million children under 5 were estimated to be stunted, 45 million were wasted, and 38.9 million were overweight or obese. Undernutrition accounts for about 45% of deaths among under 5 years of age. They are the most vulnerable groups to ill health. These mostly occur in low- and middle-income countries particularly in Southern Asia, Asia, and Africa. However, the number of children with stunting has declined in all regions except Africa [8]. One of the main reasons for undernutrition is delayed breastfeeding along with colostrum avoidance [9]. Additionally, newborns who initiated breastfeeding 2–23 hours after birth had a 33% greater risk of neonatal mortality, and those who initiated after 24 hours of birth had an 85% greater risk of neonatal mortality than those initiated within 1-hour of birth [10]. Universal optimal breastfeeding could save more than 800,000 child death per year [11], and an estimated 20,000 annual deaths from breast cancer [12].

In a study of Wolaita Zone, 66% of mothers were knowledgeable and 70% had a positive attitude towards colostrum feeding [3]. Though 90% of mothers in the Tigray

region knew about colostrum feeding, only 48% of them started colostrum feeding within 1-hour of birth [1]. According to a study done in Bench Maji Zone, 66.6%, 69.4%, and 72.4% of mothers had good knowledge, positive attitude, and practice colostrum feeding, respectively [2]. In Debre Tabor, 74% of mothers gave colostrum to their index children [13].

In Harar town, 8% of mothers discourage colostrum feeding because of increased abdominal cramping (45%), difficulty to digest (18%), and belief it is polished (36%) [14]. Similarly, in Debre Tabor, 12% of mothers thought that colostrum doesn't contain sufficient milk secretions [13]. Further, in North-Eastern Ethiopia, 13.5% of mothers discard colostrum. The reasons for colostrum avoidance were a belief that colostrum is not good (26%), traditional (23.5%), and thought colostrum milk is dirty (22.4%) [15]. The 2016 Ethiopian Demographic Health Survey (EDHS) results showed that the neonatal, infant and under-5 mortality rates were 29, 48, and 67 deaths per 1,000 live births, respectively [5]. Besides, in Ethiopia, colostrum feeding is still unsatisfactory. These major child deaths can be reduced by immediate initiation of breastfeeding and colostrum after birth [11]. Thus, this study aimed to assess the knowledge, attitude, and practice of colostrum feeding among lactating women in North Shewa Zone, Ethiopia, 2021.

Methods

Study setting, design, and population

An institution-based cross-sectional study was done in Debre Berhan town from May to June 2021. Debre Birhan is the capital city of the North Shewa Zone of Amhara Region and is located 130 km Northeast of Addis Ababa on the Ethiopian highway. It is the highest town in Africa with an elevation of 2840m. Debre Berhan has fourteen kebeles with a total population of 110,500; of whom 14,966 are children under five years. The town has 2 hospitals, 3 Health centers, 14 clinics, and around 20 pharmacies.

All lactating women presented for an expanded program of immunization (EPI) in the North Shewa Zone health facilities were the source population. All lactating women who fulfilled the inclusion criteria and were available at the time of the data collection were the study population. Randomly selected mothers with infants less than 6 months of age presented for EPI were included. Lactating mothers with known chronic illnesses (Hepatitis B/C and HIV/AIDS), had active herpes simplex virus infection with lesions present on the breast, who delivered premature baby, and birth defects (cleft lip/palate) were excluded from the study.

Sample size, sampling technique, and procedure

The sample size was determined using Open Epi Version 3.03. The following assumptions were considered: 95% confidence level, 5% margin of error, and proportion, 74.4% of practice of colostrum feeding [13]. Adding a 5% non-response rate, the final sample size equals 308.

The number of mothers with infants less than 6 months of age visiting the health facilities was obtained from the respective health institutions' EPI registration book. Then

systematic random sampling was applied to proportionally select mothers from all health institutions included in the study.

Data collection tool, quality control, and statistical analysis

A structured and pre-tested interviewer-administered questionnaire was used to collect data. The questionnaire was adapted from different works of literature and modified according to the local context. The questionnaire was first prepared in English and then translated to the local language, Amharic, and then back to English to maintain consistency. The questionnaire was pre-tested on 5% of the samples in Deneba health center which was not selected in the study. The questionnaire was modified based on the result obtained from the pre-test. In addition, a one-day training was given to the data collectors and supervisors about the objective and methods of data collection. The supervisor and principal investigators daily checked and reviewed the data for completeness, clarity, and consistency.

The data was cleaned, coded, and entered into Epi-Info software version 7.2.1 and exported to SPSS version 24.0 statistical software for analysis. Univariable analysis was computed and the finding was summarized using frequency tables. The means and standard deviations were estimated for continuous variables.

Measurement

Knowledge: Participants who answered greater than or equals to 60% of the knowledge questions were considered to have “Good knowledge”, whereas those who scored below 60% were considered as having “Poor knowledge” [2].

Attitude: Participants who responded greater than or equals to 60% of the attitude questions were considered to have a “Favorable attitude”, whereas those who scored less than 60% were considered as having “Unfavorable attitude” [1,3].

Practice: is the overt habit of feeding colostrum/first thick and yellowish milk to the newborn within the first three days of birth without prelacteal feeding.

Optimal breastfeeding practice: is the early initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding for the first 6 months of life, and continued breastfeeding for up to 2 years or beyond with appropriate complementary feeding beginning at 6 months [9].

Prelacteal feeding: If the newborn is given any solid or liquid foods other than breast milk during the first 3 days of birth.

Ethical clearance

Ethical clearance was obtained from Debre Berhan University, Institute of Medicine and Health Sciences. A cooperation letter was written to the selected health institutions. After explaining the objective and benefits of the study, written informed consent was obtained from voluntary participants. Confidentiality was ensured.

Result

Socio-demographic characteristics

A total of 290 mothers were interviewed in this study making a 94.2% response rate. The mean age of participants was 29+5.45 years. Half of the respondents (52%) belonged to the age group of 20-34 years. About 77.2% of mothers are housewives, and 91.7% of them are married. Regarding monthly income, 41.4% of mothers earn less than 2000 birr per month (Table 1).

Utilization of maternal health service

About 45.9% of mothers had only one child. More than half (53.8%) of women had antenatal care (ANC) follow-up, however, only 7% of them had postnatal care visits. Around 61% of women were counseled about early breastfeeding during antenatal care follow-ups (Table 2).

Knowledge of colostrum feeding

More than half (54.5%) of mothers have heard about colostrum feeding. Health provider (51%) was the main source of information about colostrum feeding. Around 53.8% of mothers know that colostrum is the best nutrition for the newborn (Table 3). The overall prevalence of good knowledge of colostrum feeding among participants was 74%, 95% CI (68.3-79.4).

Attitude towards colostrum feeding

About 38.3% of mothers believe that colostrum causes diarrhea, and 41.7% think that colostrum breast milk is dirty and looks like pus. Besides, more than half of mothers (57.2%) agree that colostrum is important for growth and mental development (Table 4). Overall, 69.4%, 95% CI (64-74.5) of mothers had favorable attitudes towards colostrum feeding.

The practice of colostrum feeding

This study indicated that 56.2%, 95% CI (51.9-60.3) of mothers feed colostrum for their babies within the first three days of birth. Of these, 60.1% of them initiated feeding immediately within one hour and 14.1% of them started after 24 hours. Believe that colostrum feeding causes abdominal pain and diarrhea (51.2%), and culture (30%) were the main reasons for avoiding colostrum feeding. Butter and non-human milk were the commonest prelacteal feedings (Table 5).

Discussion

In this study, 74%, 69.4%, and 56.2% of mothers had good knowledge, favorable attitude, and good practice of colostrum feeding, respectively. The main reasons for colostrum avoidance were a belief that colostrum feeding causes abdominal pain and diarrhea and culture. About 26.9% of mothers initiate prelacteal feeding. Butter and non-human milk were the commonest prelacteal feedings.

In the current study, 74%, CI (68.3-79.4) of mothers had good knowledge about colostrum. Similarly in Pakistan, 70% of mothers had good knowledge about the health benefits of colostrums [16]. In addition, in Nepal, 74% of women had heard about colostrum and 69% of them knew

Table 1: Socio-demographic characteristics of participants in North Shewa Zone, Ethiopia, 2021.

Variables	Category	Frequency	Percent (100%)
Age	< 20	43	14.8
	20-34	151	52.1
	> 34	96	33.1
Mothers' education	No formal education	81	27.9
	Primary school	87	30.0
	Secondary school	79	27.2
	College and above	43	14.9
Religion	Christian	179	61.7
	Muslim	111	38.3
Residence	Urban	159	54.8
	Rural	131	45.2
Occupation	Housewife	224	77.2
	Government employee	19	6.6
	Private employee	37	12.8
	Daily laborer	10	3.4
Marital status	Single	12	4.1
	Married	266	91.7
	Divorced	12	4.1
Living arrangement	Alone	24	8.2
	With my husband	266	91.7
Partner education	No formal education	69	25.9
	Elementary school	63	23.7
	Secondary school	60	22.6
	College and above	74	27.8
Monthly income (in ETB)	≤ 2000	120	41.4
	2000-4000	98	33.8
	> 4000	72	24.8

ETB: Ethiopian Birr

Table 2: Utilization of maternal health care services in North Shewa Zone, Ethiopia, 2021.

Variable	Category	Frequency	Percent (100%)
Parity	Primigravida	133	45.9
	Multipara	157	54.1
Antenatal care visit	Yes	156	53.8
	No	134	46.2
Number of ANC visits (N = 156)	One time	43	27.6
	Two times	80	51.3
	Three times	22	14.1
	Four times	11	7.0
Counseling about colostrum feeding during ANC visit (N = 156)	Yes	95	60.9
	No	61	39.1
Place of delivery	Health institution	173	59.7
	Home	117	40.3
Mode of delivery	Cesarean section	11	3.8
	Vaginal delivery	279	96.2
Postnatal care visit	Yes	19	6.6
	No	271	93.4

its nutritional advantage [17]. About 73.8% of mothers in the Bench Maji Zone also had good knowledge of colostrum feeding [2]. However, this was higher than the findings from Wolaita Zone [3] which found that 66.1% of participants were knowledgeable on colostrum feeding. This might be due to the differences in socio-economic, culture, and study period. In the current study, 55% of mothers are urban residents compared to 48% in Wolaita Zone. This might increase access to information from various sources (mass media and campaigns). Further, the higher knowledge may be the result

of health information dissemination and awareness creation done by the health extension workers in the study area.

On the other hand, the result was lower than the study conducted in Mekelle city which showed that 89.7% of mothers had good knowledge about colostrum feeding [1]. The variation may be because of the differences in socio-cultural, geographical, and utilization of maternal health care services. In the current study, 53.8% of mothers had antenatal care (ANC) follow-up compared to 83% in Mekelle, 60.9% have been counseled about colostrum during ANC follow-up

Table 3: Knowledge of colostrum feeding among mothers in North Shewa Zone, Ethiopia, 2021.

Variable	Category	Frequency	Percent
Have you ever heard about Colostrum feeding?	Yes	158	54.5
	No	132	45.5
Source of information	Health care provider	148	51.0
	Health extension workers	109	37.6
	Mass Media (TV/Radio)	33	11.4
Colostrum gives natural immunity	Yes	120	41.4
	No	111	38.3
	I don't know	59	20.3
Colostrum is the best nutrition for the newborn.	Yes	156	53.8
	No	107	36.9
	I don't know	27	9.3
Colostrum is thick, sticky, and yellowish.	Yes	254	87.6
	No	34	11.7
	I don't know	2	7.0
Time of initiation of the first breast milk	Within one hour of birth	192	66.2
	Within six hours of birth	56	19.3
	After 24 hours of birth	29	10.0
	I don't know	13	4.5
Day's colostrum will stay	For 1 day	24	8.3
	For 2 days	47	16.2
	For 3 days	131	45.2
	More than 3 days	88	30.3

Table 4: Attitude of mothers towards colostrum feeding in North Shewa Zone, Ethiopia, 2021.

Variables	Agree, n (%)	Disagree, n (%)	Neutral, n (%)
Baby's do not like colostrum breast milk.	52 (17.7)	214 (73.8)	24 (8.3)
Colostrum causes diarrhea for an infant.	111 (38.3)	159 (54.8)	20 (6.9)
Colostrum makes the baby sick.	111 (38.3)	159 (54.8)	20 (6.9)
Colostrum is a dirty part of milk.	121 (41.7)	158 (54.5)	11 (3.9)
Colostrum milk is difficult to digest.	112 (38.6)	160 (55.2)	18 (6.2)
Necessary to discard colostrum.	116 (40.0)	161 (55.5)	13 (4.5)
Colostrum is forbidden in culture.	112 (38.6)	151 (52.1)	27 (9.3)
Colostrum impairs growth and development.	93 (32.1)	166 (57.2)	31 (10.7)

Table 5: Practice of colostrum feeding in North Shewa Zone, Ethiopia, 2021.

Variable	Category	Frequency	Percent
Have you fed colostrum for your baby within the first three days of birth?	Yes	163	56.2
	No	127	43.8
Initiation of first breast milk	Within one hour	98	60.1
	Within six hours	42	25.8
	After 24 hours	23	14.1
Reasons for not feeding colostrum	Medical reason	5	3.9
	The baby can't suck	5	3.9
	Breast can't secrete	14	11.1
	Cause abdominal pain and diarrhea	65	51.2
	Culture	38	29.9
Prelacteal feeding	Yes	78	26.9
	No	212	73.1
If yes, what did you give the baby?	Non-human milk	26	33.3
	Butter	41	52.6
	Plain water	8	10.3
	Water with sugar	78	3.8

compared to 86.7%, and 59.7% of mothers delivered in health institutions compared to 81.5% in Mekelle. The utilization of health services increases access to health education and promotion.

This study found that 69.4%, CI (64-74.5) of mothers had a favorable attitude towards colostrum feeding. This is similar to the studies done in Bench Maji Zone [2], Mekelle [1], and Wolaita Zone [3] which reported that 69.7%, 67.2%, and 69.9% of mothers had a positive attitude about colostrum feeding, respectively. However, this result was lower than 89% in Harar town [14]. This discrepancy might be due to differences in the study setting, socio-cultural deference, and a better understanding of colostrum feeding among the study participants living in Harar city.

This study also assessed the practice of colostrum feeding by mothers and the finding showed that colostrum feeding is practiced by 56.2%, CI (51.9-60.3). WHO recommends every newborn baby to feed breast milk within 1 hour of birth and feed colostrum. This was comparable to the study done in Mizan Tepi Teaching Hospital (60.8%) [2]. A study from Debre Tabor [13] showed that colostrum feeding is practiced by 74.4% of mothers which is higher than the current study. Similarly, it is lower than 72% in Pakistan [16] and 80.5% in Mekelle [18]. The variation may account for socio-demographic differences and cultural beliefs. Debre Berhan communities are more bigoted for culture and religion. In addition, it may be due to variation in information access and utilization of maternal health care services including place of delivery.

According to this study, 43.8% of mothers avoid colostrum. About 51.2% of mothers believe that colostrum causes abdominal pain and diarrhea and 29.9% of them believe that it is culturally forbidden. A study in Pakistan reflected a similar finding where 28% of mothers feel that colostrum is not milk, having harmful effects on child health and may cause diarrhea. Mothers prefer to feed either water, honey, or herbal preparation in place of the colostrums [16]. Similarly, in Mizan Tepi, 60.5% of mothers believe that colostrum harms both the mother and her newborns [2]. A cross-sectional study in Bure identified the reasons for colostrum avoidance and found colostrum causes neonatal illness (2.3%), is culturally forbidden (4%) and is very thick (2.7%) [19]. Further, in the Raya Kobo district, untrained traditional birth attendants believed colostrum causes abdominal cramps and raw butter cleans an infant's stomach. They recommend discarding colostrum and feeding raw butter before initiation of breastfeeding [15]. This could be due to low educational attainment and poor access to information and health care.

Limitation of the study

Participants may answer questions in a manner that would be viewed favorably by others (Social desirability bias). In addition, there may be recall and courteous bias. Since this is cross-sectional fails to establish a causal relationship.

Conclusion and recommendations

The knowledge, attitude, and practice of colostrum feeding were very low. Health education dissemination should be given to all reproductive age groups, pregnant and postnatal mothers, and community members regarding the importance

of colostrum and avoidance of prelacteal feeding. Besides, emphasis should be placed on harmful cultural practices to increase the level of practice.

Data sharing statement

The original raw data are available from the corresponding author and can be presented upon reasonable request.

Ethical approval

This study was approved by the Institutional Review Board of the College of Medicine and Health Sciences, Debre Berhan University, with IRB Protocol number 088/21/CHS. Further, a permission letter was taken from the Debre Berhan town health office. The study was conducted based on the Helsinki declaration for a cross-sectional study.

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Authors contribution

MT conceived and designed the proposal, performed analysis, and prepared the manuscript. WM and GBM critically revised, provided necessary comments, and made basic adjustments to the final paper. All authors approved the manuscript.

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