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Factors Associated with Colostrum Avoidance Among Mothers of Children Aged less than 24 Months in Raya Kobo district, North-eastern Ethiopia: Community-based Cross-sectional Study

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ABSTRACT

Background: UNICEF and WHO recommend colostrum as newborns' perfect food that should be initiated within the first hour after birth.

Objective: To assess colostrum avoidance practices and associated factors among mothers of children aged <24 months in Raya Kobo district, North-eastern Ethiopia.

Methods: A quantitative community-based cross-sectional study supplemented by qualitative method was used. Descriptive statistics, binary and multivariable logistic regression analyses were used in the statistical analysis.

Results: Colostrum avoidance was practiced by 13.5% (95% confidence interval: 10.99–16.33) of mothers having children aged <24 months. In multivariable logistic regression analysis, giving birth at home, mother-heading households, lack of awareness on the advantages of colostrum and late initiation of breastfeeding remained statistically significant factors associated with colostrum avoidance practices.

Conclusion: Promoting institutional delivery, timely initiation of breastfeeding and creating awareness on the advantages of colostrum feeding are recommended interventions to reduce colostrum avoidance.

KEYWORDS: colostrum, Raya Kobo, Ethiopia.

BACKGROUND

Optimal breastfeeding practices rank among the most effective interventions to improve child health [1]. Studies showed that globally 60% of infant and young child deaths attributed to suboptimal breastfeeding practices [1–3]. Suboptimal breastfeeding is responsible for 45% of neonatal infectious deaths, 30% of diarrheal deaths and 18% of acute respiratory deaths in children <5 years of age [4]. The

risk of mortality due to diarrheal and other infectious diseases is higher in infants who are either partially breastfed or not breastfed at all [1]. In Ethiopia, about 18% of the infant deaths have been attributed to poor feeding practices [5].

The practice of optimal breastfeeding starts from the first minute of birth. UNICEF and WHO recommend colostrum as newborns' perfect food that should be initiated within the first hour after birth. Colostrum is the first liquid that is produced in the first few hours after delivery [6]. It is called 'inger' in Amharic language by the rural Amhara communities [7]. Colostrum is thick, sticky and clear to yellowish in color. It contains proteins, vitamin A and maternal antibodies important to the newborn's nutrition until lactation is fully established [6].

Colostrum establishes important bacteria in the baby's gut. It also acts as 'paint', coating the infant's gastrointestinal tract. Therefore, colostrum provides natural immunity (baby's first immunization) against many bacteria and viruses [6, 8]. In contrary to these advantages, colostrum is considered heavy, thick, dirty, toxic and harmful to children's health and therefore in some societies, a portion of colostrum is discarded [7, 9, 10]. This is also a common practice in Ethiopia [11].

Colostrum feeding was recommended in the Ethiopian Infant and Young Child Feeding Guideline that was developed in 2004 [12]. However, colostrum avoidance is still practiced in many parts of Ethiopia including Amhara regional state. Moreover, there is a paucity of evidence regarding factors associated with colostrum avoidance in Ethiopia, particularly in Raya Kobo District. Hence, this study aimed to investigate factors associated with colostrum avoidance among mothers of children aged <24 months in Raya Kobo District, North-eastern Ethiopia.

METHODS

Study design and sampling procedure

This study was conducted in Raya Kobo district of Amhara region, North-eastern Ethiopia from December to 18 January 2014. A quantitative community-based cross-sectional study, supplemented by a qualitative study, was used on mothers of children aged <24 months. In this study, 630 mother–child pairs were included. There are 42 kebeles (the smallest administrative unit in Ethiopia) in Raya Kobo district. One urban kebele and seven rural kebeles were selected by simple random sampling technique for this study. The sample size was proportionally allocated for urban and rural kebeles by assuming there could be a difference regarding colostrum avoidance between urban and rural residents. The households that had eligible study subjects were identified by the assistance of the health extension workers logbook, and systematic random sampling technique was used to choose the household for the interview.

Measurements

In this study, the outcome variable was colostrum avoidance practice among mothers of children aged <24 months. Colostrum avoidance is the failure to feed infants the first, thick and yellowish milk that is produced in the first 3 days after birth [6]. Avoiding colostrum was coded as '1', while colostrum feeding was coded as '0' for regression analysis. The independent variables were maternal characteristics (age, educational status, religion, ethnicity and marital status), household characteristics (area of residence, i.e. urban–rural, household head and family size), husband's educational status, child's sex, antenatal care utilization, place of delivery, breastfeeding initiation and the mother's awareness on the advantages of colostrum feeding. Antenatal care utilization was defined as having at least one visit to a health institution for checkup purpose during the pregnancy of the index child [13].

Data collection instrument and process

Quantitative data were collected using a pretested, structured and interviewer-administered questionnaire adopted from the Ethiopian Demographic and Health Survey [11] and the national nutrition survey questionnaire [14]. The quantitative data were collected by trained data collectors using the Amharic version of the questionnaire. Focus group discussions (FGDs) and in-depth interviews were used to collect the qualitative data by a trained BSc nurse with the assistance of two note takers. The participants for FGD and in-depth interviews were

selected purposively based on their role in the community to explore cultural beliefs about colostrum avoidance practices. Two FGDs were undertaken in a group of grandmothers (women who had at least one grandchild), each composed of eight discussants. The in-depth interviews were undertaken with four traditional birth attendants (two trained and two untrained traditional birth attendants).

Statistical analysis

After the completeness and consistency of the quantitative data were checked on the printed form of the questionnaire, it was cleaned, coded and entered into EpiData version 3.02. The data analysis was performed by using SPSS version 16.0 statistical package for analysis. Descriptive statistics were used to show the prevalence of colostrum avoidance practices, reason for discarding colostrum and the mother's awareness on the advantages of colostrum. Binary and multivariable logistic regression analyses were carried out to identify the factors associated with colostrum avoidance. Variables found statistically significant at p-value <0.25 [15] during binary logistic regression analysis were included in the multivariable logistic regression model. Both crude and adjusted odds ratios (AORs) were reported with 95% confidence interval (CI). Variables at p-value <0.05 in the final multivariable model were concluded as factors associated with colostrum avoidance.

Qualitative data were transcribed into English text by the principal investigator. Thematic framework analysis approach was used to analyze the qualitative data. Finally, the result was presented in triangulation with the quantitative findings.

Ethical consideration

A letter of ethical approval was obtained from the Institutional Health Research Ethics Review Committee of Haramaya University. Permission was obtained from Raya Kobo district and a support letter was written to each selected kebele. Informed written consent was taken from the participants before the interview. Illiterate mothers were consented by their thumb print after verbal consent. The participants were also assured about the confidentiality of the information they provided.

RESULTS

Colostrum avoidance practices

Colostrum was discarded by 13.5% (95% CI: 10.99–16.33) of mothers of children aged <24 months. Among those who discarded colostrum, 25.9% of mothers reasoned out that they believe colostrum is not good. Above 23.5% of the mothers discarded colostrums because it is tradition. About 58% of mothers were not aware about advantages of colostrum (Table 1).

> In relation to colostrum avoidance, a 39 year old discussant said, 'colostrum cannot prevent disease rather it causes abdominal cramp; it is yellowish dirty food that should be discarded' (FGD—Grandmother).

Mothers reported that the most influential individuals for colostrum avoidance were grandmothers (44%), untrained traditional birth attendants (44%) and husbands (12%).

> In support of the idea of colostrum discarding, a 42 year old mother said, 'in our community colostrum is believed to cause abdominal cramp, therefore to prevent such problem as grandmother of children I recommend my daughter to discard colostrum for the first three days before breastfeeding initiation' (FGD—Grandmother).
> A 45 year old woman said, 'Since colostrum causes abdominal cramp and raw butter cleans infants' stomach, I recommend mothers to discard colostrum and to feed their infants with raw butter before breastfeeding initiation. In rich families mothers discard colostrum and feed newborns with raw butter within the first 3–7 days' (In-depth interview—untrained traditional birth attendant).
> A 37 year old woman said, 'Since colostrum is sticky and yellowish it seems dirty, but I recommend mothers to feed their infants with colostrums' (In-depth interview—trained traditional birth attendant).

Binary logistic regression analysis showed that living in rural places, mother-heading households, giving birth at home, late initiation of breastfeeding and

Table 1. Distribution of respondents based on colostrum avoidance practices in Raya Kobo district, 2014

Variable	Frequency (n) (%)
Mother knows what colostrum is? (n = 630)	
Yes	348 (55.2)
No	282 (44.8)
Colostrum discarded (n = 630)	
Yes	85 (13.5)
No	545 (86.5)
Reasons to discard colostrum (n = 85)[a]	
Colostrum is not good	22 (25.9)
Tradition	20 (23.5)
Colostrum is dirty	19 (22.4)
Influenced by other person	16 (18.8)
Infant unable to feed	13 (15.3)
Delayed lactation	11 (12.9)
Colostrum is yellow/thick	9 (10.6)
Awareness on advantages of colostrums (n = 630)	
Yes	366 (58.1)
No	264 (41.9)

[a]Variables with multiple responses.

mothers that did not know advantages of colostrum were statistically associated with colostrum avoidance at p-value <0.25 (Table 2). However, maternal age, educational status, ethnicity, marital status, husband's educational status and antenatal care attendance were not found significantly associated with colostrum avoidance at p-value <0.25 in the binary logistic regression model. Thus, these variables were not included in multivariable regression analysis model.

In multivariable logistic regression analysis, giving birth at home, mother-heading households, lack of awareness on advantage of colostrum and late initiation of breastfeeding remained statistically significant factors associated with colostrum avoidance practices. Household-head mothers were 2.6 times (AOR = 2.6; 95% CI: 1.08–6.44) more likely to discard colostrum compared with mothers who were not household heads. Those mothers who delivered the index child at home were 2.6 times (AOR = 2.6; 95% CI: 1.13–5.79) more likely to discard colos-

trums as compared with mothers who gave birth at health institutions. Mothers who had late initiation of breastfeeding (initiation after 1 h of delivery) (AOR = 2.4; 95% CI: 1.44–4.00) had more odds of discarding colostrum than mothers who initiated breastfeeding within 1 h after delivery. Mothers who did not know advantages of colostrum (AOR = 5.5; 95% CI: 2.63–11.32) were more likely to discard colostrum than their counterparts (Table 2).

DISCUSSION

Breastfeeding practices are suboptimal in Raya Kobo district of North-eastern Ethiopia. In this study the prevalence of colostrum avoidance was 13.5% (95% CI: 10.99–16.33), which is higher than the prevalence of colostrum avoidance reported from Kersa district, South-eastern Ethiopia (8.5%) [16]. The national prevalence of colostrum avoidance was reported as 39.8% [14]. A relatively consistent prevalence of colostrum avoidance was found in the city of Bahir Dar (16.7%), north-western Ethiopia [17]. This could be due to the fact that the culture of Bahir Dar community is relatively similar to Raya Kobo district; both areas are dominated by the Amhara ethnic group. Colostrum avoidance is lower in Ethiopia as compared with the prevalence found in India (76.0%) [18] and Kuwait (81.8%) [19].

In this study, mothers of children aged <24 months reported that grandmothers and untrained traditional birth attendants were the most influential individuals to discard colostrum. Moreover, FGDs and in-depth interviews revealed that grandmothers and untrained traditional birth attendants thought colostrum causes abdominal cramp in infants. Therefore, they influence other mothers to discard colostrum. Likewise, grandmothers of the child tend to have strong influence on their daughters not to feed colostrum to their infants in Somalia [9] and Bangladesh [8].

Mothers who were not aware of the advantages of colostrum were 5.5 times more likely to discard colostrum compared with mothers who were aware of the advantages of colostrum for infants. Similarly, colostrum is discarded primarily because of lack of basic information about the importance of colostrum for infants in Somali [9]. In addition, qualitative findings in Raya Kobo showed that, mothers thought

Table 2. Binary and multivariable logistic regression analysis showing factors associated with colostrum avoidance among mothers of children aged less than 24 months in Raya Kobo district, 2014

Variable	Colostrum avoidance n (%)	Crude odds ratio (COR) (95% CI)	Adjusted odds ratio (AOR) (95% CI)
Residence			
Urban	5(5.7)	1	1
Rural	80 (14.8)	2.9 (1.13–7.31)[b]	1.7 (0.59–4.66)
Religion of mother			
Orthodox	52 (12.3)	1	1
Muslim	33 (15.9)	1.4 (0.84–2.17)	0.9 (0.56–1.65)
Household headship			
Mothers of index child	16 (28.1)	2.8(1.52–5.35)[b]	2.6(1.08–6.44)[b]
Other person[a]	69 (12.0)	1	1
Family size			
2	6 (26)	2.4 (0.91–6.46)	1.0 (0.24–4.15)
3-4	31 (13.5)	1.1 (0.66–1.75)	0.9 (0.55–1.69)
>5	48 (10)	1	1
Delivery place			
Home	76 (15.9)	3 (1.47–6.15)[b]	2.6 (1.13–5.79)[b]
Health institution	9 (5.9)	1	1
Breastfeeding initiation time			
<1 h	40 (8.9)	1	1
>1 h	38 (21.6)	2.8 (1.73–4.55)[b]	2.4 (1.44–4.00)[b]
Maternal awareness on advantage of colostrums			
Yes	12 (4.5)	1	1
No	73 (19.9)	5.2 (2.78–9.86)[b]	5.5 (2.63–11.32)[b]

[a]Respondent's husband, father and mother.
[b]Statistically significant variables at $p < 0.05$. Hosmer-Lemeshowgoodness-of-fit $= 0.719$.

colostrum as yellowish-dirty milk that is not good for infants. A study in Tigray region of Ethiopia also revealed that colostrum is perceived as not good for infants, and more than half of the mothers had no knowledge on colostrum feeding [20]. Other studies from Goba, South-eastern Ethiopia and Jimma Arjo, South-western Ethiopia districts also found that colostrum is believed to cause disease [10, 21]. There were also similar findings from Foni Kansala district of Gambia [22].

Late initiation of breastfeeding was associated with colostrum avoidance practices. Compared with mothers who initiated breastfeeding within 1 h of delivery, mothers who initiated breastfeeding beyond 1 h of delivery were 2.4 times more likely to discard colostrum. This could be because of the fact that those mothers who discarded the colostrum might take more time to discard it and initiate breastfeeding later. The reverse might be also correct. When mothers tend to initiate breastfeeding later, they would have more time for infant feeding malpractices like colostrum avoidance.

Mothers who delivered the index child at home were 2.6 times more likely to practice colostrum avoidance compared with mothers who gave birth at health institutions. Similarly, in India, mothers who gave birth at home were more likely to discard colostrum compared with mothers who gave birth at health institutions [23]. Grandmothers and traditional birth attendants usually attend the birth in homes. The FGDs and in-depth interviews findings showed that grandmothers and traditional birth

attendants thought colostrum caused abdominal cramps in infants. Therefore, giving birth at home may create a favorable environment for different socio-cultural malpractices such as the practice of colostrum avoidance. Alternatively, mothers who gave birth in health institutions might be advised by health professionals about the advantages of colostrum.

Household-head mothers were 2.6 times more likely to discard colostrum compared with mothers who were not household heads. This could be explained in such a way that mothers who were household heads might be self-directed and may lack the supportive advice offered on the importance of colostrum feeding for newborns compared with mothers who were not household heads.

One of the strengths of this study was that it included both quantitative and qualitative methods. This study has also limitations. The first limitation was that information obtained from mothers having children aged <24 months is subject to recall bias. The study also shares the limitation of the cross-sectional study design.

CONCLUSION

Colostrum avoidance was more common among mothers who lacked awareness on the advantages of colostrum feeding, who gave birth at home, who practiced improper commencement of breastfeeding and mothers who were household heads. Promoting institutional delivery, timely initiation of breastfeeding and creating awareness on the advantages of colostrum feeding are recommended interventions to reduce colostrum avoidance.

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