

Colostrum avoidance, prelacteal feeding and late breast-feeding initiation in rural Northern Ethiopia

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Abstract

Objective: To identify specific cultural and behavioural factors that might be influenced to increase colostrum feeding in a rural village in Northern Ethiopia to improve infant health.

Design: Background interviews were conducted with six community health workers and two traditional birth attendants. A semi-structured tape-recorded interview was conducted with twenty mothers, most with children under the age of 5 years. Variables were: parental age and education; mother's ethnicity; number of live births and children's age; breast-feeding from birth through to weaning; availability and use of formula; and descriptions of colostrum *v.* other stages of breast milk. Participant interviews were conducted in Amharic and translated into English.

Setting: Kossoye, a rural Amhara village with high prevalence rates of stunting; inappropriate neonatal feeding is thought to be a factor.

Subjects: Women (20–60 years of age) reporting at least one live birth (range: 1–8, mean: ~4).

Results: Colostrum (*inger*) and breast milk (*yetut wotet*) were seen as different substances. Colostrum was said to cause abdominal problems, but discarding a portion was sufficient to mitigate this effect. Almost all (nineteen of twenty) women breast-fed and twelve (63%) reported ritual prelacteal feeding. A majority (fifteen of nineteen, 79%) reported discarding colostrum and breast-feeding within 24 h of birth. Prelacteal feeding emerged as an additional factor to be targeted through educational intervention.

Conclusions: To maximize neonatal health and growth, we recommend culturally tailored education delivered by community health advocates and traditional health practitioners that promotes immediate colostrum feeding and discourages prelacteal feeding.

Keywords

Infant feeding
Infant nutrition
Skin-to-skin contact
Mother/baby dyad
Traditional birth attendants

The feeding of newborn infants has important implications for immediate and future health, especially in developing countries such as Ethiopia that have high rates of malnutrition, infectious diseases and mortality for children under the age of 5 years^(1,2). Exclusive breast-feeding from birth through 6 months of age has long-term health and emotional benefits for both mother and child and is associated with lower infant morbidity and mortality and better growth⁽³⁾. Given the health risks associated with artificial (formula) feeding and ineffective breast-feeding, WHO and UNICEF developed a strategy to underscore the importance of exclusive and maximal breast-feeding,

summarized in their guide for practitioners entitled *Ten Steps to Successful Breastfeeding*^(4,5). These steps include educating mothers about breast-feeding management; helping mothers and babies initiate breast-feeding within 30 min of giving birth; and prohibiting prelacteal feeding (feeding any other substance before first breast-feeding) or complementary feeding any substance other than breast milk before the age of 6 months.

Colostrum is a thick yellow/orange breast milk that is the earliest and most immunologically protective secretion of the mammary gland during lactogenesis I^(6,7). It is highly nutritious, easily digested and contains maternal

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cells and substances that act as a natural vaccine for the infant against a host of immunological threats including bacterial diarrhoea^(7,8). Delivery of the placenta reduces physiological levels of oestrogen and progesterone, signalling the start of lactogenesis II and secretion of a more carbohydrate-rich and more fluid breast milk⁽⁶⁾, usually within 30–40 h postpartum. This increased fluid secretion dilutes the coloured immunological layer and makes it invisible to the naked eye. Because some women inaccurately perceive colostrum and later breast milk as two different substances, recognizing only the latter as true breast milk, they may delay breast-feeding until their breasts secrete the more fluid milk.

Colostrum avoidance includes: delayed initiation of breast-feeding; pumping and discarding colostrum; and/or wet nursing⁽⁹⁾. Some mothers in developing countries avoid colostrum feeding on the basis of traditional or cultural beliefs that range from viewing it as having no nutritional value, seeing it as harmful to the infant's health (making the baby sick or even causing death), or seeing it as 'bad luck' for the family^(9–12). Some women may specify no reason for avoiding colostrum other than tradition^(13,14).

Colostrum avoidance has been reported across the globe, in varied places such as India^(15,16), Nepal⁽¹⁷⁾, Bangladesh⁽¹³⁾, Indonesia⁽¹⁸⁾, West Java⁽¹⁹⁾, the Philippines⁽²⁰⁾, Vietnam⁽¹²⁾, Thailand⁽²¹⁾, Bolivia⁽²²⁾, Guatemala⁽¹⁴⁾, Guinea-Bissau⁽²³⁾, Nigeria⁽²⁴⁾ and Tanzania⁽²⁵⁾. Using the term 'delayed breast-feeding', Morse *et al.*⁽⁹⁾ found that fifty of 120 cultures described in the Human Research Area Files (HRAF) 'withheld' colostrum. The extent to which colostrum is actually rejected has been questioned because of the methodological definitions of colostrum itself and terms such as 'colostrum rejection', 'withholding' and 'discarding'^(26,27). Nevertheless, the attention paid to the topic is evidence of the fact that any practice that withholds beneficial, readily available nutrition from infants is of concern.

The question of colostrum avoidance or discarding gains further importance when one considers that prelacteal foods are introduced when breast-feeding is delayed. Prelacteal substances may be given for non-nutritional reasons, such as to 'clear the throat' or bowels, or they may be traditional practices with no explicit intent^(11,28). Common prelacteals include unboiled cow/goat milk or sweetened water^(9,19,23,25,29,30); substances such as soda, cookies and bananas have also been reported^(14,31). All prelacteal substances have fewer nutrients and immunological components than colostrum and may introduce contaminants in the substances themselves or through finger feeding^(11,32).

Ethiopia has one of the highest infant mortality rates in the world and inappropriate neonatal feeding is a primary factor⁽³³⁾. Although breast-feeding is almost universal across Ethiopian ethnic groups and geographical areas, it does not always meet WHO/UNICEF recommendations. Data from the 2005 Ethiopian Demographic and Health

Survey⁽³⁴⁾ show that this is true for groups living in the Amhara region that includes the village that was the subject of the present study (Fig. 1, area 3). Among all births in Ethiopia's eleven major regions between 2001 and 2005, Amhara mothers had the second lowest percentage of breast-feeding in the first hour after birth (62.6%) and breast-feeding within 1 d of birth (77.4%; Table 1). Less than half of Amhara infants (44.8%) received colostrum, placing it the fourth lowest among eleven regions. A recent study⁽³⁵⁾ compared breast-feeding practices in the Gondar province (an urban Amhara town) with those in the northernmost province of Tigray (Fig. 1, area 11). New mothers in Tigray were almost twice as likely as mothers in Gondar to initiate breast-feeding within the first hour of birth (Tigray 59% and Gondar 34.2%).

A recent UNICEF press release on Ethiopian breast-feeding notes, 'Often, infants are not fed with colostrum ... as it is considered unclean'⁽³⁰⁾. The Ethiopian LINKAGES breast-feeding educational programme reports that mothers 'often discard colostrum'⁽³⁶⁾. A report from the Amhara region⁽³⁷⁾ quotes a traditional birth attendant who describes her former belief that breast milk should not be used until the placenta is passed, which could take as long as 3 d in difficult births. Before the programme, the birth attendant endorsed the belief that the 'first milk' was 'bad' for the baby. Amhara mothers interviewed by Almedom⁽³⁸⁾ noted a positive correlation between valuing colostrum and early breast-feeding initiation and reported a delay in breast-feeding 'when colostrum was considered "heavy"'. He also reported prelacteal feeding for all ethnic groups represented (Gurage, Oromo, Amhara, Sidama, Wellamo, Dorze) with one exception (Tigray)⁽³⁸⁾.

Describing practices contributing to malnutrition during their 50 years of involvement in the rural Amhara village of Kossoye, members of the Kossoye Development Project



Fig. 1 Ethiopia administrative regions and chartered cities⁽⁵⁸⁾ (1, Addis Ababa; 2, Afar; 3, Amhara; 4, Benishangul-Gumuz; 5, Dire Dawa; 6, Gambela; 7, Harari; 8, Oromiya; 9, Somali; 10, Southern Nations, Nationalities, and People's Region; 11, Tigray)

Table 1 Breast-feeding initiation in Ethiopia

| Region | Breast-fed within 1 h of birth | Breast-fed within 1 d of birth | Received prelacteal feed | Received colostrum |
|-----------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------|-----------------------|
| | % | % | % | % |
| Addis Ababa* | 66.2 | 86.7 | 49.4 | 42.1 |
| Affar | 86.4 | 91.1 | 36.8 | 68.3 |
| Amhara | 62.6 | 77.4 | 44.6 | 44.8 |
| Benishangul-Gumuz | 72.1 | 80.3 | 19.0 | 45.4 |
| Dire Dawa* | 91.4 | 94.4 | 34.2 | 66.5 |
| Gambela | 72.7 | 80.8 | 28.3 | 43.0 |
| Harari | 73.7 | 88.2 | 48.6 | 75.9 |
| Oromiya | 72.1 | 88.5 | 26.0 | 45.8 |
| Southern Nations, Nationalities and People's Region | 71.4 | 92.7 | 15.4 | 39.3 |
| Somali | 91.4 | 94.0 | 19.2 | 53.7 |
| Tigray | 52.9 | 73.7 | 30.6 | 55.8 |

Adapted from Central Statistical Agency⁽³⁴⁾, p. 144.

*Addis Ababa and Dire Dawa are cities, whereas the remaining nine areas are regional authorities.

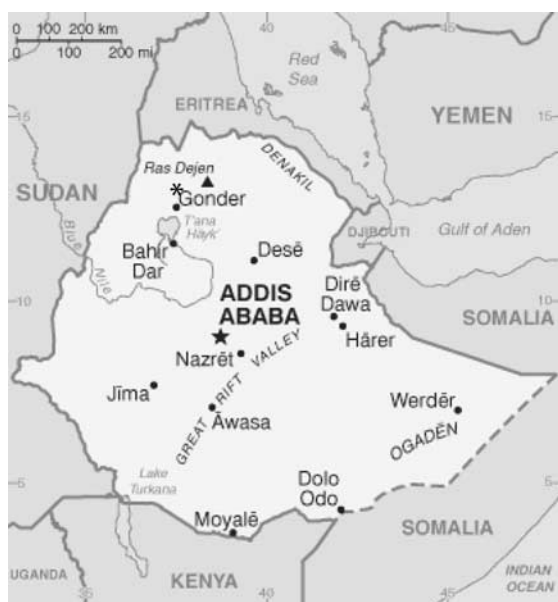


Fig. 2 The location of Kossoye (*)⁽⁵⁹⁾

(<http://www.kossoyeproject.org/>) note 'Colostrum ... is often discarded by mothers'⁽³⁹⁾. As part of their recent initiative to reduce malnutrition in this village through sustainable organic gardening (2007–present), the Kossoye Development Project approved this preliminary investigation of infant feeding practices with the goal of identifying potential cultural and behavioural factors that might be influenced to increase colostrum feeding.

Methods

Kossoye is a rural village with associated hamlets located in the centre of the Northern Gondar province of the Amhara region (Fig. 2). The primary ethnic groups are self-described as Kemant or Amhara, two groups that have coexisted for centuries. They were historically

differentiated by language and religion but long-term proximity has largely erased these differences⁽³⁹⁾.

We hoped to somewhat mitigate the effect of the small sample size of individual maternal interviews by elucidating cultural norms from experienced native informants employed in the field of child and maternal health, all of whom live and work in the village. Although our findings may not be generalizable to other populations, our method may be useful to others wishing to conduct needs assessments in similar situations. The Kossoye Development Project hires villagers as community health workers (CHW) to conduct trainings and oversee the gardening project and its health- and nutrition-associated activities. Informal discussions were conducted with six of the female CHW and two *awaledges* (traditional birth attendants) currently practising in Kossoye. These participants were told of the study's goals and encouraged to ask any questions that arose during these discussions. In this manner, women working directly with new mothers and their families provided basic background information on childbirth, infant care and feeding, as well as cultural practices related to childhood growth and health.

For participants in the formal study, a semi-structured tape-recorded interview was developed using information from the literature and approved by the Wright State University Institutional Review Board. Informed consent documents were translated from English to Amharic and translated back to ensure accuracy. The structured interview included questions about parental age and education; mother's ethnicity; number of live births and age of children; breast-feeding behaviours in the first 3 d after birth through to weaning; availability and use of formula; and specific questions about colostrum *v.* other stages of breast milk. The semi-structured interview contained direct questions designed to evoke short answers and allow for immediate follow-up. Interviews were recorded and answers were translated into English by a clinically trained nurse midwife who is fluent in both Amharic and English (J.A.).

Table 2 Age distribution of respondents' children*

| Age (years) | <1 | 1–1.9 | 2–2.9 | 3–3.9 | 4–4.9 | 5–9.9 | 10–14.9 | 15–19.9 | ≥20 |
|-------------------------------|----|-------|-------|-------|-------|-------|---------|---------|-----|
| Youngest child (<i>n</i> 20) | 4 | 5 | 3 | 3 | 1 | 2 | 0 | 1 | 1 |
| All children (<i>n</i> 67) | 4 | 5 | 3 | 6 | 5 | 18 | 12 | 6 | 8 |

*Age was not reported for eleven children.

CHW identified potential participants and we employed skilled native Ethiopian translators fluent in Amharic and English for interviews. Any woman reporting a live birth during her lifetime was eligible, and we specifically asked the CHW to introduce us to women with young children, women with older children and those with adult children to identify potential age-related differences in reported breast-feeding behaviour. Sixteen of the respondents reported that their youngest child was under the age of 5 years (Table 2).

Participants were read the informed consent in its entirety in the Amharic language and they agreed to participate before the initiation of recording. For individuals who were unable to write, an ink-stained fingerprint was used to indicate their agreement on the informed consent document in place of a signature. In exchange for their time, participants were given a stipend of five Ethiopian Birr (~50 cents US), roughly the price of a lunchtime meal in the local economy.

Seven of the twenty interviews were carried out under the auspices of Wright State University protocol, with N.L.R. as the interviewer. Using the same questionnaire and protocol, J.A. carried out an additional thirteen interviews under the auspices of the Kossoye Development Project. All interviews were conducted between May and July 2009 and lasted between 30 and 60 min. No woman who was invited to participate refused. The two interviewers were both either present during the interviews or reviewed the content of the first seven interviews to build a consensus on points needing specific clarification and probing, especially given shades of meaning lost in translation.

Results

Terms and identification of colostrum and breast milk

Colostrum (*inger*) and breast milk (*yetut wotet*) are differentiated in the Amharic language; respondents identified colostrum as *inger* and later breast milk as *yetut wotet*. They noted that *inger* was produced earlier, was yellow or orange and was thicker than *yetut wotet*. Production of *yetut wotet* was indicated by breast heaviness in the 2–3 d following birth. The term *makamesha* was used for the traditional prelacteal feed of butter, cow's milk, *ersho* (yeast used to make the traditional Ethiopian bread *injera*) or some combination (e.g. butter and *ersho*).

Discussions with community health workers

The CHW host monthly discussions of health-related topics following a curriculum designed by The Kossoye Development Project and pay home visits to reinforce these messages. They are trained in and teach new mothers WHO-approved feeding practices, including exclusive breast-feeding from birth (including colostrum). To discourage the traditional practice of colostrum avoidance, CHW use the behaviour of mother cows to illustrate the natural nature of immediate breast-feeding: 'The cow gives her baby milk immediately after birth – why can't you?'

CHW told us that a new mother might travel to her mother's house to deliver and recuperate and her mother might come to her home for subsequent pregnancies to assist with the older children. New mothers learn about child care from their mothers and mothers-in-law, and from older female family members and respected neighbours. This reliance on family and community has perpetuated the practice of colostrum avoidance.

CHW state that breast-feeding is viewed positively in Kossoye and is seen as forming a strong bond between mother and baby. They said that if an older child is badly misbehaving or out of control, a mother might show her breast and tell the child 'I hurt from my breast' to remind them of that close relationship to pressurize them into changing their behaviour. The bond is further supported by routine bed sharing and the fact that the father may leave the marital bed for 6 weeks to 1 year to avoid sleep interruption.

Discussions with traditional birth attendants

The two *awaledges* interviewed for the study were actively engaged in delivering children in the Kossoye area. Both categorized colostrum as being different from breast milk. They noted that mothers usually initiate breast-feeding on day 2 to stimulate breast milk, which would then become available on day 3. The *awaledges* claim that new mothers traditionally learnt about breast-feeding from family members or trusted neighbours, and hence they seldom provided feeding instructions after delivery. Therefore, they neither recommend nor discourage discarding or avoiding colostrum. They did, however, endorse and conduct *makamesha* (prelacteal feeding of newborns). One attendant reported that butter might be fed to girls using a gold-coloured spoon and to boys using a silver-coloured spoon. There was no general consensus about symbolism of the different coloured metals and it was primarily discussed as a pleasant tradition.

Interviews with village women

A slight majority of the twenty women interviewed self-identified as Kemant than Amhara (Table 3). The age of participants ranged from 20 to 60 years. Male partners were older than their female partners with one exception in which the partners were of the same age. Mothers were more likely than their male partners to be illiterate. The number of reported live births ranged from 1 through 8, with a mean of just under 4.

All but one of the respondents gave birth to their children at home with the aid of an *awalede* or family member and breast-fed their children. One woman delivered at a clinic and subsequently fed her child formula. However, she reported no problems with pregnancy or delivery and it appears that her employment in a city allowed her to attend a medical clinic. Four of the twenty women interviewed (20%) were aware of the contraceptive effect of breast-feeding; the remainder saw breast-feeding as being beneficial only to the infant.

A total of 79% of the women who breast-fed (fifteen of nineteen) reported discarding colostrum before breast-feeding. However, the same percentage also claimed to initiate breast-feeding within 24 h of birth (Fig. 3). The women's descriptions make it clear that only a portion of the colostrum was discarded before breast-feeding. This

practice was continued by some until they perceived an increase in fluid volume in their breasts and/or breast milk.

The consensus view was that colostrum was of potential harm to newborns. Nine women specifically referred to abdominal cramps or stomach ache as a consequence of feeding *inger*; two specified diarrhoea, three said that it contaminated an infant's stomach and two thought it would introduce the *Ascaris* parasite. One woman called it 'bad for the stomach' and another said it was 'our culture' to dispose of *inger*. *Inger* was described as 'dirty milk' by one mother and another suggested that a child who ingested *inger* might eventually die from its effects (some interviewees referred to more than one consequence).

Makemesha was described as a traditional practice associated with birth and was reported by twelve of the nineteen women who breast-fed. The most common prelacteal foods described were butter ($n = 4$), butter and/or *ersho* ($n = 4$) and cow's milk ($n = 4$), which might be diluted with water. This food was offered in order to ensure that the first thing the baby tasted was smooth and to 'smooth the throat' (this was described as referring to the oesophagus rather than the larynx, with no reference to the baby's voice). The woman who endorsed an actual substitution of butter for colostrum until after day 3 was from a generation older than those who endorsed only a ritual prelacteal feed and had only adult children.

Table 3 Summary of Kossoye respondents

| | Mean | SD | Range |
|-----------------------|------------|----------|--------|
| Age (years)* | | | |
| Woman | 32.26 | 11.49 | 20–60 |
| Partner | 36.89 | 10.06 | 24–66 |
| Number of live births | 3.85 | 2.03 | 1–8 |
| | Illiterate | Literate | Grades |
| Education | | | |
| Women | 13 | 7 | 4–10 |
| Partner | 8 | 12 | 2–10 |
| | <i>n</i> | % | |
| Ethnicity | | | |
| Kemant | 12 | 60 | |
| Amhara | 8 | 40 | |

*Age was not known for one woman and two partners.

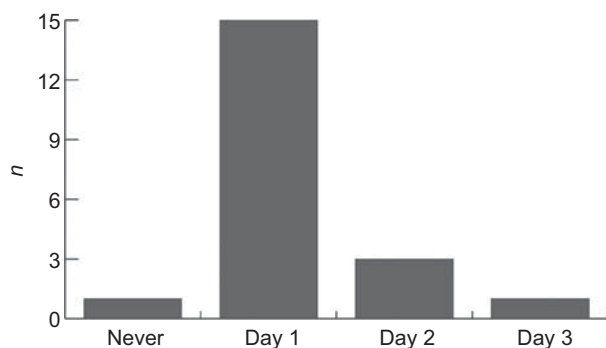


Fig. 3 Breast-feeding initiation in Kossoye

Discussion

Colostrum avoidance

Despite the linguistic differentiation of colostrum (*inger*) and breast milk (*yetut wotet*) and the support for avoiding colostrum, the majority of women initiated breast-feeding within 24 h of birth. The description of practices leads us to infer that discarding a portion of the colostrum is seen as being sufficient to cleanse the breast of the unwanted substance and/or its perceived negative consequences. It is unclear how much of the colostrum is discarded overall or how often mothers nurse in the first 3 d postpartum. These factors would need to be directly observed and assessed to accurately evaluate the functional significance of the practice on neonatal health. Additional study is planned to assist in developing appropriate interventions.

Kossoye's traditional belief that colostrum may cause abdominal discomfort and diarrhoea conflicts with the fact that it protects abdominal health by decreasing permeability of the gut to infectious substances⁽²⁷⁾. Further, evidence indicates that growth hormones of the colostrum nurture the endothelium in the neonate's gastrointestinal tract in the first days and months of life *ex utero*⁽⁴⁰⁾. This is in addition to the many additional immunological substances and protections that colostrum provides^(7,8).

The present study supports Holman and Grimes⁽⁴¹⁾ proposal that, despite the widespread reporting of colostrum taboos, total avoidance is 'rare'. Rizvi⁽²⁷⁾ suggests that

many early studies may have based their conclusion of colostrum avoidance on the practice of prelacteal feeding, which does not per se rule out early initiation of breast-feeding. However, as the proportion of immunological substances is greatest in the first 3 d following birth^(27,42), any practice that reduces the frequency or volume of breast-feeding during this time could reduce an infant's long-term health and immunological defence.

Prelacteal feeding

Prelacteal feeding emerged as a maladaptive practice that was not previously identified as a target for intervention. It is equally important to neonatal health as colostrum feeding. Further, because it takes place before the beneficial actions of the colostrum on the gut, unpasteurized substances are introduced when the gut is at its most permeable and vulnerable to contaminants. The calculated rate of 60% prelacteal feeding in Kossoye is intermediate among reported prevalence rates, which range from approximately 15%^(12,17) to 100%^(24,27). Getahun *et al.*⁽³⁵⁾ report that unsalted butter is given to newborns in Gondar (20 miles south of Kossoye) 'in the belief that it will clean the stomach'. In that study, 62% of Gondarine newborns received butter in the first days of life, and rural mothers were significantly more likely than those in urban Gondar to give prelacteal butter ($P < 0.0007$). Another Ethiopian study reported that prelacteal fluids were thought to 'clean the baby's throat' and were given over the first 3 d of birth⁽²⁾, longer than the Kossoye practice. The primary dangers of prelacteal feeding are: (i) no prelacteal feed provides immunological benefits equal to colostrum; (ii) prelacteal substances may contain harmful contaminants; (iii) some prelacteals are semi-solids that infants are unable to digest; (iv) prelacteal feeding may encourage delayed breast-feeding initiation; and (v) prelacteal feeding and handling of the baby immediately after birth disrupt the mother/baby dyad, causing stress in both the mother and the baby⁽⁴³⁾.

The complementary relationship of prelacteal feeding and delayed breast-feeding initiation has been called a 'vicious cycle' because prelacteal feeding may delay the production of breast milk that the mother perceives to be 'mature', and the perceived lack of 'mature' breast milk may encourage the use of prelacteal foods⁽⁴⁴⁾. Contrary to these reports of the vicious cycle, *makamesha* in Kossoye does not appear to prevent a majority of mothers from initiating breast-feeding within 24 h of birth. This is likely because mothers explain that nutrition is not *makamesha*'s primary purpose. Getahun *et al.*⁽³⁵⁾ report a similar coincident practice of prelacteal feeding and colostrum feeding in nearby Gondar, noting that 68.5% of newborns experienced both. The primary danger of contamination argues for an intervention that discourages prelacteal feeding^(43,45).

Despite the encouraging finding that most infants in Kossoye receive some colostrum, in the context of Ethiopian growth deficits it is imperative that breast-feeding behaviour be maximized to meet WHO/UNICEF standards.

The immune potential of the colostrum is at its peak in the first 24 h following birth^(27,42), containing up to twelve times the secretory IgA and more than twice the lactoferrin of mature milk⁽⁴⁶⁾. Recent studies of neonatal mortality in rural Ghana found that delayed breast-feeding initiation of only 1 d conferred a 2.4-fold increase in the risk of death⁽⁴⁷⁾. The authors estimate that the neonatal mortality rate could be reduced by 16% if breast-feeding was initiated on the day of birth and by 22% if started in the first hour⁽⁴⁷⁾. Despite the infective danger posed by prelacteal feeding, it was not statistically associated with increased mortality in that study. However, the potential for introducing contaminated substances to neonates still argues against even ritual prelacteal feeding.

Possible intervention in Kossoye is simplified because no religious basis was reported for either colostrum avoidance or prelacteal feeding. Nevertheless, it is possible that cultural expectations of postpartum fatigue and pain may prevent the universal acceptance of immediate breast-feeding^(9,27). Value of the *makamesha* tradition may also be a considerable barrier. Another concern is maintaining adherence to an intervention's recommendations. Given that even trained medical professionals may not encourage immediate breast-feeding⁽²¹⁾, maintaining fidelity to recommendations among lay health advisors and the public may be an even greater challenge. The results of a successful educational intervention in India note that periodic reinforcement of nutritional information may be necessary to sustain and/or improve behavioural change⁽¹⁶⁾.

Conclusion and recommendations

Recent international initiatives have drawn the attention of Ethiopian mothers to exclusive breast-feeding in the first 6 months of life^(30,32), and the Ethiopian Federal Ministry of Health trains its health workers to educate new mothers about internationally recommended feeding practices. The World Bank labels this type of intervention as a 'short route' to better nutrition because change can be achieved more quickly through smaller-scale interventions than through infrastructural and policy interventions⁽⁴⁸⁾. We commend these educational efforts and suggest that local *awaledges* be specifically recruited to augment current educational initiatives, implement postpartum practices that support the mother/infant dyad, encourage immediate breast-feeding of colostrum after birth and discourage all prelacteal feeding. Traditional birth attendants have been shown to significantly increase proactive health behaviours in expectant and new mothers^(49,50). As respected members of the community, they are important mediators of the relationship between the formal health community and the target population⁽⁵¹⁾. They attend the great majority of births (94% of Ethiopian deliveries between 2001 and 2005 were at

home⁽³⁴⁾) and are therefore well placed to assist new mothers in their first breast-feeding. It may also be helpful to add colostrum feeding to the child's immunization card to further underscore its immunological benefits. This practice was adopted by Curamericas in Guatemala⁽¹⁴⁾ because the mothers already accepted the importance of immunizations and the association of this concept with colostrum was expected to increase colostrum feeding.

Culturally tailored educational programmes conducted in women's groups using community health advocates and traditional health practitioners can successfully change even long-standing traditions. For example, an Indonesian programme increased neonatal colostrum feeding by 132%⁽¹⁸⁾ and a case-control study in Nepal showed a significant positive change in colostrum feeding, antenatal care and placental cord care⁽⁵²⁾. A colostrum feeding intervention could be integrated into the Kossoye Development Project's ongoing efforts to reduce malnutrition with an expectation of success given the project's 50-year relationship with the community and successful interventions for trachoma⁽³⁹⁾ and gardening. The potential of success is also supported by a study by the LINKAGES breast-feeding programme (2003–2006). Using the Essential Nutrition Actions approach that included optimal breast-feeding education, they reported a 37% increase ($P > 0.001$) in first-hour breast-feeding among participating Amhara mothers⁽³⁶⁾.

It is important for village women of all ages to be educated about colostrum and prelacteal feeding, given the strong influence of older generations^(13,53–55). This will further empower women to realize their central importance to community health, eloquently stated by Shirima *et al.*⁽⁵⁶⁾:

...there is a need to inform the mothers as well as society as a whole about the advantages conferred to the mother and the community by breast-feeding. Such information may help the community to acknowledge the contribution of the mother to the family and nation through breast-feeding and inspire them to help create the circumstances necessary for her to be able to breast-feed successfully.

Using information from this ethnographic enquiry, we propose that a cooperative relationship between the traditional and formal health systems is a culturally competent solution that aligns with the Ethiopian government's staunch support for traditional medicine (reviewed in Kassaye *et al.*⁽⁵⁷⁾) and its need for improved health outcomes.

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