

ARSI UNIVERSITY
COLLEGE OF HEALTH SCIENCE
DEPARTMENT OF PUBLIC HEALTH



Colostrum Feeding Practices and Contributing Factors among
Mothers with Infants and Young Children Under 24 Months in
Asasa Town, Oromia, Ethiopia

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ABBREVIATIONS AND ACRONYMS

ANC	Ante Natal Care
AOR	Adjusted Odds Ratio,
ASF	Animal-Source Foods
BF	Breast Feed
CF	Colostrum Feeding
CI	Confidence Interval
COR	Crude Odds Ratio
EBF	Exclusive Breast Feeding
DHS	Demographic Health survey
EDHS	Ethiopian Demographic Health survey
HC	Health Center
HP	Health Post
IYCF	Infant and Young Child Feeding
MOH	Ministry Of Health
NGO	Non-Governmental Organization
PNC	Post Natal Care
SDG	Sustainable Development Goal
SPSS	Statistical Package for Social Sciences
SSA	Sub-Saharan Africa
UNICEF	United Nations International Children's Emergency Fund
VIF	Variance Inflation Factor
WHO	World Health Organization

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ABSTRACT

Background: Globally, fewer than half of newborns were breastfed within the first hour of birth, contributing to thousands of preventable infant deaths each year due to delayed colostrum intake. Colostrum, the initial milk produced after delivery, contains essential nutrients and antibodies that support neonatal immunity and reduce early health risks. Despite its benefits, colostrum avoidance remained common in settings such as Asasa Town, Ethiopia.

Objective: The study aimed to assess colostrum feeding practices and associated factors among mothers of infants and young children less than 24 months living in Asasa Town, Oromia, Southeast Ethiopia, 2025.

Methods: A community-based cross-sectional study was conducted from September 25 to October 30, 2025, involving 381 systematically selected mothers of infants and children under 24 months. Data were collected using a structured, pretested questionnaire and entered into Epi-Data 4.7 before analysis in SPSS version 27. Descriptive statistics were used to summarize socio-demographic characteristics, knowledge, attitude, and feeding practices. Bivariate logistic regression was performed to identify candidate variables for multivariable analysis ($p < 0.25$). Multivariable logistic regression was then used to determine independent predictors of colostrum feeding practice. Statistical significance was declared at $p < 0.05$.

Results: A total of 381 mothers participated, yielding a response rate of 97.4%. In this study, the overall prevalence of colostrum feeding practice was 61.4% (CI: 95% 56.5% to 66.3%). Additionally, 73.2% of mothers demonstrated good knowledge of colostrum, and 67.5% had a favorable attitude toward colostrum feeding. Factors significantly associated with colostrum feeding practice were postpartum counseling on colostrum feeding (AOR=1.81, 95% CI: 1.08–3.02), mode of delivery (AOR=6.19, 95% CI: 2.92–13.11), and good maternal knowledge (AOR=5.26, 95% CI: 2.97–9.32).

Conclusion: The prevalence of colostrum feeding practice in Asasa Town was lower than the national and global recommendations. Postpartum counseling, vaginal delivery, and good maternal knowledge were key determinants of optimal colostrum feeding. Strengthening breastfeeding counseling during antenatal care, delivery, and postnatal care; improving maternal health education; and promoting institutional delivery are essential to improve early colostrum feeding practices in the community.

Keywords: Colostrum, Breastfeeding, Early initiation, Knowledge, Oromia, Ethiopia

1. INTRODUCTION

1.1 Background

Colostrum is a thick, yellow to orange-colored fluid secreted by the mammary glands during the initial days of lactation. Often referred to as 'liquid gold,' it is exceptionally rich in essential nutrients, growth factors, and antibodies, playing a crucial role in strengthening the newborn's immune system, supporting early development, and laying the foundation for lifelong health(1). Early breastfeeding fosters a strong mother-child bond, stimulates consistent milk production, and ensures the newborn receives colostrum, often called nature's first vaccine, due to its rich concentration of antibodies and nutrients. To support these benefits, pre-lacteal feeding is discouraged, and it is recommended that infants be put to the breast immediately or within the first hour after birth(2). In addition to this, it has significant advantages for mothers because early colostrum feeding stimulates oxytocin release and causes the uterus to contract and reduce postpartum hemorrhage after birth(3).

Colostrum differs markedly from mature breast milk in both composition and function. Although it contains lower amounts of lipids and potassium, it is rich in lactalbumin, proteins, carbohydrates, vitamin A, and chloride. It is especially abundant in immunoglobulins such as IgA, IgG, and IgM, which provide passive immunity to the newborn and protect the mucous membranes of the throat, lungs, ears, and intestines (4, 5). In addition to immunoglobulin, colostrum contains antimicrobial peptides such as lactoferrin and lacto-peroxidase, along with various bioactive molecules and growth factors that promote optimal nutrition, immune defense, and early development (4). Its natural laxative effect assists in the passage of meconium, the infant's first stool, which helps remove excess bilirubin and lowers the risk of neonatal jaundice. This is particularly important because newborns have immature digestive and liver systems (5).

Moreover, colostrum provides broad-spectrum protection against bacteria, viruses, fungi, and protozoa such as *Giardia*, offering immune support that surpasses even antibiotics, without contributing to antimicrobial resistance. Recognized as the first natural vaccine, colostrum also relies on sustained mother-infant interaction to maintain a "warm chain" of protection (4,

6, 7). Its rich supply of growth factors supports tissue repair and regeneration, including muscle, skin, collagen, cartilage, bones and nerve tissue (8). Additionally, its high levels of sodium, chloride, and cholesterol contribute to the optimal development of the infant's heart, brain, and central nervous system and it also offer premature infants the best chance for the optimal development of their fragile organs. In the developing countries such as Ethiopia where the rate of communicable diseases is high, timely provision of colostrum is reduce one of the leading causes of death in like diarrhea, malnutrition and acute respiratory tract infection (9, 10).

1.2 Statement of the Problem

Globally, fewer than 50 percent of newborns are breastfed within the first hour of birth, missing the critical immune and nutritional benefits of colostrum feeding. This delay contributes to thousands of preventable neonatal deaths, with more than 4,000 infants dying each year due to the lack of colostrum during this vital window. Around 5.6 million children die before reaching their fifth birthday, and of these, approximately 2.6 million, or 46 percent, die within the first 30 days of life (11, 12). Additionally, nearly a million infant deaths occurred between the first day and the next six days in 2016, which was the bulk of newborn deaths, which happened within the first seven days after birth (approximately 7000 each day)(5, 13). More than 4000 newborns and young children pass away every day as a result of not receiving colostrum within the first hour of life. Southeast Asia and sub-Saharan Africa account for two-thirds of the approximately 3 million newborn deaths that occur each year(14).

The United Nations' third Sustainable Development Goal (SDG 3), specifically target 3.2, aims to end preventable deaths of newborns and children under the age of five by 2030. This includes reducing neonatal mortality to no more than 12 deaths per 1,000 live births and under-five mortality to no more than 25 deaths per 1,000 live births (15, 16). According to the World Health Organization (WHO), neonatal deaths account for approximately 45 percent of all deaths in children under five (17). About three-quarters of these deaths occur within the first seven days of life, and more than one-third take place within the first 24 hours after birth(18). Early colostrum feeding and exclusive breastfeeding during the first six months are among the most effective interventions, reducing newborn mortality by 20 percent and under-

five mortality by 13 percent (5). Despite these global efforts, Sub-Saharan Africa continues to report the highest rates of infant mortality. In many developing countries, an estimated 3,000 to 4,000 newborns die each day from preventable conditions such as acute respiratory infections and diarrhea. These deaths are often linked to the absence of early breastfeeding and the failure to provide colostrum at birth colostrum (19).

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend initiating breastfeeding within the first hour of birth, providing colostrum from the outset, exclusively breastfeeding for the first six months, introducing appropriate complementary foods at six months, and continuing breastfeeding up to 24 months or beyond(20). However, despite these well-established recommendations, various cultural beliefs and malpractices may discourage mothers from breastfeeding immediately after birth by perceiving it as sour and difficult to digest, and harmful to the infant's health with some associating it with illness or even death. Therefore, they replace it with pre-lacteal feedings such as plain water, honey, formula, or animal milk (21-24). In addition to the cultural beliefs different maternal related factors like lack of awareness and comorbidity, newborn related factors such as the need of special care due to the babies health condition and health care related factors are the barriers for colostrum feeding (25). These misconceptions are common in non-industrialized populations, where timely colostrum feeding within the first hour can reduce infant mortality by preventing infections. In some communities, where colostrum is viewed as harmful or toxic, discarding part of it is believed to protect the infant's health(4, 7).

The Federal Ministry of Health (FMoH) in Ethiopia has adopted the National Nutrition Programs and National Infant and Young Child Feeding (IYCF) guidelines in accordance with international recommendations to improve breastfeeding practices, including colostrum feeding. Alongside these programs, the government has introduced the Health Extension Program and engaged with non-governmental organizations (NGOs) to strengthen these efforts (19, 26-28). Despite these efforts, Ethiopia continues to experience one of the highest infant mortality rates globally, largely due to inappropriate neonatal feeding practices. Although breastfeeding is nearly universal across all ethnic groups and regions in Ethiopia, it often falls short of meeting WHO and UNICEF guidelines recommendations (29).

Furthermore, in Ethiopia, a significant proportion of neonatal deaths occur during the first week after birth, a period critical for infant survival. Despite the known benefits of colostrum, many mothers continue to perceive it as harmful, associating its feeding with adverse health outcomes in newborns. This misconception leads to the rejection of colostrum, yet the underlying causes and cultural influences contributing to this belief remain inadequately explored, especially within the target study area. Consequently, this research aims to evaluate colostrum feeding practices and examine the factors that influence these behaviors among mothers of infants less than 24 months living in Asasa Town, Oromia regional state, Southeast Ethiopia, 2025.

1.3. Significance of the study

The study aims to provide insights into the current feeding behaviors, cultural beliefs, and knowledge levels surrounding colostrum feeding to inform public health strategies and improve infant health outcomes in the region. Understanding the factors that influence colostrum feeding practices can help address misconceptions, promote optimal breastfeeding behaviors, and reduce infant morbidity and mortality. The findings from this study will also be valuable for local health authorities and policymakers in designing targeted interventions and educational programs that support mothers in adopting optimal infant feeding practices, ultimately improving child health and survival rates in Asasa Town and similar settings.

For the community, raising awareness about the benefits of colostrum can help dispel harmful myths and encourage healthier neonatal feeding behaviors, ultimately improving infant survival and wellbeing. The findings will provide the government with essential evidence to inform and enhance maternal and child health policies and programs tailored to local cultural contexts. Non-governmental organizations working in maternal and child health can utilize this information to develop targeted education and intervention strategies that promote colostrum feeding. Furthermore, the study will fill critical gaps in knowledge regarding colostrum feeding practices and associated factors, laying the groundwork for future research to design effective interventions aimed at reducing neonatal morbidity and mortality.

2. LITERATURE REVIEW

2.1 Magnitude of colostrum feeding practice

Colostrum feeding practices have been extensively studied worldwide, highlighting varying rates of adherence and the ongoing need to promote this vital early feeding behavior. In Pakistan, a community-based study conducted across three districts of Sindh Province—Larkana, Qamber Shahdadkot, and Dadu—reported that 72.1% of mothers practiced colostrum feeding, whereas 27.9% discarded it, largely due to misconceptions that colostrum is non-nutritious or causes diarrhea(30). Similarly, a facility-based study at the Military Hospital in Rawalpindi found a higher colostrum feeding rate of 86%(9). Moving to Papua New Guinea, a rural survey revealed a colostrum feeding prevalence of 68.6%(21).

In India, studies have also demonstrated substantial rates of colostrum feeding; a community-based cross-sectional survey in Kamrul, Assam, reported a rate of 76%(31), while a similar study in the R.S. Pura block of Jammu district confirmed this prevalence76.0%(32). Nepalese research reflects comparable findings: two hospital-based cross-sectional studies at Kathmandu Medical College Teaching Hospital and Siddhi Memorial Children's Hospital in Bhaktapur documented colostrum feeding rates of 69% and 91%, respectively(33, 34). Another study in Nepal found a high prevalence of 83.5%(35). In Bangladesh, the colostrum feeding rate was reported as 75.92%, indicating considerable adherence to recommended breastfeeding practices (36).

Turning to Africa, colostrum feeding rates vary across countries. In South Sudan, 61.2% of mothers fed colostrum to their newborns, suggesting moderate awareness of its benefits(37). Conversely, a lower rate of 41.4% was observed in Egypt, highlighting the need for intensified educational efforts to improve maternal knowledge and dispel myths about colostrum(38). Burkina Faso reported a notably high rate of 84%, reflecting strong acceptance of colostrum feeding practices in some parts of the continent(39).

Within Ethiopia, the 2016 Ethiopia Demographic and Health Survey (EDHS) showed that 73% of infants were breastfed within the first hour of birth, and 92% within the first day(2). Multiple studies across diverse Ethiopian regions confirm varying colostrum feeding rates. In Afambo District, Afar Region, 65.1% of mothers practiced colostrum feeding(8), while a

hospital-based study in Debre Tabor reported a rate of 69% feeding(40). Southern Ethiopia's Chenchä Zuria district showed a higher prevalence of 84.7%, with only 15.3% discarding colostrum it(41). Similarly, in Debremarkos town, Amhara region, 77.71% of mothers fed colostrum adequately (42). Among rural pastoralist communities in Afar, colostrum feeding was practiced by 63.6% (43) , whereas a study in Debre Berhan town reported a lower rate of 56.2% (44).

Further investigations across Ethiopia reflect considerable regional differences: in Bahir Dar city, the rate was 83.3%%(45) ; Arba Minch Zuria reported 89.0%(46); and Mizan Tepi University Teaching Hospital in the Bench Maji Zone recorded 60.88(47). In Wolaita Zone's Gununo Health Center, 83% of mothers fed colostrum within three days of delivery(14), while Wolaita Sodo city had an 87.4% rate(48). In Dubti town, Afar regional state, 84.4% of mothers practiced colostrum feeding(49). The Northwestern part of Ethiopia showed high rates, with 91.2% in one study(50) and 79.8% in Motta town(51). The Sidama Region's Hula district reported an impressive 96.1%%(52) , and Debre Tabor General Hospital observed 89.5%(53). Additional high rates were recorded in Jinka Town (90.2%)(19), East Wollega Zone (91.2%) (54), Dembecha district (76.2%)(55), and Samara-Logia city in Northeastern Ethiopia (88.0%)(56). Gozamen district reported 77.9%(57), Raya Kobo District 86.5%(7), and Mekele health facilities 80.5%(58) . Axum town showed an outstanding 93.7%(59), while North Wollo Zone recorded 88.0%(60).

Contrastingly, lower colostrum feeding rates have also been documented. For instance, a community-based study in Ambo district, Oromia Region, found that only 56.5% of mothers fed colostrum (4). In Dire Dawa administrative city, 68.8% of mothers demonstrated good colostrum feeding practices in health facilities, with some mothers (8%) avoiding colostrum due to fear of abdominal cramping and others (5%) substituting cow's milk (10). In Harar Town Governmental Hospital, Eastern Ethiopia, 70% of mothers practiced timely colostrum feeding%(5). Similarly, a study in North Shao zone, Antsokia Gemza woreda, reported 64% of postnatal mothers fed colostrum within one hour to five days after delivery(61). Other regions reported higher figures: 88.9% in North Eastern Ethiopia%(62), 85.5% in Bure district(3), 72.5% in Boditi Town (63), and 72.5% in Jimma Arjo Woreda(64).

2.2. Factors associated with colostrum feeding practice

2.2.1 Socio-demographic Factors

Socio-demographic characteristics such as maternal education, place of residence, and parity significantly influence colostrum feeding practices. Studies from various countries have consistently shown that mothers with formal education and urban residence are more likely to initiate colostrum feeding. In Kamrup, Assam, India, higher rates of colostrum feeding were observed among educated and urban mothers, whereas rural and less-educated women were more likely to avoid it (31). Similarly, in Ethiopia, women in rural areas like Aksum town and Dire Dawa were less likely to initiate colostrum feeding, highlighting the impact of geographic and educational disparities (10, 59). Interestingly, the 2016 EDHS found that Ethiopian mothers with more than secondary education had lower early breastfeeding initiation (61%) compared to their less educated counterparts (73–74%), yet they were more likely to provide pre-lacteal feeds(2). This suggests that education alone does not always translate to better practices without targeted health education.

2.2.2 Obstetric and Maternal Health Service Factors

Maternal health service utilization, such as antenatal care (ANC), postnatal care (PNC), delivery method, and counseling, plays a vital role in shaping colostrum feeding behaviors. A study in Brazil found that mothers who received prenatal guidance and had vaginal deliveries were more likely to initiate timely colostrum feeding, whereas cesarean section and preterm birth were associated with delays(65). In Nigeria, timely breastfeeding was significantly higher among mothers who attended ANC and delivered in health facilities (66). Ethiopian studies echo these findings. For example, in Gununo health center, Wolaita Zone, mothers who had more than three ANC visits and received breastfeeding counseling were more likely to practice early colostrum feeding(14). Similarly, in Wolaita Sodo and Ambo district, health facility deliveries and professional assistance during childbirth were strongly associated with proper colostrum feeding, while absence of early PNC and counseling was linked to colostrum avoidance (4, 48). Cesarean section and complications during childbirth were also contributing factors to non-feeding practices in several regions (3, 4).

2.2.3 Cultural and Traditional Beliefs

Cultural beliefs and traditional practices play a substantial role in influencing colostrum feeding. In Western Turkey, early infant feeding practices were deeply shaped by traditional

norms(67). In Ethiopia, harmful beliefs persist, particularly in regions like Bench Maji Zone, where 26.57% of mothers believed colostrum was culturally forbidden, 20.28% considered it dirty, and 14% feared it would cause illness. Despite these beliefs, 76.08% still fed colostrum due to its perceived health benefits (47). Among pastoralist communities in Afar, colostrum avoidance was higher among mothers who did not discuss feeding with traditional birth attendants(43). These findings highlight the need for culturally sensitive health interventions.

2.2.4 Knowledge and Attitude

2.2.4.1 Knowledge

Maternal knowledge regarding the benefits of colostrum is a key determinant of early initiation. In the Tigray and Raya Kobo districts, poor awareness was strongly associated with colostrum avoidance(7, 59). Similarly, in Bure district, lack of understanding about colostrum's value led to higher rates of discarding it, particularly among mothers who delivered at home and were not involved in ANC groups (3). Studies from Jinka town and Jimma Arjo Woreda also emphasize the positive effect of maternal education and breastfeeding counseling on colostrum feeding (19, 64).

2.2.4.2 Attitude-related Factors

Maternal attitudes toward breastfeeding also influence colostrum practices. In Ambo district, negative attitudes were linked to higher avoidance, especially among women with unwanted pregnancies or those who experienced complications during delivery(4). Conversely, in Gununo health center, multiparous women and those with prior delivery experience demonstrated more favorable attitudes and were more likely to provide colostrum(14). This suggests that both experience and targeted counseling contribute to shaping positive maternal attitudes.

2.4 Conceptual frame work

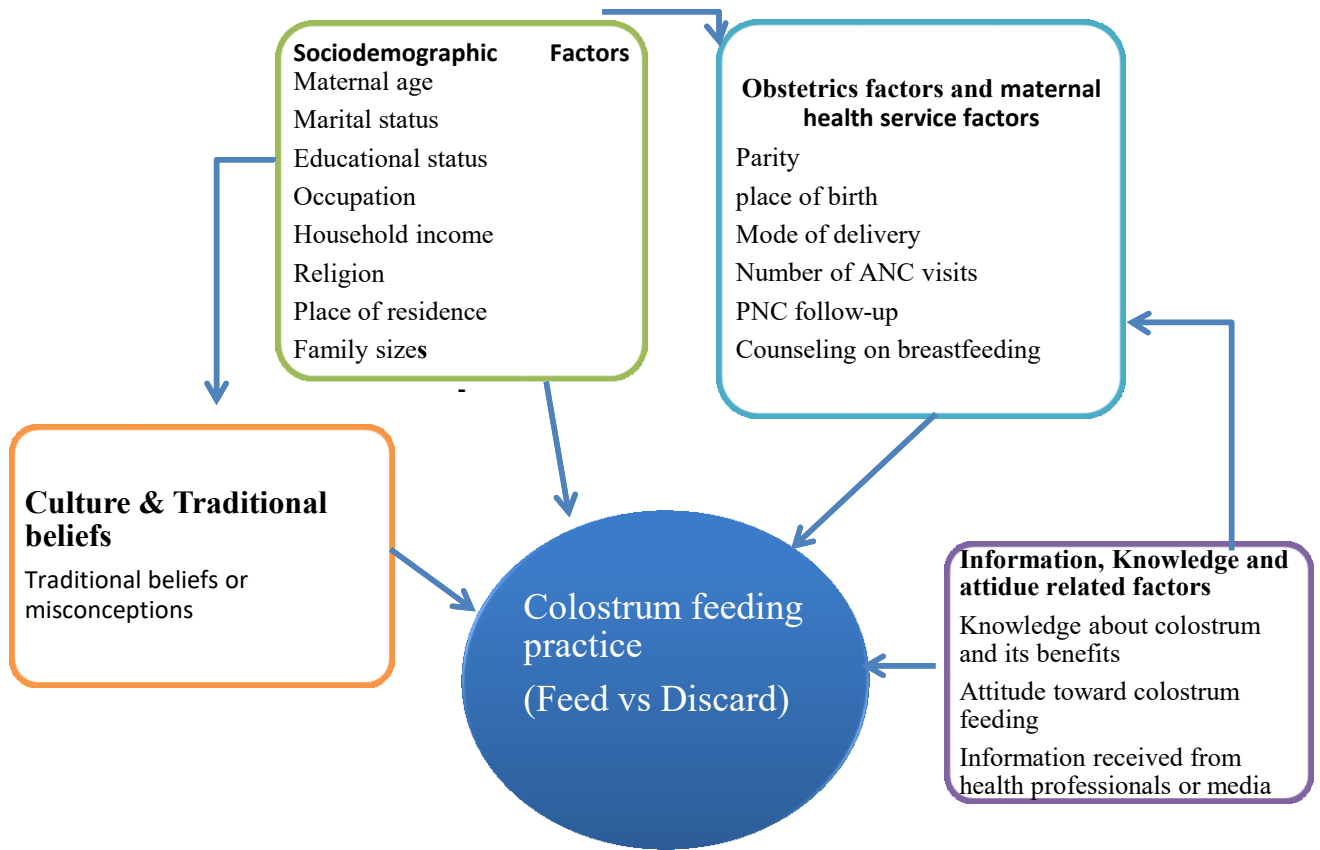


Figure 1: Conceptual framework for assessment of practice of colostrum feeding and its associated factors among mothers of infants and young children less than 24 months living in Asasa Town, Oromia, Southeast Ethiopia (7, 48, 59, 68).

3. OBJECTIVES

3.1 General objective

- To assess colostrum feeding practices and associated factors among mothers of infants and young children less than 24 months living in Asasa Town, Oromia, Southeast Ethiopia, 2025.

3.2 Specific Objectives

- ✓ To assess the practice of colostrum feeding among mothers of infants and young children less than 24 months living in Asasa Town, Oromia, Southeast Ethiopia, 2025.
- ✓ To identify factors associated with colostrum feeding practice among mothers of infants and young children less than 24 months living in Asasa Town, Oromia, Southeast Ethiopia, 2025.

4. METHOD AND MATERIALS

4.1- Study area and period

This study was conducted from September 25 to October 30, 2025 at Asasa Town, Oromia regional state, Southeast Ethiopia. Asasa is a town located in the West Arsi Zone of the Oromia Regional State, situated in the southeastern part of Ethiopia. It lies along the main road connecting Shashemene to Dodola, serving as an important administrative and commercial hub for surrounding rural communities. The town is known for its agricultural activities, with a large portion of the population engaged in farming and small-scale trade. It also has access to basic public services, including health and education facilities, which contribute to its role as a local center for development.

According to recent population data, Asasa Town has a total population of approximately 37,736, of which 18,491 are males and 19,245 are females. Among the total population, 7,974 are women of reproductive age, making the town particularly relevant for studies related to maternal and child health. In addition, there are about 6,200 children under the age of five, including 2,155 children under two years, who represent a critical age group for assessing infant feeding practices such as colostrum administration. The demographic structure and accessibility of health services make Asasa Town an appropriate and meaningful setting for the current study.

4.2. Study designs

A community cross-sectional study was conducted.

4.3. Source and study population

4.3.1. Source Population

The source population was comprised all mothers with infants and young children under 24 months residing in Asasa Town

4.3.2. Study population

The study population was included systematically selected mothers of infants and young children under 24 months who are available during the data collection period.

4.4. Eligibility criteria

4.4.1 Inclusion criteria:-

- Mothers who have infants and young children less than 24 months of age.
- Mothers who have lived in Asasa Town for at least six months prior to the study

4.4.2 Exclusion criteria:-

- Mothers who are seriously ill or unable to communicate at the time of data collection.
- Mothers whose infants were critically ill.

4.5. Sample size and sampling procedures

4.5.1. Sample size determination

1. The first objective sample size was calculated by using single population proportion based on the following assumptions: 95% confidence interval, margin of error 5% and proportion of prevalence of colostrum feeding was taken (56.5%) (p) as reported by study done in Ambo District of West Shewa Zone, Oromia Regional state, Ethiopia, 2020(4).

Then sample size was calculated by using single population proportion formula:

$$n = \frac{(Z \alpha / 2)^2 p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 0.565(1-0.565)}{0.05^2} = 355$$

Where: - n = the required minimum sample size

z = Level of confidence 95%, $Z\alpha/2 = 1.96$

d = Margin of error, assumed to be 5%=0.05

p = Prevalence of colostrum feeding taken from previous study

By adding 10% non-response gives the final sample size of **391**

2. The sample size for the second objective was calculated using the double population proportion formula in Epi Info, assuming 80% statistical power and a 1:1 allocation ratio, based on findings from previous studies conducted in Dire Dawa City, Eastern Ethiopia, and South Gondar Zone, Amhara Region, Northwest Ethiopia.

Table 1: Summary of sample size calculation for factors associated with prevalence of colostrum feeding practice among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia using Open Epi 7.2.5.0

Variables selected as Association factors	Assumptions					Sample size with a 10% non-response rate			
	OR	P1	Ratio	Power	CI	N	10%NR	n	
Knowledge(good)	3.5	75.6%	1:1	80%	95%	192	19.2	211.2	
Place of birth (home)	20.0	77.7%	1:1	80%	95%	92	9.2	101.2	
Counseled on CF(yes)	2.6	74.1%	1:1	80%	95%	270	27	297	

➤ **NB:** OR = odds ratio; P1 = proportion of the unexposed group; Ratio = case-to-control ratio; CI = confidence interval; N = 10% non-response rate; and n = final sample size.

The sample size calculated for the first objective (prevalence of colostrum feeding) was larger than that for the second objective. Therefore, the final sample size for this study was determined based on the first objective, resulting in a total of **391** participants.

4.5.2. Sampling procedure

A systematic random sampling technique was used to select mothers of children under 24 months residing in Asasa Town, Oromia Region. Local administrative records indicate that the town has approximately 2,155 children under two years of age, which served as the sampling frame for identifying eligible households.

The sampling interval (K) was calculated by dividing the total number of eligible mothers by the required sample size ($K = N/n$). With a sample size of 391, every Kth household was selected. The first household was identified at random from the initial K households using a lottery method. In households with more than one eligible mother, one was randomly chosen. When a selected household did not contain an eligible participant, the next eligible household was visited. This procedure ensured a representative sample while preserving randomness and reducing selection bias.

$$\text{Sampling fraction (K)} = \frac{\text{Total population}}{\text{Sample size}} = \frac{2155}{391} = 5.5 \sim 6$$

4.6. Variables of the study

4.6.1. Dependent variables

Colostrum feeding practice (Yes/No)

4.6.2. Independent variables

1. Socio-demographic factors:

- Maternal age
- Marital status
- Educational status
- Occupation
- Household income
- Religion
- Place of residence
- Family size

2. Obstetric and maternal health service factors:

- Parity
- Place of delivery (home or health institution)
- Mode of delivery (vaginal or cesarean)
- Number of antenatal care (ANC) visits
- Postnatal care (PNC) follow-up
- Counseling on breastfeeding

3. Knowledge and attitude-related factors:

- Knowledge about colostrum and its benefits
- Attitude toward colostrum feeding
- Information received from health professionals or media

4. Cultural and traditional beliefs:

- Traditional beliefs or misconceptions about colostrum (e.g., colostrum is dirty or harmful)

4.7. Operational definitions

Colostrum: The thick, yellowish breast milk secreted during the first 3–4 days after birth, rich in antibodies and nutrients, produced before transitional and mature breast milk appears (48).

Knowledge on colostrum feeding: Assessed using 8 yes/no questions. A correct answer is scored as 1 and an incorrect answer as 0. Total scores are summed and categorized as:

- ✓ Good knowledge: Score $\geq$ mean value of the total knowledge items
- ✓ Poor knowledge: Score $<$ mean value (5)

Attitude toward colostrum feeding: Measured using 5 Likert scale items (strongly agree to strongly disagree), scored from 1 to 5. The total attitude score is calculated and categorized as:

- ✓ Positive attitude: Score $\geq$ mean attitude score
- ✓ Negative attitude: Score $<$ mean attitude score(5)

Colostrum feeding practice: Refers to the actual behavior of mothers in feeding colostrum to their newborns within the first hour to three days postpartum.

- ✓ Good practice: Score $\geq$ mean value of practice-related items
- ✓ Poor practice: Score $<$ mean value (5).

4.8. Data collection tools and procedures

Data will be collected using a structured, pretested questionnaire adopted from validated tools in similar studies (4, 5, 10, 14, 48). The questionnaire was included sections on:

- ✓ Socio-demographic characteristics
- ✓ Obstetric and maternal health service utilization
- ✓ Cultural and traditional beliefs
- ✓ Knowledge, attitude, and practice (KAP) toward colostrum feeding

Knowledge was assessed with 8 yes/no questions.

Attitude was measured using 5 Likert-scale items.

Practice was assessed with multiple-choice or yes/no questions addressing actual behaviors.

The questionnaire was translated into the local language and administered through face-to-face interviews. Data collectors and supervisors were trained to maintain quality and consistency.

4.9. Data quality assurance

To ensure the accuracy and consistency of the data, a pilot test was carried out on 5% of the intended sample population from an area outside the actual study site. This was used to evaluate the clarity, flow, and reliability of the questionnaire prior to the main data collection. Based on the feedback from the pre-test, necessary adjustments were made to refine the data collection tool. Before data collection began, data collectors underwent a one-day training session focused on the study's purpose, ethical considerations, and correct procedures for administering the questionnaire. The training also included guidance on how to handle participants respectfully and maintain data confidentiality. Throughout the data collection process, the principal investigator was provided with close supervision and continuous support. The collected responses were reviewed daily to ensure completeness and internal consistency. Any issues identified were immediately addressed by returning the questionnaire to the respective data collector for clarification or correction.

4.10. Data processing and analysis procedure

Collected data were coded, cleaned, and entered into Epi-Data version 7.2.5.0, then exported to SPSS version 27 for analysis. Descriptive statistics were used to summarize participant characteristics and colostrum feeding practices, including knowledge, attitude, and practice (KAP) components. Knowledge was measured using eight yes/no items, each scored as one for a correct answer. Attitude was assessed through five Likert-scale questions (scored from one to five). Practice was evaluated using behavior-based items related to colostrum feeding. For each domain, participants scoring greater than or equal to the mean were categorized as having good knowledge, positive attitude, or good practice, respectively. Results were presented using frequency tables, graphs, and figures to provide a clear picture of the data distribution.

Bivariate logistic regression was used to identify variables associated with colostrum feeding. Those with p -values < 0.25 were included in a multivariable logistic regression model to control for confounding factors. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported, and statistical significance was declared at $p < 0.05$. Model fitness was assessed using the Hosmer-Lemeshow test, and multicollinearity was checked using the Variance Inflation Factor (VIF) values.

4.11. Ethical considerations

Prior to the commencement of the study, ethical clearance was obtained from the Institutional Review Board (IRB) of Arsi University. A formal permission letter was also secured from the Department of Public Health and the relevant administrative bodies of Asasa Town. Study participants were clearly informed about the purpose, procedures, and significance of the research. Participation was entirely voluntary, and individuals were assured of their right to refuse or withdraw at any stage without any consequence. To maintain confidentiality, no personal identifiers, such as names, were recorded on the questionnaire. All collected information was kept strictly confidential and used solely for research purposes. Participant privacy will be respected throughout the data collection process.

4.12 Dissemination of the results

The final findings of this study will be compiled and submitted to the Department of Public Health at Arsi University as part of the fulfillment of academic requirements. Copies of the thesis will also be deposited in the libraries of Asella Referral and Teaching Hospital, Arsi Zone Health Bureau. Additionally, the results will be disseminated through presentations at relevant seminars and professional conferences, and efforts will be made to publish the study in nationally or internationally recognized peer-reviewed journals to reach a broader scientific community.

5. RESULTS

5.1. Socio-demographic and economic-related characteristics of respondents

A total of 381 mothers participated in the study with 97.4% response rate. Most respondents were within the adults (20-34yrs) reproductive age group (82.9%). The majority of participants were Muslim (80.1%) and predominantly of Oromo ethnicity (95%). Nearly all mothers were married (98.7%).

Regarding educational status, 42.5% of mothers had completed secondary education, while 21.8% had attained college education or above. More than half of the mothers were housewives (62.5%), followed by government employees (16.8%) and merchants (11%). Most fathers had primary (33.3%) or secondary (27.3%) education and 61.4% were farmers. Two-thirds of households had one under-five child, and a majority earned 5,000–10,000 ETB per month (65.6%).

Table 2: Socio-demographic and economic-related responses of mothers among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Variable	Category	Frequency (n)	Percent (%)
Age group	<20 years	14	3.7
	20-34 years	316	82.9
	>34 years	51	13.4
Religion	Muslim	305	80.1
	Orthodox	63	16.5
	Protestant	13	3.4
Ethnicity	Oromo	362	95.0
	Amhara	11	2.9
	Tigre	2	0.5
	Gurage	6	1.6
Marital Status	Married	376	98.7
	others	5	1.3
Mother's Education	No formal education	18	4.7
	Primary	118	31.0
	Secondary	162	42.5
	College and above	83	21.8
Mother's Occupation	Housewife	238	62.5
	Government employee	64	16.8
	Merchant	42	11.0
	Daily laborer	29	7.6
	Others	8	2.1
Father's Educational status	No formal education	88	23.1
	Primary	127	33.3
	Secondary	104	27.3
	College and above	62	16.3
Number of Under-Five Children	One	256	67.2
	Two	125	32.8
Monthly Household Income	< 5,000 ETB	99	26.0
	5,000–10,000 ETB	250	65.6
	> 10,000 ETB	32	8.4

5.2. Child-Related Characteristics

A total of 381 mothers with children aged less than 24 months participated in the study. The mean age of the children, as reported by their mothers, was 7.94 (SD $\pm$ 5.10) months. More than one-third of the children were under 6 months (38.6%), followed by those aged 6–12 months (45.9%), while 15.5% were between 13–24 months.

Based on maternal report, 56.7% of the children were female, and 43.3% were male. Nearly half of the children (48.6%) had growth monitoring follow-up, whereas 51.4% had not been taken for routine monitoring. Most children were reported to be healthy after birth (85.6%), while 14.4% experienced illness. Additionally, almost all children had received routine vaccination (98.2%), as reported by their mothers.

Table 3: Child-related responses of mothers among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Variable	Category	Frequency (n)	Percent (%)
Age Category of Child	Under 6 months	147	38.6
	6–12 months	175	45.9
	13–24 months	59	15.5
Sex of Child	Male	165	43.3
	Female	216	56.7
Growth Monitoring Follow-up	Yes	185	48.6
	No	196	51.4
Health Condition After Birth	Healthy	326	85.6
	Sick	55	14.4
Child Vaccinated	Yes	374	98.2
	No	7	1.8

5.3. Maternal and Obstetric Characteristics of Mothers

A total of 381 mothers participated in the study. Nearly half were primiparous, accounting for 174 (45.7%), while the remaining 215 (56.4%) were multiparous. Most mothers received antenatal care (ANC) during their recent pregnancy, with 358 (94.0%) attending at least one ANC visit. Among ANC attendees, the majority 251 (70.1%) completed four or more visits. More than half of the mothers 213 (55.9%) reported that they did not receive health education during ANC follow-up. Health facility delivery was highly prevalent, with 364 (95.5%) of mothers giving birth at health facility.

Postnatal care (PNC) utilization was relatively high, with 289 (75.9%) of mothers reporting at least one PNC visit. Regarding infant and young child feeding (IYCF) counseling, a substantial proportion of mothers 185 (48.6%) had not received IYCF-related health education. In terms of delivery mode, the majority of mothers delivered vaginally (270; 70.9%), while 111 (29.1%) delivered by caesarean section.

Table 4: Maternal and obstetric characteristics of mothers among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Characteristics	Category	Frequency (n)	Percent (%)
Parity	Primipara	166	43.6
	Multipara	215	56.4
Received ANC	Yes	358	94.0
	No	23	6.0
Number of ANC Visits(n = 358)	< 4 visits	107	29.9
	≥ 4 visits	251	70.1
Received Health Education During ANC on IYCF(n =358)	Yes	145	40.5
	No	213	59.5
Place of Delivery	Health facility	364	95.5
	Home	17	4.5
Received PNC	Yes	105	27.6
	No	276	72.4
Received CF Health Education	Yes	209	54.9
	No	172	45.1
Mode of Delivery	Vaginal delivery	314	82.4
	Caesarean section	67	17.6

5.4. Maternal knowledge on colostrum feeding

In this study, the majority of mothers (82.7%) had heard about colostrum feeding, with health professionals serving as the primary source of information (54.6%), followed by family and friends (25.7%). Regarding mothers' understanding of key aspects of colostrum feeding, 74.0% correctly identified the color of colostrum as yellow. Additionally, 64.0% recognized that colostrum provides natural immunity, and 68.2% acknowledged that it is the best source of nutrition for newborns.

More than half of the respondents (56.4%) were aware that early initiation of colostrum feeding can help reduce the risk of postpartum hemorrhage, and 65.6% understood that colostrum protects infants from various diseases. Similarly, 68.2% reported that colostrum feeding should begin within the first hour after birth and continue for the first three days of life. Overall, the proportion of mothers who demonstrated good knowledge of colostrum feeding was 73.2% (95% CI: 68.8%–77.6%).

Table 5: Maternal knowledge on colostrum feeding among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Knowledge Item	Response	Frequency (n)	Percent (%)
Have you ever heard about colostrum feeding?	Yes	315	82.7
	No	66	17.3
Source of Information (n = 315)	Health professionals	172	54.6
	Family and friends	81	25.7
	Mass media	45	14.3
	Other	17	5.4
Color of colostrum	Yellow	282	74.0
	White	99	26.0
Colostrum gives natural immunity	Yes	244	64.0
	No	137	36.0
Colostrum is the best nutrition for the newborn	Yes	260	68.2
	No	121	31.8
Early initiation of CF reduces postpartum hemorrhage risk	Yes	215	56.4
	No	166	43.6
Colostrum protects the baby from diseases	Yes	250	65.6
	No	131	34.4
CF should begin within one hour & continue for three days	Yes	260	68.2
	No	121	31.8
Overall Knowledge Level	Good knowledge	279	73.2
	Poor knowledge	102	26.8

5.5. Maternal attitudes toward colostrum feeding

In this study, mothers were assessed for various beliefs and misconceptions regarding colostrum feeding. Overall, the majority of mothers demonstrated positive attitudes toward colostrum, with 257 (67.5%) exhibiting a favorable attitude, while 124 (32.5%) had an unfavorable attitude.

Most mothers disagreed with common misconceptions about colostrum. More than half of the respondents disagreed with the statements that colostrum impairs a child's growth and development 212 (55.6%), causes diarrhea 242 (63.5%), makes the baby sick 259 (68.0%), or is a dirty part of breast milk 249 (65.4%). Similarly, a large proportion disagreed that colostrum is difficult to digest and should be discarded 255 (66.9%) or that it is forbidden by cultural beliefs 239 (62.7%). Additionally, half of the mothers disagreed with the perception that babies do not like colostrum 192 (50.4%). Finally, the study found that **67.5%** of mothers (95% CI: 62.8–72.0) had a favorable attitude toward colostrum feeding.

Table 6: Maternal attitudes toward colostrum feeding among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Characteristics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Baby does not like colostrum breast milk	9 (2.4%)	62 (16.3%)	97 (25.5%)	192 (50.4%)	21 (5.5%)
Colostrum impairs growth and development	4 (1.0%)	66 (17.3%)	73 (19.2%)	212 (55.6%)	26 (6.8%)
Colostrum causes diarrhea for an infant	7 (1.8%)	53 (13.9%)	68 (17.8%)	242 (63.5%)	11 (2.9%)
Colostrum makes the baby sick	8 (2.1%)	48 (12.6%)	57 (15.0%)	259 (68.0%)	9 (2.4%)
Colostrum is a dirty part of milk	5 (1.3%)	76 (19.9%)	30 (7.9%)	249 (65.4%)	21 (5.5%)
Colostrum milk is difficult to digest and should be discarded	7 (1.8%)	60 (15.7%)	43 (11.3%)	255 (66.9%)	16 (4.2%)
Colostrum is forbidden in culture	9 (2.4%)	67 (17.6%)	49 (12.9%)	239 (62.7%)	17 (4.5%)
Overall Attitude Level	Favorable attitude			257	67.5
	Unfavorable attitude			124	32.5

5.6. Practice of colostrum feeding

Among the 381 mothers surveyed, the majority 318 (83.5%) reported feeding colostrum to their newborns, while 63 (16.5%) did not. The primary reasons cited for withholding colostrum included the perception of insufficient breast milk 19 (5.0%), maternal medical or surgical complications 13(3.4%), and misconceptions such as colostrum being “dirty” or capable of causing abdominal discomfort 12(3.1%). Early initiation of breastfeeding was also suboptimal, with 108 mothers (28.3%) reporting that they did not initiate breastfeeding within the first hour of birth.

Pre-lacteal feeding practices were relatively common, as 120 mothers (31.5%) provided substances other than breast milk shortly after delivery. The most frequently reported pre-lacteal feeds included formula milk 61(16.0%), cow’s milk 27 (7.1%), and plain water 15(3.9%). The overall prevalence of colostrum feeding among infants less than 24 hours old was **61.4%** (CI: 95% 56.5% to 66.3%)

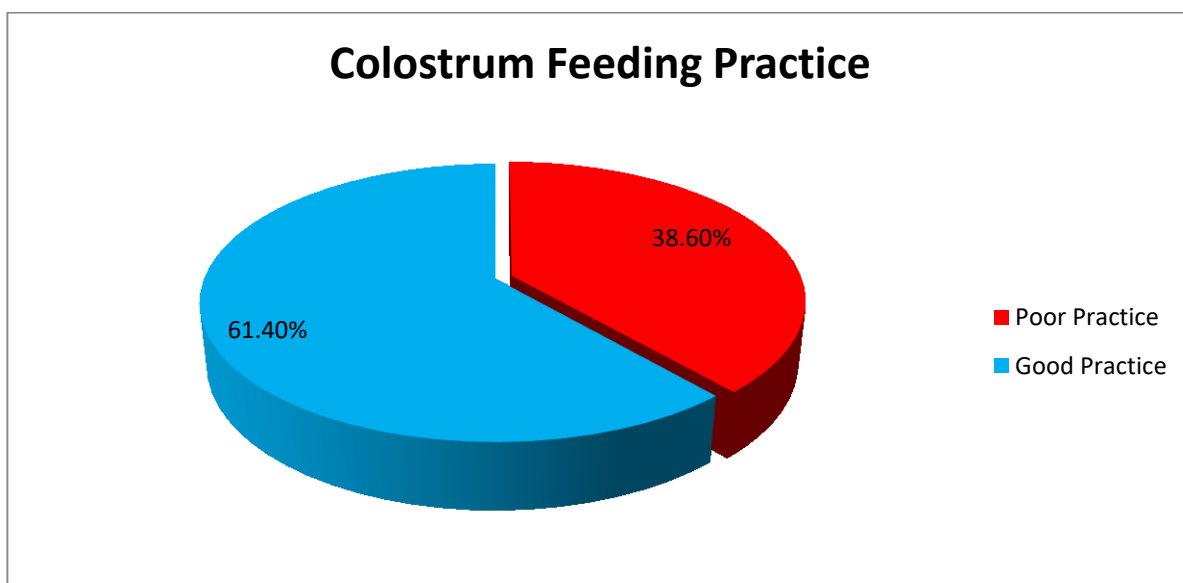


Figure 2: Prevalence of colostrum feeding practice among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025

5.7 Factors associated with colostrum feeding practice

The study utilized both bivariate and multivariable binary logistic regression analyses to identify factors associated with colostrum feeding practices. In the bivariate analysis, variables with a p-value < 0.25 included maternal occupation, monthly income, neonatal health status immediately after birth, parity, place of delivery, mode of delivery, breastfeeding and colostrum counseling, maternal knowledge, and maternal attitude.

In the multivariable logistic regression analysis, mode of delivery, receipt of postnatal counseling on breastfeeding and colostrum feeding, and maternal knowledge about colostrum remained significantly associated with colostrum feeding practice ($p < 0.05$). Mothers who received health counseling on breastfeeding and colostrum feeding after delivery were **1.81 times more likely** to practice appropriate colostrum feeding compared with those who did not receive counseling (AOR = 1.81, 95% CI: 1.08–3.02).

Similarly, mothers who delivered vaginally had **6.19 times higher odds** of practicing colostrum feeding compared with mothers who underwent cesarean delivery (AOR = 6.19, 95% CI: 2.92–13.11). Furthermore, mothers with good knowledge about colostrum were **5.26 times more likely** to practice colostrum feeding than those with poor knowledge (AOR = 5.26, 95% CI: 2.97–9.32).

Table 7: Bivariate and multivariate logistic regression analysis of factors associated with colostrum feeding practice among mothers of infants and young children under 24 months residing in Asasa Town, Oromia, south-east Ethiopia, 2025(n=381)

Variable	Category	Colostrum feeding practice		COR (CI=95%)	AOR (CI=95%)
		Good	Poor		
Occupation of mother	Housewife	141 (60.3%)	97 (66.0%)	4.36(0.86 -22.06)	2.55(0.38–17.06)
	Government employee	44 (18.8%)	20 (13.6%)	6.6(1.2–35.6)	3.4(0.4–24.7)
	Merchant	27 (11.5%)	15 (10.2%)	5.4(0.9–30.2)	3.2(0.4–24.3)
	Daily laborer	20 (8.5%)	9 (6.1%)	6.7(1.1–39.7)	3.4(0.4–28.3)
	Others	2 (0.9%)	6 (4.1%)	1	1
Monthly income	< 5000	56 (23.9%)	43 (29.3%)	1	1
	5000-10000	154 (65.8%)	96 (65.3%)	1.2(0.8–1.9)	1.2(0.6–2.1)
	>10000	24 (10.3%)	8 (5.4%)	2.3(0.9–5.6)	1.9(0.6– 5.9)
Child health condition	Healthy	213 (91.0%)	113 (76.9%)	3.0(1.7– 5.5)	1.5(0.7–3.2)
	Sick	21 (9.0%)	34 (23.1%)	1	1
Parity	Primipara	91 (38.9%)	75 (51.0%)	1	1
	Multipara	143 (61.1%)	72 (49.0%)	1.6(1.08–2.5)	1.2(0.8 – 2.1)
Place of birth	Health facility	221 (94.4%)	143 (97.3%)	2.1(0.7–6.6)	1.9(0.5– 7.5)
	Home	13 (5.6%)	4 (2.7%)	1	1
Counseling on colostrum	No	108 (46.2%)	101 (68.7%)	1	1
	Yes	126 (53.8%)	46 (31.3%)	2.56(1.7–3.9)	1.8(1.1–3.0)*
Mode of delivery	Vaginal	222 (94.9%)	92 (62.6%)	11.1(5.7–21.6)	6.2(2.9-13.1)**
	C/s	12 (5.1%)	55 (37.4%)	1	1
Maternal Knowledge	Good	208 (88.9%)	71 (48.3%)	8.56(5.09 – 14.4)	5.3(2.9-9.3)**
	Poor	26 (11.1%)	76 (51.7%)	1	1
Maternal attitude	Favorable	141 (70.1%)	48 (36.7%)	1.36(0.88–2.10)	1.24(0.7 – 2.1)
	Unfavorable	70 (29.9%)	93 (63.3%)	1	1

6. DISCUSSION

This study assessed colostrum feeding practices and associated factors among mothers of infants and young children under 24 months, revealing that 61.4% of mothers practiced colostrum feeding. When compared with previous research, this finding shows both similarities and variations across global and Ethiopian contexts.

The result of the present study is similar to the colostrum feeding rate reported in South Sudan (61.2%)(37). However, it is lower than findings from several Asian and African countries, including Pakistan (72.1%)(30), Papua New Guinea (68.6%)(21), India's Kamrul, Assam (76%)(31), and Bangladesh (75.92%)(36). Likewise, multiple Ethiopian studies reported substantially higher prevalence rates than our study, such as Chenchura Zuria (84.7%)(41), Debreworkos town (77.71%)(42), Bahir Dar city (83.3%)(45), Arba Minch Zuria (89.0%)(46), Gununo Health Center (83%)(14), Wolaita Sodo (87.4%)(48), Dubti town (84.4%)(49), Gozamen district (77.9%)(57), Raya Kobo District (86.5%)(7), and Mekele health facilities (80.5%)(58).

Conversely, the current study finding is higher than the rate reported in Egypt (41.4%)(38) and Ambo district (56.5%)(4). These discrepancies may be attributed to differences in cultural beliefs, maternal awareness, urban–rural disparities, and variations in maternal health service utilization. Cultural perceptions of colostrum as “dirty,” “harmful,” or “inappropriate for newborns” documented in certain regions (47) may play a role in lowering colostrum feeding rates where such beliefs dominate.

Mothers who received counseling on breastfeeding and colostrum during immediate postnatal care were significantly more likely to practice colostrum feeding. This finding is consistent with evidence from Dire Dawa City, Eastern Ethiopia, where mothers who received counseling on colostrum were more likely to demonstrate appropriate colostrum-feeding practices(1). Similar results were observed in a study conducted at Gununo Health Center in Wolaita Zone, which showed that respondents who received breastfeeding counseling were more likely to develop positive attitudes and engage in appropriate colostrum-feeding practices compared to those who did not receive such counseling(14). Likewise, a study from Ambo District, Ethiopia, reported that mothers who attended ANC services but did not receive counseling on the importance of colostrum were less likely to feed colostrum than

those who were counseled (4). This might be due to counseling plays a crucial role in shaping maternal knowledge, correcting misconceptions, and reinforcing the health benefits of colostrum. Immediate postnatal counseling provides timely, context-specific information when mothers are most receptive and able to apply the guidance directly. This targeted interaction enhances awareness, builds confidence in early breastfeeding practices, and ultimately increases adherence to recommended newborn feeding behaviors.

In addition, this study revealed that mode of delivery emerged as a significant determinant of colostrum feeding practice. Mothers who delivered vaginally were more likely to initiate colostrum feeding compared to those who underwent cesarean sections. This finding is consistent with existing literature, which suggests that cesarean delivery and associated complications often delay breastfeeding initiation and reduce the likelihood of early colostrum uptake. For instance, a study conducted in Brazil found that mothers who had vaginal deliveries were more likely to initiate timely colostrum feeding, while cesarean sections and preterm births were linked to delayed breastfeeding practices(65). Similarly, a study from Bure district in Ethiopia reported that the odds of avoiding colostrum feeding were higher among mothers who had cesarean sections, in contrast to those who delivered vaginally(3). The possible justification for this finding could be that cesarean deliveries often involve longer recovery times, increased risk of post-operative complications, and separation from the newborn, which can contribute to delayed initiation of breastfeeding and hinder the immediate provision of colostrum. Additionally, mothers who experience cesarean sections may face challenges such as pain or physical limitations that make breastfeeding more difficult in the first few hours postpartum. In contrast, vaginal delivery typically allows for quicker recovery and immediate contact with the infant, facilitating early breastfeeding and colostrum feeding. Therefore, promoting timely breastfeeding initiation following vaginal delivery, alongside strategies to support cesarean section mothers, is crucial to improving colostrum feeding rates.

Finally, maternal knowledge about colostrum demonstrated a strong positive association with colostrum-feeding practice. Mothers who possessed good knowledge were significantly more likely to provide colostrum to their newborns. This finding aligns with evidence from Dire Dawa City, Eastern Ethiopia, where mothers with adequate knowledge of colostrum and breastfeeding practiced colostrum feeding more consistently than their less-informed

counterparts (1). Similar findings were reported in studies conducted in Tigray and Raya Kobo (7, 59), Bure district (3), Jinka town, and Jimma Arjo Woreda(19, 64), all of which indicated that enhanced maternal awareness, often acquired through ANC counseling, community health education, and targeted information sessions, was strongly associated with improved colostrum-feeding practices. This could be due to the fact that maternal knowledge directly influences feeding decisions during the immediate postpartum period. Awareness of the nutritional, immunological, and developmental benefits of colostrum empowers mothers to overcome cultural misconceptions or traditional beliefs that may discourage its use. Knowledge obtained through structured counseling and health education increases confidence, corrects misinformation, and equips mothers to make informed choices. Consequently, well-informed mothers are more likely to initiate evidence-based newborn feeding practices, including the timely provision and acceptance of colostrum.

7. STRENGTH AND LIMITATION

7.1 Strength

- ✓ Primary data collection ensured that the information obtained was current, context-specific, and reflective of mothers' real experiences and practices during the immediate postpartum period.
- ✓ The study achieved a strong response rate, enhancing the validity and reliability of the results.
- ✓ Use of a structured, interviewer-administered questionnaire minimized misinterpretation of questions and improved the completeness of responses.

7.2 Limitation

- ✓ Cross-sectional design: Because data were collected at a single point in time, causality cannot be established between the associated factors and colostrum feeding practices.
- ✓ Self-reported data: Information was obtained through maternal recall, which may introduce recall or social desirability bias, especially regarding feeding behaviors after birth.
- ✓ Limited generalizability: Although community-based, the findings represent Asasa Town and may not fully reflect practices in other settings with different cultural or health system contexts

8. CONCLUSION AND RECOMMENDATION

8.1 Conclusion

The findings indicate that the prevalence of colostrum feeding in the study area is lower than both national and global recommendations. However, approximately three-fourths of mothers exhibited a strong understanding of colostrum feeding, and about two-thirds demonstrated a positive attitude towards its practice. The study identified several factors significantly associated with appropriate colostrum feeding. Specifically, mothers who received postnatal counseling on breastfeeding and colostrum feeding, those who had vaginal deliveries, and those with good knowledge about colostrum were more likely to engage in proper colostrum feeding practices. While more than half of the mothers practiced colostrum feeding, the overall prevalence remains suboptimal, underscoring the continued need for targeted maternal education and enhanced postnatal counseling services.

8.2. Recommendation

For Health Facilities and Health Workers

- ✓ **Strengthen postnatal counseling:** Health professionals should consistently provide structured counseling on the importance of colostrum feeding immediately after delivery and during early postnatal care.
- ✓ **Enhance ANC and PNC education:** Integrate colostrum feeding messages into routine ANC and PNC sessions, emphasizing its nutritional and immunological benefits.
- ✓ **Target mothers undergoing cesarean delivery:** Provide additional breastfeeding support to mothers who deliver via cesarean section, as they are at higher risk of delayed initiation.

For Community Health Programs

- ✓ **Community-level awareness campaigns:** Collaborate with health extension workers to deliver culturally appropriate education to address misconceptions and promote positive attitudes toward colostrum.
- ✓ **Engage local leaders and HEWs:** Mobilize influential community members and health extension workers to advocate for early breastfeeding initiation.

For Policy and Program Planners

- ✓ **Prioritize maternal education strategies:** Develop policies that strengthen maternal knowledge-building initiatives at household and community levels.
- ✓ **Improve access to maternal health services:** Expand availability and utilization of ANC, delivery care, and PNC services in rural and semi-urban areas.

For Future Research

- ✓ **Qualitative studies:** Further qualitative research is recommended to explore cultural beliefs and barriers influencing colostrum feeding in the community.
- ✓ **Comparative studies:** Conduct large-scale studies across different regions to enhance generalizability and identify regional variations in colostrum feeding practices.

9. REFERENCES

1. Gemed ND, Mengistu F, Chekole FA, Balcha WF, Adugna KF, Belete GA. Factors associated with colostrum feeding practice among mothers who attended child immunization clinic in Dire Dawa City, Eastern Ethiopia. *Pan African Medical Journal*. 2024;48(1).
2. Demographic E. Health survey (EDHS) 2016: key indicators report, central statistical agency Addis Ababa, Ethiopia. The DHS Program ICF Rockville, Maryland, USA. 2016.
3. Mose A, Dheresa M, Mengistie B, Wassihun B, Abebe H. Colostrum avoidance practice and associated factors among mothers of children aged less than six months in Bure District, Amhara Region, North West, Ethiopia: A community-based cross-sectional study. *PLoS one*. 2021;16(1):e0245233.
4. Gela JD, Minase D, Teferi E, Tesfaye T. Knowledge, attitude, practices and associated factors towards colostrum feeding among mothers of infants in Ambo District of west Shewa zone, Oromiya region, Ethiopia. 2020.
5. Zewde GT. Assessment of knowledge, attitude and practices of colostrum feeding among postnatal mothers in Harar Town Governmental Hospital Harar, Ethiopia 2019. *J Pediatr Res Rev Rep*. 2020;2:2-6.
6. Liben ML. Colostrum: The Golden Milk for Infants's Health. *Global Journal of Intellectual & Developmental Disabilities*. 2017;1(4):59-60.
7. Legesse M, Demena M, Mesfin F, Haile D. 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. *Journal of tropical pediatrics*. 2015;61(5):357-63.
8. Liben ML, Abuhay T, Haile Y. The role of colostrum feeding on the nutritional status of preschool children in Afambo District, Northeast Ethiopia: descriptive cross sectional study. *Eur J Clin Biomed Sci*. 2016;2(6):87-91.
9. Aisha R, Batool F, Sultana S. Knowledge, attitude and practices about colostrum feeding among pregnant women in military hospital Rawalpindi of Pakistan. *Open journal of nursing*. 2016;6(04):309.
10. NATNAEL D. PRACTICE OF COLOSTRUM FEEDING AND ASSOCIATED FACTORS AMONG MOTHERS WHO ATTENDED CHILD IMMUNIZATION CLINIC IN GOVERNMENTAL HEALTH FACILITIES OF DIRE DAWA ADMINISTRATIVE CITY, EASTERN ETHIOPIA, 2021 2021.
11. (WHO) WHO. Global Health Observatory (GHO) data on Child mortality and causes of death. 2017.
12. Kebede N, Alemu G, Cherie N. Colostrum feeding practice and its associated factors among postnatal mothers who attend at health facility, Ethiopia. *Journal of Neonatal Nursing*. 2023;29(6):875-80.
13. Organization WH. Indicators for assessing infant and young child feeding practices: part 2: measurement. 2010.
14. Yeshambel Wassie A, Atnafe Gebeyehu N, Abebe Gelaw K. Knowledge, attitude, and associated factors towards colostrum feeding among antenatal care attendant mothers in Gununo Health Centre, Wolaita Zone, Ethiopia 2019: Cross-Sectional Study. *International journal of pediatrics*. 2020;2020.
15. Howden-Chapman P, Siri J, Chisholm E, Chapman R, Doll CN, Capon A. SDG 3: Ensure healthy lives and promote wellbeing for all at all ages. A guide to SDG interactions:

- from science to implementation Paris, France: International Council for Science. 2017:81-126.
16. Memon J, Holakouie-Naieni K, Majdzadeh R, Yekaninejad MS, Garmaroudi G, Raza O, et al. Knowledge, attitude, and practice among mothers about newborn care in Sindh, Pakistan. *BMC pregnancy and childbirth*. 2019;19:1-9.
 17. Organization WH. Neonatal mortality [https://www.who.int/gho/child_health/mortality/neonatal/en/]. Accessed 20 Sep 2017.
 18. Akter T, Dawson A, Sibbritt D. What impact do essential newborn care practices have on neonatal mortality in low and lower-middle income countries? Evidence from Bangladesh. *Journal of Perinatology*. 2016;36(3):225-30.
 19. Amaje E, Gebremeskel F, Tufa G, Gelchu M, Wayessa ZJ. Colostrum Avoidance Practices and Its Associated Factors among Mothers of Children Aged Less Than 12 Months in Jinka Town, South Ethiopia, 2020. A Community Based Cross Sectional Study. *Health Services Research and Managerial Epidemiology*. 2022;9:23333928221106056.
 20. Organization WH. the United Nations Children's Fund (UNICEF) Indicators for assessing infant and young child feeding practices: definitions and measurement methods. World Health Organization and the United Nations Children's Fund (UNICEF): Geneva, Switzerland. 2021.
 21. Kuzma J. Knowledge, attitude and practice related to infant feeding among women in rural Papua New Guinea: a descriptive, mixed method study. *International breastfeeding journal*. 2013;8:1-5.
 22. Kavle JA, LaCroix E, Dau H, Engmann C. Addressing barriers to exclusive breastfeeding in low-and middle-income countries: a systematic review and programmatic implications. *Public health nutrition*. 2017;20(17):3120-34.
 23. Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, et al. Why invest, and what it will take to improve breastfeeding practices? *The lancet*. 2016;387(10017):491-504.
 24. Asaro T, Gutema BT, Weldehawaryat HN. Colostrum avoidance practice and associated factors among mothers of infants less than six months in Chenchha District: cross-sectional study. *BMC nutrition*. 2023;9(1):18.
 25. Majra JP, Silan VK. Barriers to early initiation and continuation of breastfeeding in a tertiary care institute of Haryana: a qualitative study in nursing care providers. *Journal of clinical and diagnostic research: JCDR*. 2016;10(9):LC16.
 26. Fetene N, Linnander E, Fekadu B, Alemu H, Omer H, Canavan M, et al. The Ethiopian health extension program and variation in health systems performance: what matters? *PloS one*. 2016;11(5):e0156438.
 27. Csace I. Ethiopia demographic and health survey 2016. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF. 2016:1-551.
 28. GotFDR E. National nutrition programme june 2013-june 2015. Addis Ababa: government of federal democratic republic of Ethiopia. 2013.
 29. Liben ML, Yesuf EM. Determinants of early initiation of breastfeeding in Amibara district, Northeastern Ethiopia: a community based cross-sectional study. *International breastfeeding journal*. 2016;11:1-7.
 30. Sohail J, Khaliq A. Knowledge, attitude and practice of mothers regarding colostrum feeding to newborns in rural Pakistan: a cross-sectional study. *Khyber Medical University Journal*. 2017;9(4):192-6.

31. Kakati R, Rahman SJ, Borah M, Borah H. Colostrum feeding practices and its determinants among urban and rural mothers in Kamrup, Assam, India. *Int J Res Med Sci.* 2016;4(10):4567-72.
32. Raina SK, Mengi V, Singh G. Determinants of prelacteal feeding among infants of RS Pura block of Jammu and Kashmir, India. *Journal of family medicine and primary care.* 2012;1(1):27.
33. Joshi SK, Barakoti B, Lamsal S. Colostrum feeding: knowledge, attitude and practice in pregnant women in a teaching hospital in Nepal. 2012.
34. Ulak M, Chandyo RK, Mellander L, Shrestha PS, Strand TA. Infant feeding practices in Bhaktapur, Nepal: a cross-sectional, health facility based survey. *International breastfeeding journal.* 2012;7:1-8.
35. Bhandari S, Thorne-Lyman AL, Shrestha B, Neupane S, Nonyane BAS, Manohar S, et al. Determinants of infant breastfeeding practices in Nepal: a national study. *International breastfeeding journal.* 2019;14:1-17.
36. Rahman M, Begum N, Rahman MM, Nayan SK, Zinia SN. Breast Feeding Practices among Rural Women in a selected area of Bangladesh. *Northern International Medical College Journal.* 2014;5(2):345-8.
37. Tongun JB, Sebit MB, Ndeezi G, Mukunya D, Tylleskar T, Tumwine JK. Prevalence and determinants of pre-lacteal feeding in South Sudan: a community-based survey. *Global health action.* 2018;11(1):1523304.
38. Abdelmenam NA, Youness EM, Arief AF. Knowledge and Practices Among Immediate Post Partum Women About Colostrum at Women's Health Hospital. *Assiut Scientific Nursing Journal.* 2018;6(13):92-100.
39. Munos MK, Mullany LC, Maïga A, Baya B, Bryce J. Coverage and determinants of newborn feeding practices in rural Burkina Faso. *Journal of Perinatology.* 2014;34(5):369-74.
40. Feleke DG, Mesfin E, Mekete G. Assessment of Knowledge, Attitude and Practice of mothers on early breast feeding initiation after delivery in Debre Tabor Referral Hospital, and South West Ethiopia 2019: Institution based crosses sectional Study. 2020.
41. Asaro T, Gutema BT, Weldehawaryat HN. Colostrum avoidance practice and associated factors among mothers of infants less than six months in Chenchu District: cross-sectional study. *BMC nutrition.* 2023;9(1):1-9.
42. Gualu T, Adugna H, Dilie A. Assessment of knowledge, attitude and practice of post natal mothers towards colostrum breast milk in Debre Markos Town governmental health institutions East Gojjam Zone, Amhara Regional State, Ethiopia. *Nurse Care Open Access.* 2017;2(2):3-7.
43. Gebretsadik GG, Tkuwab H, Berhe K, Mulugeta A, Mohammed H, Gebremariam A. Early initiation of breastfeeding, colostrum avoidance, and their associated factors among mothers with under one year old children in rural pastoralist communities of Afar, Northeast Ethiopia: a cross sectional study. *BMC pregnancy and childbirth.* 2020;20(1):1-9.
44. Tadesse M, Kebede W, Mulu G. Assessment of Knowledge, Attitude, and Practice of Colostrum Feeding among Lactating Women in Northeast Ethiopia. *Clin Case Rep Int* 2022; 6.1402.
45. Seid AM, Yesuf ME, Koye DN. Prevalence of Exclusive Breastfeeding Practices and associated factors among mothers in Bahir Dar city, Northwest Ethiopia: a community based cross-sectional study. *International breastfeeding journal.* 2013;8:1-8.

46. Tamiru D, Mohammed S. Maternal knowledge of optimal breastfeeding practices and associated factors in rural communities of Arba Minch Zuria. *Int J Nutr Food Sci.* 2013;2(3):122-9.
47. Shewasinad S, Manjura M, Bolesh A, Sisay D, Negash S. Assessment of knowledge, attitude and practice towards colostrum feeding among antenatal care attendant pregnant mothers in Mizan Tepi University Teaching Hospital, Bench Maji Zone, SNNPR, South West Ethiopia, 2016/2017 *GC J Preg Child Health.* 2017; 4: 348. *J Preg Child Health.* 2017;4(5):1-8.
48. Gargamo DB. Colostrum feeding practices and associated factors among mothers having children less than 12 months of age in Wolaita Sodo City, Wolaita, Ethiopia 2019. *Biomed Sci.* 2020;6:17.
49. Liben ML, Gemechu YB, Adugnew M, Asrade A, Adamie B, Gebremedin E, et al. Factors associated with exclusive breastfeeding practices among mothers in dubti town, afar regional state, Northeast Ethiopia: a community based cross-sectional study. *International breastfeeding journal.* 2016;11:1-6.
50. Ayalew T, Asmare E. Colostrum avoidance practice among primipara mothers in urban Northwest Ethiopia. A cross-sectional study. *BMC Pregnancy and Childbirth.* 2021;21:1-9.
51. Tewabe T. Timely initiation of breastfeeding and associated factors among mothers in Motta town, East Gojjam zone, Amhara regional state, Ethiopia, 2015: a cross-sectional study. *BMC pregnancy and childbirth.* 2016;16(1):1-7.
52. Hoche S, Meshesha B, Wakgari N. Sub-optimal breastfeeding and its associated factors in rural communities of Hula District, southern Ethiopia: a cross-sectional study. *Ethiopian journal of health sciences.* 2018;28(1):49-62.
53. Addisu D, Melkie A, Bezie M, Gedefaw G. Determinants of Colostrum Avoidance among Postpartum Mothers in North West Ethiopia. *Journal of Midwifery & Reproductive Health.* 2020;8(4).
54. Hailemariam TW, Adeba E, Sufa A. Predictors of early breastfeeding initiation among mothers of children under 24 months of age in rural part of West Ethiopia. *BMC public health.* 2015;15(1):1-6.
55. Bimerew A, Teshome M, Kassa GM. Prevalence of timely breastfeeding initiation and associated factors in Dembecha district, North West Ethiopia: a cross-sectional study. *International breastfeeding journal.* 2016;11:1-8.
56. Beyene AM, Liben ML, Arora A. Factors associated with the early termination of exclusive breastfeeding among mother-infant dyads in Samara-Logia, Northeastern Ethiopia. *BMC pediatrics.* 2019;19(1):1-9.
57. Azene ZN, Mulunesh A, Alamneh TS. Delayed breast feeding initiation increases the odds of colostrum avoidance among mothers in Northwest Ethiopia: a community-based cross-sectional study. *Archives of Public Health.* 2021;79(1):1-11.
58. Gebrehiwot H, Thampi A, Kassaw Y, Fita N. Knowledge, attitude and practice towards colostrum feeding among antenatal care attendant pregnant women in Mekelle health facilities, Mekelle, Tigray, Ethiopia, 2018. *Int J Dev Res.* 2018;8(12):24836-41.
59. Weldesamuel GT, Atalay HT, Zemichael TM, Gebre HG, Abraha DG, Amare AK, et al. Colostrum avoidance and associated factors among mothers having children less than 2 years of age in Aksum town, Tigray, Ethiopia: a cross-sectional study 2017. *BMC research notes.* 2018;11:1-7.

60. Yimer NB, Liben ML. Effects of home delivery on colostrum avoidance practices in North Wollo zone, an urban setting, Ethiopia: a cross sectional study. *Journal of Health, Population and Nutrition*. 2018;37:1-7.
61. Kebede N, Alemu G, Cherie N. Colostrum feeding practice and its associated factors among postnatal mothers who attend at health facility, Ethiopia. *Journal of Neonatal Nursing*. 2023.
62. Bililign N, Kumsa H, Mulugeta M, Sisay Y. Factors associated with prelacteal feeding in north eastern Ethiopia: a community based cross-sectional study. *International breastfeeding journal*. 2016;11(1):1-7.
63. Azeze GA, Gelaw KA, Gebeyehu NA, Gesese MM, Mokonnen TM. Exclusive breastfeeding practice and associated factors among mothers in Boditi Town, Wolaita Zone, Southern Ethiopia, 2018: a community-based cross-sectional study. *International journal of pediatrics*. 2019;2019.
64. Tamiru D, Belachew T, Loha E, Mohammed S. Sub-optimal breastfeeding of infants during the first six months and associated factors in rural communities of Jimma Arjo Woreda, Southwest Ethiopia. *BMC public health*. 2012;12:1-9.
65. Vieira TO, Vieira GO, Giugliani ERJ, Mendes CM, Martins CC, Silva LR. Determinants of breastfeeding initiation within the first hour of life in a Brazilian population: cross-sectional study. *BMC Public Health*. 2010;10:1-6.
66. Tarrant M, Fong DY, Wu KM, Lee IL, Wong EM, Sham A, et al. Breastfeeding and weaning practices among Hong Kong mothers: a prospective study. *BMC Pregnancy and Childbirth*. 2010;10:1-12.
67. Oflu A, Yalcin SS, Bukulmez A, Balikoglu P, Celik E. Timely initiation of breastfeeding and its associated factors among Turkish mothers: a mixed model research. *Sudanese Journal of Paediatrics*. 2022;22(1):61.
68. Maternal W. infant and young child nutrition Comprehensive implementation plan on maternal, infant and young child nutrition: biennial report Report by the Director-General. Exec Board 142nd Sess provisional agenda item46. 2018;3:1-8.

10. APPENDEESIS

Annex I: Information sheet and consent form (English version) in verbal form

Hello, my name is _____. I am assisting in collecting data for a study being conducted by Abdi Nure, a student at Arsi University, College of Health Sciences, Department of Public Health. The purpose of this study is to explore colostrum feeding practices and the factors influencing them among mothers of infants and young children under 24 months under 24 months living in Asasa Town. The information gathered will be used to inform health-related interventions and support decision-making by relevant organizations. During the interview, you will be asked some questions that may relate to your personal experiences.

Please know that your participation is entirely voluntary. You are not required to answer any questions you do not feel comfortable with, and you may stop the interview at any time without any consequences. You will not be asked to give your name, and all information you provide will remain strictly confidential and used only for research purposes.

Your honest responses will be extremely valuable to the success of this study. Thank you for considering taking part.

Would you be willing to participate in this study?

Yes, ☐ please go to the next page.

No, ☐ thank you!

Date _____

Signature: _____

Annex II: English version Questionnaire

Instructions: There are a series of questions to be responded by participants.

Direction: - please encircle the letter of the participant's answer choice or correctly fills in the blank space provided.

Code number of the participant _____

S.NO	Question	Response	Remark
I. Household demographic and socio-economic data			
101.	Age of mother	_____yrs.	
102.	Religion	1. Orthodox 2. Muslim 3. catholic 4. protestant 99. Others (specify).....	
103.	What is your ethnicity?	1. Amhara 2. Oromo 3. Tigre 4. Gurage 99.Others (specify)_____	
104.	Current marital status of a mother	1. Unmarried 2. Married 3. Divorced 4. Widowed	
105.	Education status of a mother	1. Can't read and write 2. Read and write 3.Primary school(1-8) 4.Secondary school(9-10) 5. College and above	
106.	Occupation of mother	1. Housewife 2. Government employee 3. Daily laborer 4. Merchant 99. Other (specify).....	For Q104 if chosen without 2 skip to Q109
107.	Educational status of the father	1. Can't read and write 2. Read and write 3. Primary school(1-8) 4. Secondary school(9-10)	

		5. College and above	
108.	How many children under five do you have?	_____ children	
109.	Total family size	_____	
110.	Estimated average monthly household income	_____ Birr	
II. Child related characteristics			
201.	Age of Child		
202.	Sex of the child	1. Male 2. Female	
203.	Child Vaccinated	1. Yes 2. No	
204.	Has the child growth monitoring been followed up?	1. Yes 2. No	
205.	Health Condition After Birth	1. Healthy 2. Sick	
III. Health service-related characteristics			
301.	Parity	1. Primipara 2. Multipara	
302.	Did you receive antenatal care for your last pregnancy?	1. Yes 2. No	If 2 skip to 305
303.	If yes for Q No.301. How many times did you receive ANC?	_____ times.	
304.	Did you receive Health education on IYCF practice during your ANC visits?	1. Yes 2. No	
305.	Where did the child born?	1. Home 2. Health facility 99. Other, specify _____	
306.	Did you receive PNC care for your last delivery?	1. Yes 2. No	If 2 skip to 309
307.	If yes for Q No.305. How many times did you receive PNC?	_____ times.	
308.	Did you receive Health education on IYCF practice during your	1. Yes 2. No	

	PNC visits?		
309.	Mode of Delivery	1. Vaginal delivery 2. Caesarean section	
III. Child feeding Practice			
401.	Did you provide colostrum to the baby after birth?	1. Yes 2. No	If 2 skip to 404
402.	If not why?	_____ specify.	
403	When did you provide colostrum to the baby after birth?	1. Within 1 hour after delivery	
		2. Within 6 hour after delivery	
		3. Within 24 hour after delivery	
		4. After discard some of colostrum milk	
404	Did you provide pre lacteal feeding to your baby?	1. Yes 2. No	If 2 skip to 501
405.	What did you give (feed) your baby within the first three days after delivery, before your white milk began flowing regularly?	1) Cow's milk. 2) Honey 3) Butter. 4) Water and sugar 5) Nothing fed. 6) Others _____ specify	
IV. Knowledge about colostrum feeding			
501	Did you know colostrum milk?	1. Yes 2. No	
502	Source of Information	1. Health professionals 2. Family and friends 3. Mass media 4. Other (specify _____)	
503	Color of colostrum	1. Yellow 2. White	
504	Colostrum gives natural immunity for baby?	1. Yes 2. No	
505	Colostrum is the best nutrition for the newborn?	1. Yes 2. No	
506	Early initiation of CF reduces	1. Yes	

	postpartum hemorrhage risk?	2. No				
507	Colostrum protects the baby from diseases?	1. Yes 2. No				
508	CF should begin within one hour & continue for three days?	1. Yes 2. No				
	V. Mothers' Attitudes Toward Colostrum Feeding Measured using a five-point Likert scale: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree					
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
501	Baby does not like colostrum breast milk	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
502	Colostrum impairs growth and development	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
503	Colostrum causes diarrhea for an infant	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
504	Colostrum makes the baby sick	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
505	Colostrum is a dirty part of milk	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
506	Colostrum milk is difficult to digest and should be discarded	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
507	Colostrum is forbidden in culture	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

11. DECLARATION INVESTIGATOR

I hereby declare that the thesis titled “Colostrum Feeding Practices and Associated Factors among Mothers of infants and young children under 24 months in Asasa Town, Oromia Region, Southeast Ethiopia” is my original work. This thesis has been submitted in partial fulfillment of the requirements for the Master of Public Health degree at Arsi University, College of Health Sciences. All sources of materials used for this thesis have been duly acknowledged.

Name of the Student Investigator: Abdi Nure

Signature: _____

Date: _____

12. DECLARATION ADVISORS

We, the undersigned, declare that we have read and thoroughly reviewed the thesis titled “Colostrum Feeding Practices and Associated Factors Among Mothers of Infants and Young Children Under 24 Months in Asasa Town, Oromia Region, Southeast Ethiopia”, which has been submitted by Abdi Nure. We believe that this thesis meets the standards and requirements for the partial fulfillment of the Master of Public Health degree at Arsi University.

Main Advisor:

Name: _____

Academic Rank: _____

Signature: _____

Date: _____

Co-Advisor:

Name: _____

Academic Rank: *Assistant Professor*

Signature: 

Date: 11/12/2025