

WOLKITE UNIVERSITY

COLLEGE OF MEDICINE & HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

ASSESSMENT OF COLOSTRUM FEEDING PRACTICE & ASSOCIATED FACTORS AMONG LACTATING MOTHERS IN SODO WOREDA, GURAGE ZONE SNNPR REGION, ETHIOPIA 2023.

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ASSESSMENT OF COLOSTRUM FEEDING PRACTICE & ASSOCIATED FACTORS AMONG LACTATING MOTHERS IN SODO WOREDA, GURAGE ZONE SNNPR REGION, ETHIOPIA.

A Thesis Submitted to Department of Public Health, College Of Medicine and Health Sciences, in Partial Fulfillment of the Requirements for the Degree of Master of Public Health (MPH) in Nutrition.

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This thesis is submitted in partial fulfillment of the requirement of Master's degree from School of Graduate Studies at Wolkite University. I solemnly declare that this thesis has not been submitted to any other University for the award of any other academic degree, diploma or certificate.

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ABBREVIATIONS AND ACRONYMS

ANC Antenatal Care

CHIS Community Health Information System

EDHS Ethiopian Demographic Health Survey

EPI Expanded Program on Immunization

ETB Ethiopian Birr

FGD Focus Group Discussion

HSTP Health Sector Transformation Plan

IgA Immunoglobulin A

IgG Immunoglobulin G

IgM Immunoglobulin M

GIT Gastro Intestinal Tract

IYCF Infant & Young Child Feeding

KAP Knowledge Attitude, Practice

MCH Maternal & Child Health

NMR Neonatal Mortality Rate

SNNPR Southern, Nations, nationality, peoples Region

SPSS Statistical Package for the Social Sciences

SSA Sub Saharan Africa

WHO World Health Organization

UNICEF United Nations Children's Emergency Fund

TBA Traditional Birth Attendance

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ABSTRACT

Background**:** Colostrum is yellow to orange colored milk produced during the first few days of delivery and rich in nutrients and antibodies that have great role in health of the newborn baby. Despite the World Health Organization recommends that every newborn baby has to feed breast milk with colostrum soon after delivery, poor colostrum feeding practice is still a common problem in Ethiopia. The main purpose of this study was to assess colostrum feeding practices and associated factors among mothers having less than 12 months age in Sodo Woreda, Gurage Zone, SNNPR Region, Ethiopia. Methods**:** A community-based cross-sectional study design supplemented by qualitative study was conducted from June 2023 to July 2023 among 352 mothers of infants selected by systematic random sampling technique. The data were collected using structured questionnaire, FGD & KII by semi structured guiding questionnaire. Descriptive analysis like frequency, percentage, & mean were performed. Binary and multiple logistic regression analysis were employed to identify associated factors. Variables with p-value <0.05 with 95% confidence interval identified statistically significant. Data was entered in Epi-data version 3.1 and exported to SPSS version 24.0 for further analysis. Bivariable and multivariable binary logistic regression analyses were conducted to determine the pertinent variables. Adjusted odds ratio with 95% confidence intervals and P-value <0.05 were considered to indicate a significant statistical association. Results: Two hundred eighty three, 80.1%, with (95%, CI: 0.758, 0.841) of lactating mothers good practiced of colostrum feeding, with among those respondents with good knowledge (88.1%) ((AOR=2.98 times [95% CI: 1.49, 5.94]) more likely had good colostrum feeding practice & mothers with good attitude (84.4%) ((AOR=7.16 times [95% CI: 3.834, 13.39]) more likely had good practice of colostrum. Mothers of infants counseled on timely initiation of colostrum feeding during ANC (AOR =3.01[(95% CI: 1.20-7.53])) & postnatal care within the first 2-3 days (AOR = 8[(95% CI: 2.61-26.07])) were positively associated with good colostrum practice. Mothers living in urban have (AOR= 5[(95% CI: 2.4-10.41])) have better practice of colostrum. Mothers having history of multiparty (AOR=2 [(95% CI: 1.18-4.34])) had good colostrum feeding practice. Mothers having frequent history of ANC visit had more likely to practice colostrum feeding (AOR=2.64 [(95% CI: 1.15-6.08])).Institutional delivery (AOR=5[(95% CI: 1.77-14.502]) had significantly associated. Conclusion: My study shows that two hundred eighty three, 80.1% of lactating mothers had good practice of colostrum feeding and which shows about 20% of mothers still did not feed

colostrum to their newborn. Counseling on timely initiation colostrum feeding during ANC visits, residency, partner educational status, having information about colostrum, having good knowledge & favorable attitude towards colostrum feeding practice were significantly associated with practice of colostrum feeding. However, lack of counseling on the importance colostrum feeding to the neonate, home delivery to their neonate, and lack of information about colostrum feeding were the factors negatively affecting the practices of colostrum feeding. Strengthening education on timely initiation of breastfeeding during antenatal care, Sustaining awareness creation strategies and approaches were suggested for the improvement of the nutritional value of colostrum and its health welfare for new born babies

KEY WORDS: Colostrum, Feeding practice, Infants, Sodo Woreda, Gurage, Ethiopia

1. INTRODUCTION

1.1 Background

During lactation mammary glands, produce colostrum, which is the initial milk and is yellow to orange in color. It has high protein, calories, sodium chloride, vitamin A, but lower in lipids, fat, and potassium than regular milk suitable for optimal child growth(1, 2). The World Health Organization and United Nations Children's Emergency Fund (2) universally advise colostrum feeding for all newborns. The best nourishment for a baby is colostrum, which also guarantees the infant's successful adaption and transfer to an independent postnatal existence(3).

It has several immunoglobulins like IgA, IgG, and IgM that help to prevent numerous diseases like, pneumonia, diarrhea, weight loose, obesity, and a number of difficult-to-treat malignancies(4) & improves mother-infant bonding. Early breast-feeding initiation makes it easier to produce regular breast milk, helps the uterus contract, lowering the risk of postpartum hemorrhage(5). For the majority of children, nursing is the infant's "passport to life" and can mean the difference between life and death.

According to a secondary study of the WHO Global Survey on Maternal and Perinatal Health, the average rate of early initiation of breastfeeding with colosrum is 57.6%, with a range of 17.7% to 98.4 %(6). The timely initiation of breastfeeding in Sub-Saharan Africa (SSA) is 58%, ranging from 24% in Chad to 86% in Burundi, according to data from 35 SSA Demographic and Health Surveys (DHS)(7). In Ethiopia, 8 percent of children undergo pre-lacteal feeding, while 73% of infants nurse within an hour of delivery, 92% do so within a day, and 8% do so within a week. As study done in Amibara district shows only 39.6% practice of breast-feeding within one hour after birth(8). Another similar study done in Debre Birhan town indicates that 66.2 %(9). Similar study done in Halaba &Zeway town EIBF within one hour is only 63%(10). Moreover, prevalence of early initiation of BF within one hour shows only 47.3% in Gurage zone(11). Another study done in Wolayita Zone 83.7% of lactating mothers' breast initiation with in first hour, which is a little bit higher(12).

In resource-limited countries like Ethiopia, lactating women have few understandings on the advantages on colostrum breastfeeding. As a result, they preclude their infants from colostrum feeding immediately following delivery. This poor feeding practice leads to high infant morbidity and mortality. Different studies performed in the rural & urban parts of Ethiopia found

there are gaps on practice of colostrum feeding among lactating women. A study done in Ambo district only 56.5% had good colostrum feeding practice(13). Another study done in Debre Birhan town indicate that only 56.2% had good colostrum feeding practice(9). Even though there are some studies on practice of colostrum feeding and determinant factors for colostrum feeding in some parts of Ethiopia, still there have not been well studied mainly in this study area. Hence, this study aimed to assess practice and associated factors of colostrum feeding practice among lactating mothers in Sodo Woreda, Gurage Zone, SNNPR Region. Ethiopia in 2023 G.C.

1.2 Statement of the problem

Each year, malnutrition causes millions of deaths in children under the age of five, either directly or indirectly. Globally, it was projected that there would be 149 million stunted children, 45 million children who were dying away, and 38.9 million children who were overweight or obese in 2020. 45 % of mortality in children under the age of five are caused by under nutrition(14). Because of not obtaining colostrum within the first hour of life, it is estimated that 4,000 newborns and young children worldwide die every day. Many newborns receive liquids other than their mothers' milk in the first few days after birth all over the world(15). These are most prevalent in low- and middle-income countries, particularly in Southern Asia, Asia, and Africa. All regions, with the exception of Africa, have experienced a decline in the proportion of infants who are stunted(15).

Two of the main factors contributing to under nutrition are delaying breastfeeding and avoiding colostrum(16) Additionally, newborns who began breastfeeding between two and twenty-three hours after delivery had a 33% higher risk of neonatal mortality, and newborns who began breastfeeding after twenty-four hours had 85% higher risk than newborns who began breastfeeding right away(17). Because of deeply established cultural or traditional beliefs that milk has little nutritional value, is harmful to the baby's health (making it sick or even cause death), or would bring the family "unfavorable fortune," some mothers in developing countries choose not to give their infants colostrum(18). Some women might only avoid from using colostrum out of habit(19).

In Ethiopia, colostrum had thought to be abnormal milk. Fifty% to seventy nine% of mothers refuse colostrum in order to decrease its effects because many civilizations think that it causes gastrointestinal problems in the newborn(20). Only forty-eight % of mothers began colostrum

feeding within an hour of giving birth, despite the fact that ninety % of them were aware of the practice, according to a study done in the Tigray region(2). In Debre Tabor 74% of mothers gave colostrum to their index babies(21), and in this study the prevalence of colostrum feeding practice was 60.88% of women practiced colostrum feeding and had a thorough understanding of it(3).Due to increased stomach cramps (45%), difficult to digestion (18%), and the perception that it is polished (36%) of women in Harar town discourage colostrum feeding(22). Similar to this, 12% of mothers in Debre Tabor felt that there were not enough milk secretions in the colostrum(21). In North Eastern Ethiopia, 13.5% of mothers also discard their colostrum. Avoiding colostrum was prompted by the beliefs that it is unhealthy (26%), conventional (23.5%), and that colostrum milk is dirty (22.4%).

According to data from the 2016 Ethiopian Demographic Health Survey (EDHS), there were 29, 48, and 67 deaths per 1,000 live births for newborns, neonates, and children under the age of five, respectively(5). Additionally, Ethiopian colostrum feeding practice is still insufficient. These large infant death rates can be reduced by starting to feed colostrum as soon as the baby is born, these high infant death rates can be decreased(23). As a result, given the breadth and severity of the issue, early breastfeeding with colostrum starting in accordance with WHO/UNICEF IYCF standards, reinforcing SBC approaches to women, identifying practice gaps with reference to colostrum feeding and other activities are required. In spite of this, avoiding colostrum & practicing, is still common problem in many regions of Ethiopia, particularly the SNNPR regional state.

This study is more essential because of the role that colostrum feeding plays in preventing under-five nutritional issues and baby fatalities in relation to feeding breast milk. Recognize and begin applying counseling approaches to support particular, crucial messages given by community-based and medical workers to women at all points of contact. It is also essential for policymakers, healthcare professionals, and stakeholders to promote lactating mothers' to practices on colostrum breastfeeding in Sodo Woreda, Gurage Zone, SNNPR Region, Ethiopia in 2023.

1.3. Significant of the study

This study determines the practices of colostrum feeding practice among lactating women in the study area, & identifying associated factors towards colostrum feeding practices as well as the

appropriate actions to be done to close those gaps in the study region as well as at the zonal level. This study gives benefit to stakeholders, programmers, planners, governmental and non-governmental organizations, and accountable bodies by providing them with pertinent information. As a result, Colostrum breast milk feeding would be improved, promoted, and maintained, which would improve newborn and infant outcomes. It also aided in timely planning, interventions, and the establishment of appropriate strategies. The work will also be used as a source of information by other researchers conducting related studies.

2. LITERATURE REVIEW

2. 1. Practices of lactating women on colostrum breast-feeding

There is a variety of materials on the practice of biological mothers feeding their infants colostrum. According to a study conducted in Pakistan, 72% of women practiced good colostrum breast-feeding(24). Another study done in Indian 76% of mothers practiced good colostrum feeding(25). Similar topic of a survey conducted in Kuwait(26), 81.8% of breastfeeding women follow proper colostrum feeding practices(26). According to a study conducted in Bangladesh, 63% of mother's breastfed their newborns with good colostrum practices(26), while 69% of Nepalese women practice it well(26),When I looked at African literature on the subject, I found that good colostrum breast-feeding practices were reported in South Africa (83%), Burkina Faso (92%), Uganda (97%), and Ethiopia73%,(3) accordingly.

Many studies had been undertaken in various parts of Ethiopia during various times of the year. The Amhara region's Debre Birhan town, which had a 56.2%(9), Debre Tabor town, which had a 74.4%(9), survival rate(9), North Wolo Zone 88.6%(27), Raya Kobo District 86.5 %(28), Debre Markos Town 77%(29), Ambo District 56.5%(13) and 70% of Harar town's residents are from the Harari region(22). Similar research indicates that the state of Afar is 63.6%(30). Dire Dawa is 68.8% (31), and Aksum is 94.7%(20), However, the results of the SNNPR study conducted at the Mizan Tape University Teaching Hospital (76.2 %(3), Mekele is 80.5%(23), and the Wolayita Zone (87.4%) showed.(32).

2.2 Factors associated with colostrum breast-feeding practice

As different studies indicated, in the binary logistic regression at a p-value of ≤0.25, family income, exposure to mass media, ANC follow up, number of ANC follow up, counseling on timely initiation of breast-feeding during ANC visit, early initiation of breastfeeding after

delivery, place of delivery, birth order and birth attendant were statistically associated with colostrum feeding practice. As study done Dire Dawa show mothers who had secondary and above educational level were 2.79 times, more likely had good practice of CF(31). On the other hand, studies conducted in Debre Tabor general hospital and Jimma Arjo Woreda shows that mothers with non-formal educational status more likely discard colostrum than those have formal education(33, 34). Moreover, study conducted in urban and rural mothers in Kamrup, Assam, India shows that having low educational level associated with colostrum avoidance(35). Having history of ANC visit in their most recent pregnancy was increased the odds of having a good practice of CF 3.21 times. Based on a systemic review and meta-analysis in Ethiopia, mothers having ANC visits were 72.6% less likely to discard colostrum than mothers who did not have ANC visits during pregnancy(36).

Mothers who are counselled on TIBF were 2.59 times more likely had good practice of CF(31). Another Study done in Wolayita zone shows, mothers who have counseling on timely initiation of breastfeeding during antenatal care were 7.798 times higher to practice colostrum feeding than those mothers who have not counseled on timely initiation of breast feeding(32). Ambo district study shows that lack of counseling on CF were negatively associated with CFP than those who got counselling(13). As well as a studies done in Gozamen district and Kombolcha shows that mothers who did not get counseling on TIBF were more likely discard colostrum than counseled (37, 38). Mothers who are counselled on CF were more likely had good practice of CF. While a studies conducted in Jinka and Debre Tabor general hospital shows that lack of receiving counseling about BF during ANC increase the chance of colostrum discarding(33, 39).

A studies done in rural pastoralist communities of Afar, Motta town, and Wolayita Sodo city giving child birth with the assistant of health professional were increased the odds of having good practice of CF(30, 32, 40). This could increase the chance of getting counseling on early initiation of BF with colostrum than those who gave childbirth at home with the assistant of TBA or family. As well as a study conducted in Bure district shows that mothers who gave birth at home where more likely discarded colostrum that relative to those who gave birth at health institution(40). As study done in Dire Dawa more than half (51.1%) of the mothers received information on CF from health professionals and this shows that the information on colostrum obtained from health professional is more accurate and the mothers have good level of

information on CF than those who obtained the information from other sources. The study conducted in Aksum town shows that poor maternal level of information on CF more likely associated with practice of colostrum avoidance than CF.

Mothers delivered at health care facilities were 4.010 times more to practice colostrum feeding than their counterparts. In addition, mothers attended by health care professionals have 3.119 times more likely to provide colostrum for their infants than those mothers assisted by non-health care workers & had the significant association with colostrum feeding practice. Mothers who deliver at home were 20 times more risk to practice colostrum feeding than mothers who deliver from health institution as study done in South Gondor. In multivariable logistic regression, analysis and maternal PNC visit within the first two to three days were positively associated with colostrum feeding practice. But lack of counseling on the importance colostrum feeding, giving birth at home, lack of information on the importance of colostrum feeding were negatively associated factors with colostrum feeding practices. The mothers who were attending PNC within the first two to three postpartum days were three times more likely to feed colostrum than mothers who do not attend PNC service.

Therefore, this study is needed to identify gaps that exist on practices toward colostrum feeding and the determinant factors that hinder appropriate practice of colostrum feeding among lactating mothers. In addition, the key findings will help health care workers, stakeholders, Programmers /planner, governmental and non-governmental organization and responsible bodies for having relevant information which helps for timely planning, interventions and established appropriate strategies to improve, promote and maintain Colostrum breast milk feeding which would lead to better neonatal outcomes. The study will also serve as a reference data for other researchers.

3. OBJECTIVES OF THE STUDY

3.1. General objective

To assess the practices and associated factors of colostrum feeding among lactating women in Sodo Woreda, Gurage Zone, SNNPR, Ethiopia 2023

3.2. Specific objectives

To determine the practice of colostrum feeding among lactating women in Sodo Woreda, Gurage Zone, SNNPR, Ethiopia 2023.

To identify factors associated with practice of colostrum feeding among lactating women in Sodo Woreda, Gurage Zone, SNNPR Region, Ethiopia 2023.

4. METHODS AND MATERIALS

4.1 Study area and period

The study was conducted from June 2023 to July 2023 G.C in selected kebeles in Sodo Woreda. Sodo Woreda is one of the largest populous districts found in Gurage zone in SNNPR. Its capital, Buee is located 103Kms South of Addis Ababa and 198 KM to Hawassa town and 72Kms north East from the Zonal town Wolkite. It is bordering with Oromia Region from North, East, and West and from the South Meskan woreda. It is composed of 32 administrative Kebeles and estimated population of the study Year is 123, 371, estimated pregnancy and lactating women 4,270. The woreda has 1 primary hospital and 5 health centers, 32 health posts. The main source of food and economic activity is rain-fed agriculture; Common staple foods are maize, wheat, teff in the form of injera, enset (in the high land areas), legumes, green cabbage, and other cereals.

4.2 Study design

A mixed method of community-based cross-sectional study design supplemented by qualitative study was conducted from June 2023 to July2023 among 352 mothers of infants selected by systematic random sampling technique.

4.3 Source population

All mothers having children less than 12 months of age lived in Sodo Woreda during the study Year were the source population.

4.4 Study population

The study population was selected mothers who have a child less than 12 months of age at the time of data collection in Sodo Woreda.

4.5 Eligibility criteria

4.5.1 Inclusion criteria

All biological mothers who live in the study area at least for the last six months & had less than 12 months of age infants were included.

4.5.2 Exclusion criteria

Mothers who were acutely sick and unable to communicate during data collection were excluded.

4.6 Sample size determination

According to study conducted in South Gondar Este Woreda 98.4% of mothers had good practice of colostrum feeding(41): By using a single population proportion formula:

P= (98.4%) for **practice.**

d (w) = margin of error of 0.05 with 95% confidence level. $n= (Z \alpha/2)^2 *P (1-P)/ d^2$

$= (1.96)^2*0.984(1-0.984)/0.05^2$

= 24 samples and multiplied by design effect of 2 = 48 Mothers of infants & (adding 10% of non-response rate) & equal to 53 samples.

Sample size for the second objective had calculated by using Epi info statistical software version 7.2.5.0 using two-population proportions formula. In this regard, a 5% level of significance (two-sided) or the hypothesis of no significant difference, a power of 80% and ratio of unexposed to exposed one has assumed.

Table 1 sample size to the second objective

Sample size determination for the second objective

Variables	% Of outcome in exposed	% Of outcome in unexposed	AOR	Sample size before adding non –response	Sample size after adding non - response rate (10%)& design effect of 2	Reference
Skilled birth attendants	81	64	3.85	122	268	(13)
Knowledge of good CF	81	47	3.53	102	224	
History of ANC	79	22	3.21	124	273	
Counseling on CF	85	45	2.65	156	343	
Counseled on TIBF	84	39	2.59	160	352	

The largest sample size was obtained by the second objective was 160 and after considering 10% of non-response rate and design effects of 2, the final sample size is 352 mothers with baby less than one-year age.

4.7 Sampling technique and procedure

The study participants were selected by multistage sampling method then determining and proportionately allocations of samples. The total samples (n=352) were proportionally allocated based on total population and the required sample size. Among 32 kebeles, 25% of the Woreda kebeles (8) were selected by lottery method. Then proportionally allocating the number of study participants based on the target population who are living in those 8 kebeles like Tiya 01(28),Anati(42),AdeleK/Kobo(60),AdeleM/meteja(42),Ashkedeye(46),DachieH/gebeya(60),Michael/semero(32),ArboA/Kumuro(42). After preparing sample frame from CHIS registration book of each selected kebeles' Health post, each participant also was selected from the listed sample frame after determining and proportionately allocation of samples in each select kebeles. To select the study participants from each household Kth interval was used to select households, which contain the required samples –value was calculated by using the formula N/n for each selected kebeles. Then, house-to-house visit was made and one lactating mother was selected randomly. The total sample size (352) was distributed proportionally to the selected kebeles by using multi stage sampling technique.

$$ni = \frac{n(Ni)}{N}$$

Where,

n- the calculated total sample size (352)

Ni – population size of that total selected kebeles.

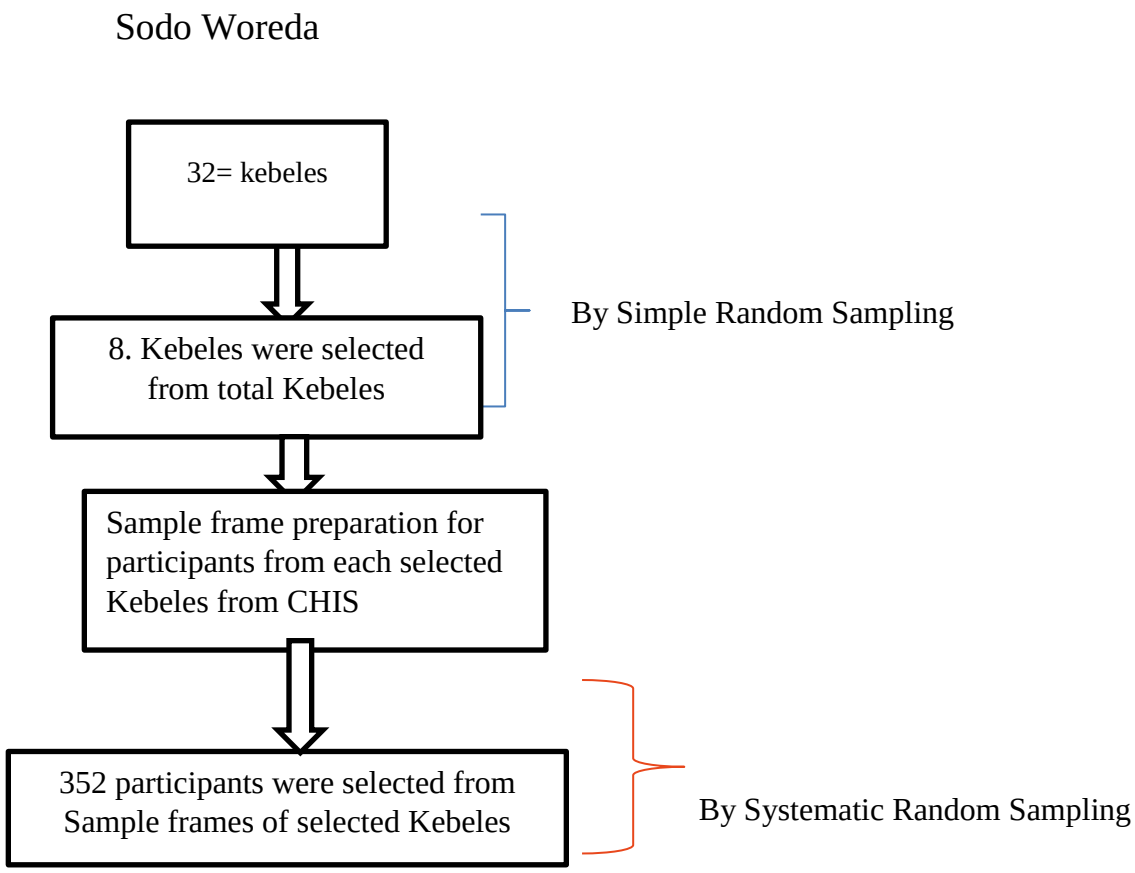


Figure 1 diagram of sampling of kebeles & participants

4.8 Data collection tools and procedure

A structured and pre-tested interviewer-administered questionnaire was used to collect data. The questionnaire was adapted from different works of literature and modified according to the local context. The questionnaire was first prepared in English and then was translated to the local language, Amharic, and then back to English to maintain consistency. The number of mothers with infants less than 12 months of age were obtained house-to-house visit from the respective kebeles, which were selected from sample frame. Then systematic random sampling was applied to proportionally selected mothers from kebeles included in the study. It was prepared as an interview guide to assess participant's socio demographic condition, obstetric condition, knowledge, attitude and colostrum feeding practice and associated factors.

For qualitative study, two FGDs having an average of eight participants were conducted with fathers having children under 12 months and two in-depth interviews with health worker who work in maternal and child health (MCH) department. FGD guide was prepared for fathers, TBAs, & mother in-laws and in depth interview guide for health care provider &Woreda MCH

coordinator to explore information on knowledge, attitude and practice towards colostrum breast-feeding among lactating mothers & the contributing factors for CF. FGD was conducted with purposely-select husbands of mothers having infants less than 12 months and in-depth interview with health professional in H/F& MCH coordinator in the woreda health sector. The FGD was conducted with two different groups of fathers having less than 12 months children, TBAs& Mother in-law. Each discussion session was prepared mobile recorder and notes were taking additionally. The discussions were moderated by public health professional whereas another public health professional also were conducting the in-depth interview. Four trained & who had previously participated in data collection & well experienced in data collection, & had level V certificate graduated had face-to-face collected the data under supervision of the two supervisors & investigator.

4.9. Operational definition

Knowledge: Participants who answered greater than or equals to 60% of the knowledge questions were considered to have "Good knowledge", whereas those who were score below 60% were considered as having "Poor knowledge"(3).

Attitude: Participants who were responded greater than or equals to 60% of the attitude questions were considered to have a "Favorable attitude", whereas those who scored less than 60% were considered as having "Unfavorable attitude"(12, 23).

Practice: is the overt behavior, habit or custom of feeding colostrum milk to their current newborn within one hour to two - three days of birth.

Good practice: Score > 60% on the overall practice questions.

Poor practice: Those who answer <60 % of practice related questions.

Optimal breastfeeding practice: is the early initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding for the first 6 months of life, and continued breastfeeding for up to 2 years or beyond with appropriate complementary feeding beginning at 6 months(14).

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

4.10. Variables

4.10.1. Dependent variables

Colostrum feeding Practice

4.10.2. Independent variables.

The independent variables were age, religion, marital status, residence, occupation, educational status, knowledge, attitudes, family income, ethnicity, family size, partner occupation, partner education, ANC follow up & frequency of visits, place of delivery, mode of delivery, PNC follow up, parity.

4.11. Data quality control

Data quality was controlled via conducting a pre-test on 5 % of the samples from other non-selected kebeles in the Woreda. Regularly, the supervisors & investigator conducted monitoring and supervision of the overall activity during data collection. The completeness of the questionnaire was also being checked before data entry. Trained data collectors were followed & strictly used standard interviewer-administered questionnaire during data collection.

4.12. Data processing and analysis

Editing and sorting of the collected questionnaires was done manually every day to check for completeness. The completed questionnaires were coded and entered into a data entry template in epi-data version 3.1. After double entry verification, the data were exported to SPSS version 24.0 for analysis. Normality was checked for all continuous variables. Interactions between different independent variables were checked and collinearity diagnosis was made due by checking the VIF & tolerance test. Bivariable and multivariable logistic model was used with adjusted odds ratio and 95% confidence interval. Model fitness was checked using Hosmer and Lemeshow's statistics. Associations with p-value below 0.05 were considered as statistically significant. Qualitative data was transcribed verbatim into English text and thematic areas were identified based on the objective of study by the investigator. Ideas were organized under thematic framework analysis approach was used to analyze the qualitative data. Finally, the result was presented in triangulation with the quantitative findings.

4.13. Ethical consideration

Ethical clearance was obtained from institutional ethical review board of Wolkite University. Informed verbal consent was obtained from each study participant during data collection Honest explanation of the survey purpose, description of the benefits and an offer to answer all inquiries

will made to the respondents. Participant's right to withdraw consent and discontinue participation without any form of prejudice was guaranteed. Privacy and confidentiality of participants' information was ensured throughout the process.

4.14. Result dissemination plan

The findings of this study will be presented to Wolkite University College of Medicine & Health Sciences Department of Public Health. The hard and soft copy of this study result will be issued to Gurage Zone Health Department, disseminated to the study area and to other organizations working on study area. The findings will be present in different seminars, meetings and workshops. My next plan is after the completion of the study properly; all effort will be made to publish the thesis in scientific journals.

5. RESULTS

5.1 Socio demographic characteristics of the respondents

Total of 352 mothers of children aged less than 12 months were included in the study with response rate of 100%. The mean (± SD) age of mothers was 29.64 (± 5.3) years ranging from 18 to 42 years. The majority of the mothers 113 (32.1%) were between 26–30 years of age. Almost all, 318 (90%) of the respondents were rural dwellers, while, about 10% of the respondents are urban dwellers. About majority of the study population, 329 (93.5%) were Orthodox but only16 (4.5%) were Protestant, &7(2%) were Muslim religion followers. About three seventh of mothers 141 (40.1%) cannot read and write, while only 9(2.6%) respondents have diploma & above. Almost of all of the mothers 343 (97.4%), 335(95.2%) were in marital union & homemakers respectively. Regarding average monthly income of the house-hold of study participants, 240(68.2%) were earning less than 1000 birr, 66 (18.8%) were earning 1001–2000 birr, 30(8.5%) were earning 2001–3000 birr, and 12 (3.4%) earned 3001-4000 & 4(1.1%) more than 4000 birrs per month (Table 2)

Table 2 socio-demographic characteristics of mothers of infants in Sodo woreda of Gurage Zone, SNNPR, Region Ethiopia 2023.

Variables	Category	frequency	percent
Age of the mother in year(n=352)	15-20	21	6
	21-25	74	21
	26-30	113	32.1
	31-35	94	26.7
	>36	50	14.2
Residence	Urban	34	9.7
	Rural	318	90.3
Marital status of lactating mothers(n=352)	Married	343	97.4
	Single	6	1.7
	Divorced	3	0.9
Educational status of lactating mothers (n=352)	Unable to read & write	141	40.1
	Able to read & write	106	30.1
	Completed primary education	68	19.3
	Completed secondary education	28	8
	Diploma & above	9	2.6
Educational status of partners (n=352)	Unable to read & write	71	20.2
	Able to read & write	163	46.3
	Completed primary education	78	22.2
	Completed secondary education	24	6.8
	Diploma & above	16	4.5
Occupational status of lactating mothers (n=352)	Housewife	335	95.2
	Government employee	11	3.1
	Private employee	2	0.6
	Daily labor	4	1.1
Occupational status of Partners (n=352)	Government employee	14	4
	Private employee	4	1.1
	Daily labor	51	14.5

	Merchant	6	1.7
	Farmer	277	78.7
Area of residence (n=352)	Urban	34	9.7
	Rural	318	90.3
Family size	1-3	99	28.1
	4-6	124	35.2
	>6	129	36.6
Monthly family income (n=352)	<1000Birr	240	68.2
	1001-2000Birr	66	18.8
	2001-3000Birr	30	8.5
	3001-4000Birr	12	3.4
	>4000Birr	4	1.1
Religion of the lactating mothers (n=352)	Orthodox	329	93.5
	Protestant	16	4.5
	Muslim	7	2

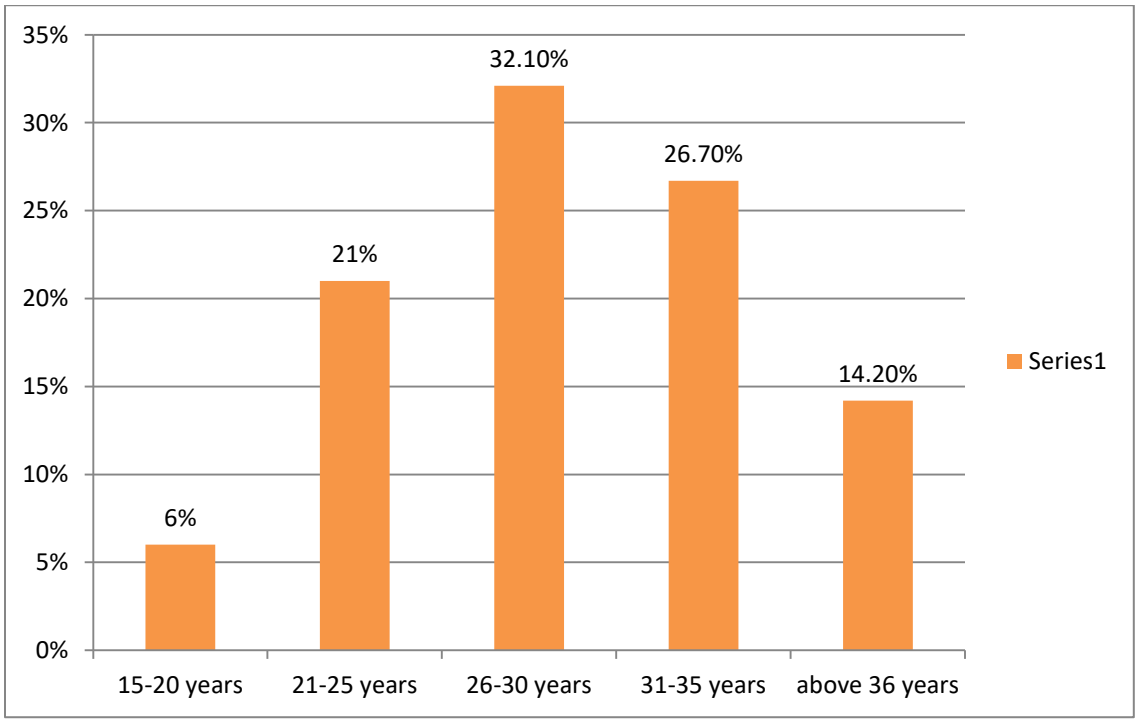


Figure 2 mothers distribution based on age in Sodo Woreda Ethiopia 2023.

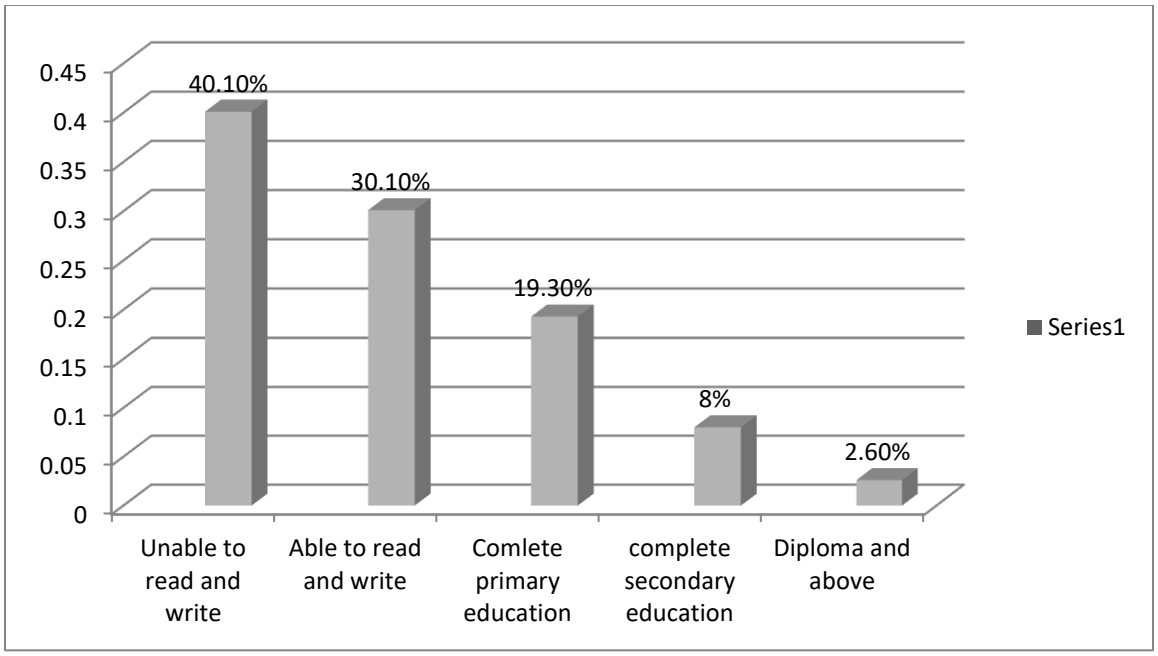


Figure 3 mothers distribution based on educational status in Sodo Woreda, Ethiopia 2023

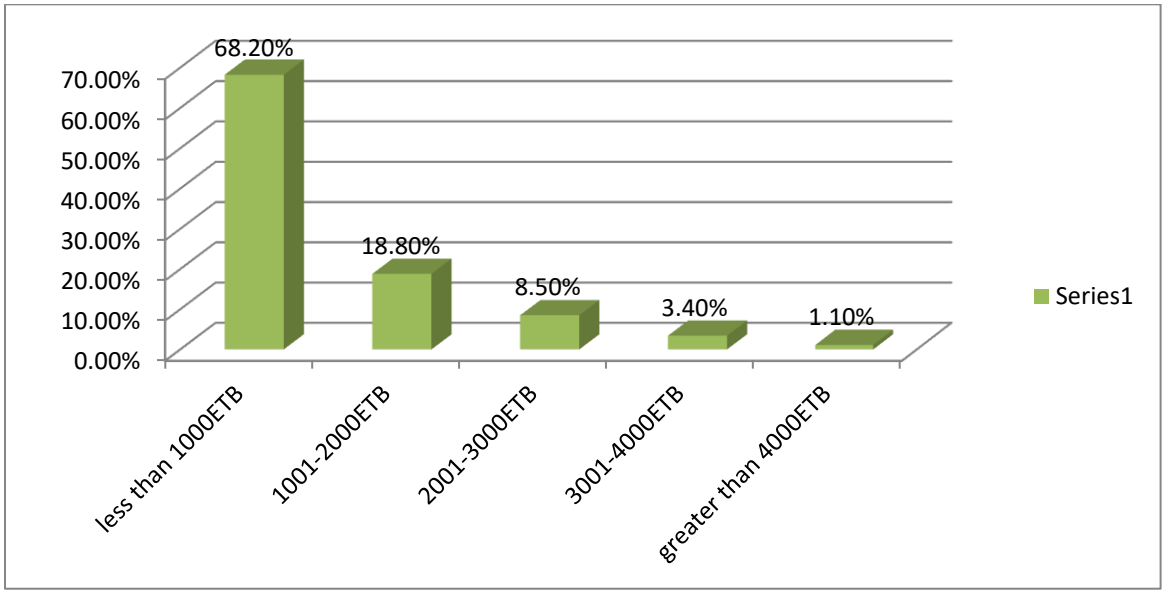


Figure 4 mothers distribution based on family income in Sodo Woreda, Ethiopia 2023.

5.2 Health service utilization and birth experience of the respondent mothers

Among the mothers who participated in the study, 52 (14.8%) had only one childbirth experience, the rest, 300 (85.2%), had two or more children. Among 352 lactating mothers, almost all 346 (98.3%) had a history of ANC attending mothers for the pregnancy of the current infant. Among ANC attendants, the frequency of visits to the facility was 8 (2.3%) visited only one time, 30 (8.5%) visited two times, 75 (21.3%) visited three times, and the rest 233 (66.2%) visited four or more times. Those counseled on the importance of colostrum feeding during an antenatal care visit were 308 (87.5%); the rest, 38 (10.8%), had no information. (Table 3). In this study, the majority of mothers gave birth at different health facilities of different types, but 15 (4.3%) of them delivered their current child at home (table 3). Regarding mode of delivery, the majority of study participants, 336 (95.5%), gave birth by spontaneous vaginal delivery, while 16 (4.3%) by caesarian section (C/S) at hospitals. Three-fourths of study participants, 270 (76.7%), attended PNC within 3 days of birth; the rest, 82 (23.3%), had no history of PNC visits. Three-fourths of the mothers (266 (74.4%)) had information on the advantages of colostrum feeding from different sources: 108 (30.7%) from health professionals or health facilities, 127 (36.1%) from health extension workers, 20 (5.7%) from mass media, and 11 (3.1%) from others (Table 3).

Table 3 Health service utilization and mode of delivery among mothers of infants in Sodo woreda, Gurage Zone SNNPR Region Ethiopia 2023.

Variables	Alternatives	Frequencies	Percent
Number of child have (n=352)	Only one child	52	14.8
	Two & more children	300	85.2
Mothers who had followed their antenatal care during pregnancy of current infants (n=352)	Yes	346	98.3
	No	6	1.7
Number of Antenatal care visited during current child pregnancy(n=346)	Only one times	8	2.3
	Two times	30	8.5
	Three times	75	21.3
	Four and above times	233	66.2
Those counseled on the importance of colostrum during their antenatal care ((n=346)	Yes	308	87.5
	No	38	10.8

Place of delivery of current child	Health institution	337	95.7
	Home	15	4.3
Mode of delivery of current infant	Normal SVD	336	95.5
	Cesarean section	16	4.5
History of follow up of postnatal care with in3 days of delivery	Yes	270	76.7
	No	82	23.3

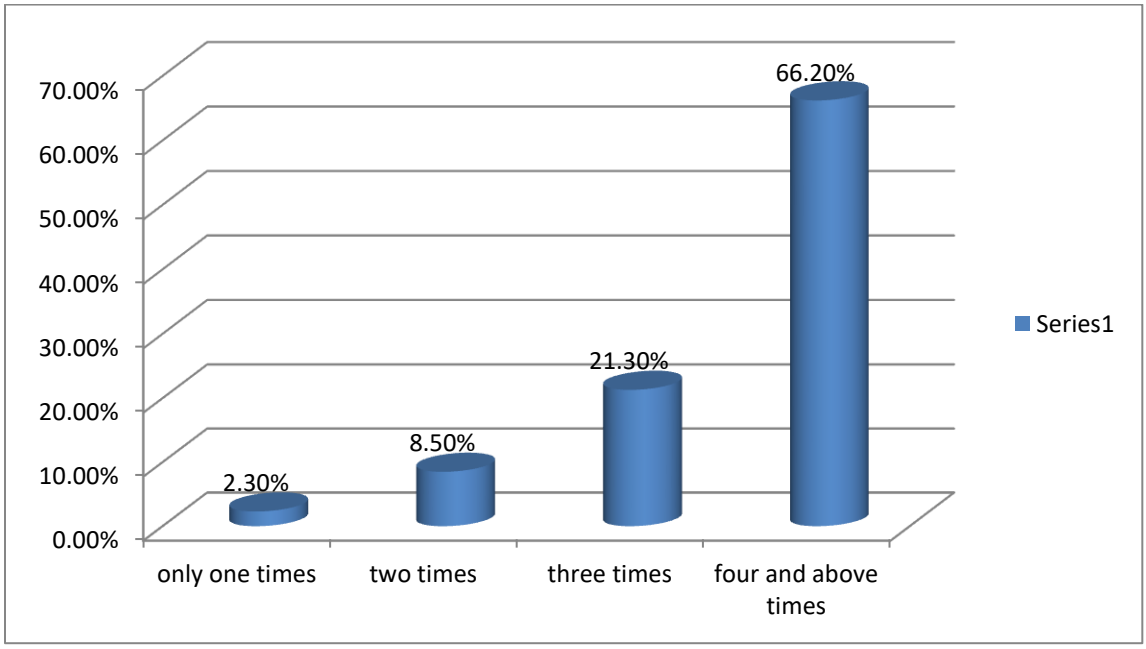


Figure 5 mothers distribution based on number of ANC visit in Sodo Woreda, Ethiopia 2023

5.3 Knowledge of the study participants on colostrum feeding

To assess the knowledge of the mothers on colostrum feeding, according to the predetermined criteria, 310 (88.1%) mothers had good knowledge (table 4). Three-fourth 266(74.4%) of the participants has information about colostrum 86 (24.4%) but does not have information. About two-third of the participants in the study 235 (66.8%) responded that colostrum is yellowish, thick, and sticky in consistency, while one –third of them 117(33.2%) did not know color &, consistency of colostrum. The majority of 287 (81.5%) mothers knew that colostrum contains protein, carbohydrate, minerals, or water, as listed below (table 3). While those mothers who responded that colostrum is the best nutrition for the newborn were 224 (63.6%), more than half

of them, 193 (54.8%), knew that early initiation of breast feeding with colostrum feeding within one hour should be continued for three days.

Table 4 Knowledge about colostrum breast milk among mothers of infants in Sodo Woreda, Gurage Zone, SNNPR Region Ethiopia 2023.

Description		Yes N (%)	No N (%)
Those who have information about colostrum(n=352)		266(74.4%)	86(24.4%)
Source of information about colostrum feeding(n=266)	H/professional	108(30.7%)	
	HEWs	127(36.1%)	
	Mass media	20(5.7%)	
	Others	11(3.1%)	
Colostrum is Yellowish, thick, and sticky in consistency		235(66.8%)	117(33.2%)
Colostrum gives natural immunity to the newborn		219(62.2%)	133(37.8%)
Colostrum is the best nutrition to the baby(newborn)		224(63.6%)	128(36.4%)
Those mothers knew that early initiation of breast -feeding with colostrum within one hour to three days.		193(54.8%)	159(45.2%)
Those mothers aware of colostrum stayed up to three days		85(24.1%)	267(75.9%)
Those mothers responded that colostrum contains water, protein, carbohydrate, and different minerals and important for the growth and development of the infant		287(81.5%)	65(18.5%)
Mean knowledge score		61.05	
Standard Deviation of knowledge score		0.950	

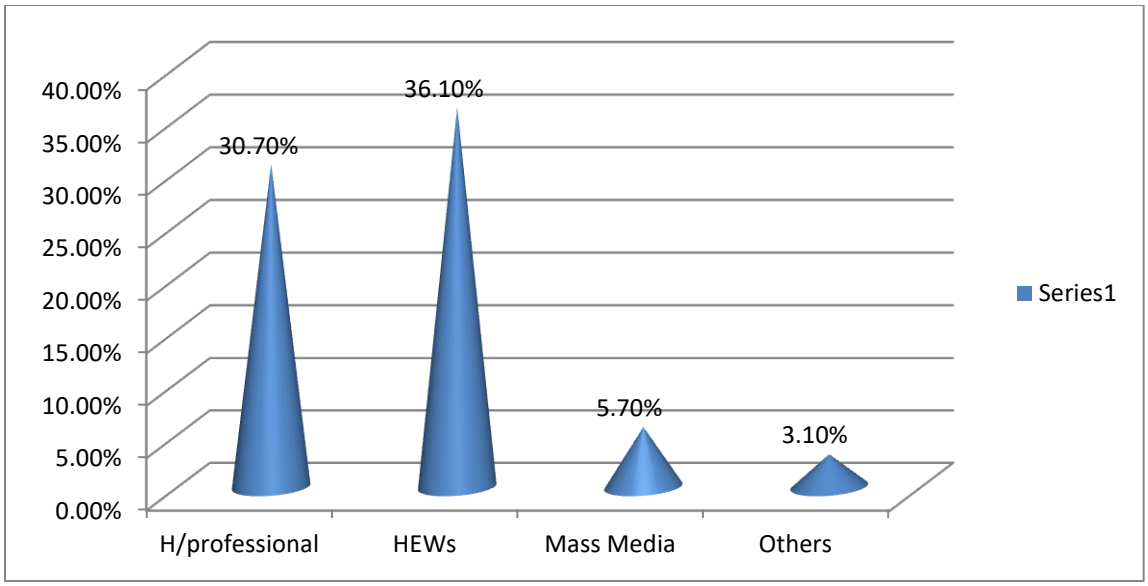


Figure 6 mothers distribution based on source of information about colostrum feeding in Sodo Woreda Ethiopia 2023.

5.4 Attitude and cultural beliefs of study participants towards colostrum breast milk.

According to the responses of the study, participants to questions to assess attitude, Most of 297(84.4%) of mothers had a favorable attitude towards colostrum feeding but the remaining 55(15.6%) had unfavorable attitude towards colostrum breast milk. Those mothers believed that babies do not like colostrum 58 (16.5%) & the rest majority 294(83.5%) believed the opposite. Mothers agreed that colostrum makes the newborn sick 74 (21%); while 278(79%) of them did not agreed. Infants mothers believed colostrum caused diarrhea 79 (22.4%), but 273 (77.6%) mothers did not agreed that. As respondents mothers perceived that colostrum is a dirty part of the milk 56 (15.9%), but 296(84.1%) did not perceived that. Moreover, mothers perceived that colostrum milk is difficult to digest for the baby's gut 90 (25.6%), on the other way 262(74.4%) mothers did not perceived. Those who believed that it is necessary to discard colostrum 60 (17%), but 292(83%) believed that must not discard. Mothers believed that colostrum is forbidden in their culture 90 (25.6%), and those who believed that colostrum impairs growth and development 53 (15%), and also believed that colostrum causes constipation 52 (14.8%) (Table 5).

Table 5 Attitude towards colostrum breast milk among mothers of infants in Sodo Woreda, Gurage Zone, SNNPR Region, Ethiopia 2023

Variable category	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Those mothers that believed baby do not like colostrum	4(1.1%)	54(15.3%)	252(71.6%)	42(11.9%)
Those believed that Colostrum milk makes the baby to sick	3(0.9%)	71(20.2%)	227(64.5%)	51(14.5%)
They perceived that colostrum causes diarrhea	4(1.1%)	75(21.3%)	224(63.6%)	49(13.9%)
Those perceived that colostrum is the dirty part of the milk	5(1.4%)	51(14.5%)	237(67.3%)	59(16.8%)
Mothers believed that colostrum milk is difficult to digest the baby gut	2(0.6%)	88(25%)	218(61.9%)	44(12.5%)
Those believed that colostrum is necessary to be discard	3(0.9%)	57(16.2%)	236(67%)	56(15.9%)
They believed that colostrum is forbidden in their culture	2(0.6%)	88(25%)	218(61.9%)	44(12.5%)
Those believed that colostrum impairs growth and development	3(0.9%)	50(14.2%)	243(69%)	56(15.9%)
My family Sayed it should not be given	2(0.6%)	80(22.7%)	239(67.9%)	31(8.8%)
Mothers believed that colostrum breast milk causes constipation	1(0.3%)	51(14.5%)	254(72.2%)	46(13.1%)
Mean Attitude score				80.27
Standard Deviation of attitude score				0.906

5.5 Practice of respondents towards colostrum feeding.

Among colostrum breast-feeding mothers, 291 (82.7%) gave colostrum to their baby within one hour to three days. Twelve-point-eight percent of colostrum-fed mothers were feeding within six hours after delivery; About 39 (11.1%) of the mothers started colostrum feeding after 24 hours of delivery of their child; those who answered starting breast-feeding after discarding some of the colostrum were 4 (1.1%). According to the responses of the mothers for not feeding colostrum within an hour, 6 (1.7%) of them delayed due to abdominal cramping, 19 (5.4%) believed that it was difficult to digest, and 5 (1.4%) believed that it was polished. Those who did not breastfeed their newborn within one hour were due to medical reasons (ill health): 6 (1.7%), 15 (4.3%) reasoned out that their breasts cannot secrete milk, and the rest (10 (2.8%) of them) said their culture made it forbidden to feed their newborn baby. Those mothers who fed their current child food before feeding colostrum were 62 (17.6%), the types of food they fed were non-human milk (3.1%), plain water fed their neonate was 37 (10.5%), water and sugar mixed food was 3 (0.9%), and the rest were other types of food like ”ajja” or gruel (3.1%) (Table 6).

Table 6 practice of colostrum feeding among lactating mothers in Sodo Woreda, Gurage Zone, SNNPR Region, Ethiopia 2023.

Variables	Category	Frequency	Percent
Colostrum feed to their newborn babies with in the first three days	Yes	291	82.7%
	No	61	17.3%
The times mothers started colostrum breast milk fed to their babies	Within one hour after birth	203	57.7%
	Within six hours after delivery of their newborn	45	12.8%
	After twenty four hrs after delivery	39	11.1%
	After discard of some of the colostrum	4	1.1%
The reason of the mothers not fed colostrum breast milk to the newborn	Abdominal cramping and diarrhea	6	1.7%
	Difficult to digest the baby gut	19	5.4%
	They believed that it was polished	5	1.4%
	Due to medical reason(ill health)	6	1.7%
	The breast cannot secret milk	15	4.3%
	Our culture forbidden to feed colostrum	10	2.8%
Those mothers fed food to their baby before colostrum breast milk	Yes	62	17.6%
	No	290	82.4%
If yes, what did you give the baby?	Non-human milk	11	3.1%
	Plain water	37	10.5%
	Water and sugar	3	0.9%
	Others	11	3.1%

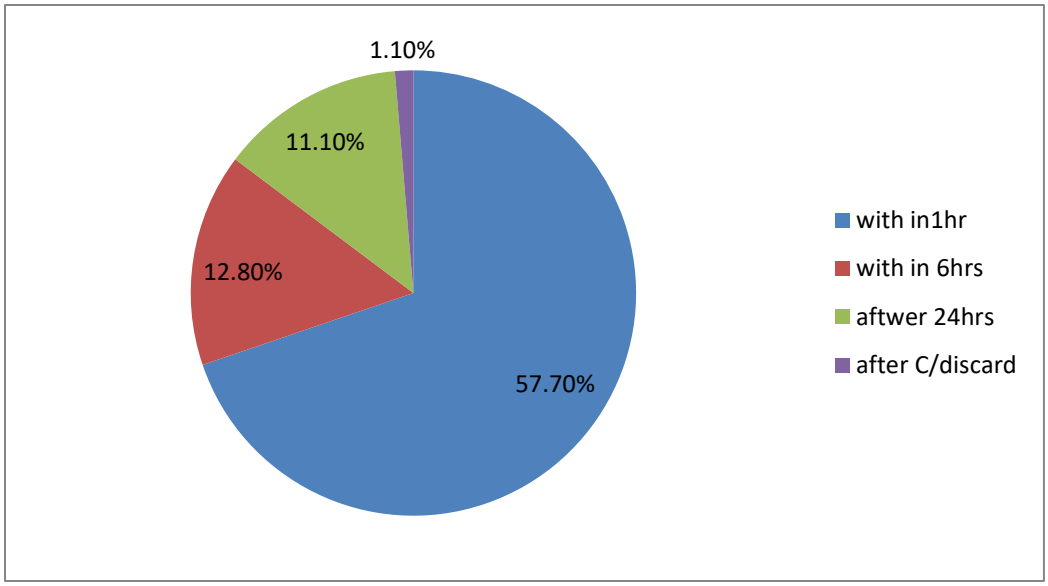


Figure 7 mothers distribution based on time of initiating breast feeding in Sodo Woreda Ethiopia 2023.

5. 6. Barriers and facilitators of colostrum feeding

Regarding the qualitative data collected, two sessions of focus group discussions and two KIIs were conducted. Among the respondents 15.9% of mothers believed that colostrum was a dirty part of the milk; 25.5% believed that it was difficult to digest by the baby's stomach and 15% believed that colostrum in breast milk causes constipation and needed to be discarded. These believes were supported by a Keeble HEW interviewed which she said that "*the main reasons, that the mothers abstained from feeding colostrum breast milk to their newborns were misconceptions about colostrum and it was a dirty part of the milk and needed to be discarded, and that it caused the neonate constipation and abdominal cramps and made him sick.*"

About majority of both focus group discussants, stated, "*Colostrum is very important to the newborn for normal growth & development, & the first vaccine that prevents the newborn from various diseases, build the body of the baby, and helps to prevents hunger the neonate & to be given immediately after birth.*" In line with the above statement, a 55 years old grandmother said that "*previously the newborn was not get colostrum breast milk to the newborn, because we gave more attention to taking care of the mother even up to three days until expulsion of placenta but nowadays this was avoided we have got knowledge advantage of colostrum ".* In both discussant groups believed that "*those mothers whose partners were more educated had more practice of colostrum breast-feeding, because easily understand &get access to information and applied in*

his home and pressure his wife to feed the newborn". Another woman who was 41 years old TBA said that, "*believing that colostrum causes abdominal cramp and blocks the stomach, I recommend mothers to discard colostrum and raw butter swallowing, and drinking some leaves and roots cleans the stomach of newborn before breastfeeding initiation but I stopped currently".* A 35 years old mother also said, "*Feeding colostrum to the newborn baby was believed dirty & unsafe in the previous days, but now as health care providers and health extension workers educated us it is important to the newborn and prevent from various diseases."* In contrast to this, 44-year-old mothers said, *"in our community, colostrum is believed to cause abdominal cramp, constipation and make them sick hence to prevent such problem as grandmother of children said that 'I recommend to discard some of the colostrum first then feed breast milk for the first two to three days"*. As both discussant groups said that *" those who delivered at health institution were more practice of colostrum feeding than those who delivered at home because they obtained more information by health providers and demonstrate how to feed the colostrum breast milk after delivery."* Mothers who were followed up for postnatal care during the first 2-3 days after delivery had higher colostrum feeding practices as compared to mothers with no history of PNC. This is supported by qualitative data that shows that the woreda MCH and Nutrition Coordinator and HEWs said that *"either institutional delivery or home delivery due to strengthened postnatal care within 2-3 days of delivery increased practice of colostrum feeding practice in our woreda."*

Those mothers who delivered at health facilities had a higher rate of practicing colostrum breast-feeding as compared to those who gave birth at home. These were supported by qualitative data as of both Woreda MCHN coordinator and HEW said that, *"previously, home delivery rates were high and mothers did not give colostrum breast milk to their newborn within an hour after birth. Because the TBAs and grandmothers focused attention on caring and hygiene for the mothers, and the baby- initiated breast milk after five or more than four hours, but currently that trend has been improved by increasing institutional delivery, making access to information easier, and even though it has not been avoided completely."* Mothers, who obtained postnatal care within two to three days after childbirth had 1.5 times more practice of colostrum feeding than those who did not get postnatal care services. KII of MCHN and HEW support this, which

stated*, "Besides institutional delivery, postnatal care service provision increased the practice of colostrum feeding despite the fact that there is still a gap."*

The lack of indicators for breast and colostrum feeding in DHIS2 and in the supervisory checklist was the problem that affected colostrum feeding. This causes health providers not to give counseling service on the advantage of colostrum feeding at every contact point, and even they fail to help the mothers who gave birth at health facilities during their stay at health institutions for immediate post-natal care on colostrum feeding. Additionally, both respondents responded, *"there is also a low commitment of service providers to the transmission of health information on the importance of colostrum feeding, and even some materials like flip charts are not clear for easy use and are outdated."* As a result, lack of awareness among the community as a whole, especially the most influential segment, is also the main cause of colostrum feeding malpractice. Hence, as actions to be taken, they proposed, *"DHIS2 and the supervisory checklist have to be revised, and IEC/BCC need to be updated and made easy to use at all levels, especially at community level, by central and regional governments."*

5.7 Factors associated with colostrum feeding among the study participants

In the binary logistic regression analysis, at a p-value of 0.25, urban dwellers' being orthodox religion followers and having a better partner's educational status are positively associated factors with good colostrum feeding practice. Those mothers who had more children or parity, attended two or more ANC visits to the facility, received counseling on the importance of colostrum feeding during ANC follow-up, and received counseling on the timely initiation of breast milk with colostrum feeding. Institutional delivery, visiting for PNC within the first two to three days, and mothers who got information on the advantages of colostrum was also found to be positively associated with colostrum feeding practice. (Table 7).Those mothers had practicing pre-lacteal- feeding to their neonates [AOR=0.024, 95 CI: 0.011, 0.049] times less likely to practice colostrum feeding.

In multivariable logistic regression analysis by using the backward elimination technique, mothers who lived in urban areas were 8.25 times (AOR 8.25, 95 CI: 2.61-26.07) more likely to practice good colostrum feeding practices than those who lived in rural areas. Mothers who had counseling on timely initiation of breast-feeding with colostrum during antenatal care were 3.01 times more likely to practice colostrum feeding than those mothers who had not been counseled

on timely initiation of breastfeeding (AOR = 3.01, 95% CI: 1.20–7.53). Mothers who obtained information about the advantages of colostrum feeding were 12.32 times (AOR 12.32, 95% CI: 5.98–25.34) more likely to have good colostrum feeding practices than those who did not have information about the advantages of colostrum feeding. Lactating mothers whose partners were able to read and write (AOR 21.93, 95% CI: 1.82-263.5) were more likely to practice colostrum feeding than those whose husbands were unable to read and write. Mothers who had good knowledge about colostrum feeding has three times more likely than poor knowledge about colostrum feeding (AOR3.109, 95% CI; 1.539, 6.281). Mothers who had favorable attitude on CF six times more likely than unfavorable attitude (AOR 6.50 95% CI 3.449,12.250) Mothers who had a history of having multiple children, attending two or more ANC sessions, institutional delivery, and maternal PNC visits within the first two to three days were positively associated with colostrum feeding practice. Nevertheless, lack of counseling on the importance of colostrum feeding, giving birth at home, and lack of information on the importance of colostrum feeding was negatively associated factors with colostrum feeding practices (Table 7).

Table7. Binary and Multivariable logistic regression analyses showing that associated factors towards colostrum feeding practices among mothers of infants in Sodo Woreda of Gurage Zone, SNNPR Region Ethiopia 2023.

Explanatory Variables		Have you fed colostrum for your baby within the first three days?		Binary regression	Multi-variate	
		Yes=1	No=0	COR 95% CI	P Value	AOR 95% CI
Residence	*Urban	28(82.4%)	6(17.6%)	5(2.40,10.41)	.000	*8.25(2.61,26.07)
	Rural	255(80.2%)	63(19.8%)	1		
Counseling on timely initiation of BF during ANC	Yes*	271(86.3%)	43(13.7%)	6.30(3.09,12.85)	0.018	*3.01(1.20,7.53)
	No	19(50%)	19(50%)	1:00		
Partner education	Unable to read & write	43(65.2%)	23(34.8%)	1:00		
	*Able to read & write	132(82.5%)	28(17.5%)	0.578(0.304,1.09)	0.015	*21.93(1.82,263.5)
	Complete primary school	72(86.7%)	11(13.3%)	0.261(0.11,0.61)	0.078	8.79(0.78,98.42)
	Complete secondary school	21(87.5%)	312.5%)	0.78(0.306,0.082)	0.448	2.61(0.21,31.04)
	Diploma & above	14(87.5%)	2(12.5%)	0.068(0.018,1.154)	0.856	1.29(0.082,20.38)

Information about colostrum	Yes*	229(87.4%)	33(12.6%)	11.758 (7.45,25.21)	.000	*11.75(5.78,23.89)
	No	54(60%)	36(40%)	1.00		
Knowledge	Good knowledge	263(84.8%)	47(15.2%)	3.109[1.539,6.281]	0.002	*2.63 (1.56-5.96)
	Poor knowledge	27(64.3%)	15(35.7%)	1.00		
Attitude	Favorable attitude	261(87.9%)	36(12.1%)	6.50[3.449,12.250]	0.000	*3.33 (1.56-7.96)
	Unfavorable attitude	29(52.7%)	26(47.3%)	1.00		
*Indicates that very significant variables						

6. DISCUSSION

The purpose of this study was to assess colostrum-feeding Practices and associated factors towards colostrum feeding among mothers of infants less than 12 months of age in Sodo Woreda of Gurage zone, SNNPR Region, Ethiopia 2023. This study indicated that the good practice of colostrum feeding of mothers was 80.1%, which was consistent with the study done in Mekele city 80.5 %(23), Harari town 80%(22), Mota town 79.8 %(40), Bahak tapur in Nepal 80 %(42), Kamrup &Asam in India 79 %(35) & Kuwait 81 %(26). The possible explanations for this similarity is may be due to using similar study design which is cross-sectional study design, high coverage in health service utilization especially ANC. The current study is lower than studies done in different countries. In Ethiopia different regions of the countries like Wolyta zone 87.4%(32),Nepal 83% (43),South Africa 83%(44),Este Woreda South Gondor 98.4%(41). Another similar studies show Raya Kobo district 86.5%(14),Hula District in Sidama Region 96.1%(44),Bure District 85.5%(40), Kombolcha town 88.6%(38),Dubti Afar Region 84.4%(30),Debre Tabor town 89.5% (21),Jinka town 90.2%(33), East Gojam Zone 91.2%(29),Axum town 93.7%(20),Uganda 97%(45), Burkina Faso 92%(46). These big variations may account for socio-demographic differences and cultural beliefs may be due to economic growth and modernization. Other variations in information access and utilization of maternal health care services including place of delivery, here, the huge difference might be due to the study area, some studies conducted in facility based. Study design each study used, some studies were conducted in town.

However, the current study is higher than studies done in Ambo district 56.5%(13), Debre Brihan56.2%(9), Dire Dawa city 68.8%(31),Harari town 70%(22),Debre Tabor74.4%(39), Dembecha District 76.2%, Gozamn Disrict77.9%(37), Debre Markos town 77.9%(47),

EDHS2016 62.7%, Pakistan 72.1%(24), Bangladesh 63%(18),Nepal 69%(43) of mothers practiced colostrum feeding. The variation may account for socio-demographic differences and multi-cultural beliefs. In addition, it may be due to variation in information access and utilization of maternal health care services including place of delivery, study period and study design and study areas.

Those mothers who obtained counseling about early initiation of breast-feeding during antenatal care follow up practiced 3.01 times higher than those who did not get counseling service. This study finding is consistent to studies done in Wolayta Zone(32), Dire Dawa City(31),and Kombolcha town(38). This might be due to creation of awareness towards advantage of colostrum to their infants during promotion of timely breastfeeding initiation. Recommendation on timely breastfeeding counseling during pregnancy may also give the opportunity for mothers to discuss the essentials of colostrum for their newborn. Mothers living in urban were increased the odds of having good Practice of CF by 8.25 times than rural dwellers. This finding was supported by studies done in Dire Dawa City(31), Kombolcha town(38), Amibara District in Afar Region(30) ,and in Nepal(43). As other study conducted in Kamrup Assam India town(35), and Debre Tabor general hospital(39) show that mothers who lived in urban were more likely give colostrum than those who lived in rural. The possible reason for this difference in practice of colostrum feeding among urban and rural mothers might be due to the educational levels, more access to information, and as most of the mothers who lived in urban are educated and have better knowledge on colostrum. The other possible reason might be due to cultural influences, mothers who lived in rural areas have various societal myths and misconception.

The study participants who have got information about colostrum had 11.75 times more likely to good practice of colostrum feeding. In this study about three fourth 266(74.4%) of the mothers received information on CF from various sources. while, among these (66.8%) obtained from health workers and HEWs this shows that the information on colostrum obtained from health professional is more accurate and the mothers have good level of information on CF than those who obtained the information from other sources. This study is supported by study done in Dire Dawa City shows that participants who got information about CF from health professionals were nearly four times more likely had good practice of CF(31). The unique finding from my study shows that those whose partners were able to read and write were 21.93 times more likely to

good colostrum feeding practice than those whose partners were unable to read and write. This is may be due to information sharing &pressuring to his wife to colostrum feeding. This finding needs further study whether it is consistent or not.

Strength and limitation of this study

Strengths of this study

The strength of this study was that it included both quantitative and supported by qualitative method. The study tried to address mothers recall bias by limiting only included the respondents whose infants age to less than 12 months. Rather than facility based study, community centered study was used to reduce the social desirability bias. This particular study also tried to limit sample related issues. Strength may be this is the first study on the Practice of colostrum feeding and associated factors at the study area in particular to address issues related to early breastfeeding problems.

Limitations of this study

The evidence obtained from mothers might be exposed to memory bias since the data were gathered grounded on self-report of the mothers of infants aged less than 12 months age. Since this is cross-sectional study design, fails to establish bidirectional a causal relationship &shares some other constraints of cross-sectional study design.

7. CONCLUSION & RECOMMENDATION

7. 1 Conclusion

My study shows that two hundred eighty three, 80.1% of lactating mothers had good practice of colostrum feeding and which shows about 20% of mothers still did not feed colostrum to their newborn. Counseling on timely initiation colostrum feeding during ANC visits, residency, partner educational status, having information about colostrum, having good knowledge & favorable attitude towards colostrum feeding practice were significantly associated with practice of colostrum feeding. However, lack of counseling on the importance colostrum feeding to the neonate, home delivery to their neonate, and lack of information about colostrum feeding were the factors negatively affecting the practices of colostrum feeding.

7.2 Recommendation

Depending up on the finding of the study, even if it is difficult to recommend national/regional institution with the findings of one district, I would like to recommend FMOH/Central Ethiopia

regional health bureau, ZHD, Sodo Woreda health office, health facilities as well as providers with the following recommendations.

FMOH & CEHB:

The policy makers can/need to initiate new strategies and programs that address community needs. Taking the associated factors towards colostrum feeding into account, community-oriented, targeted, and specific, interventions has to be designed. So that, counseling on colostrum feeding is made routine health service-by-service providers, indicators of colostrum feeding has to be integrated in to DHIS2 and supervisory checklists of family health activities, The government must encourage program specific partners in the areas of colostrum feeding practice, & further research should done in Practice & associated factors about Colostrum feeding.

Gurage Zone Health Department, Sodo Woreda health office and PHCU:

Strengthen capacity building, motivation for experts & service providers & HEWs. The intervention has to be implemented at household, community, and health facility level targeting important segments of the communities. Strengthen facilitative supervision to every level by using integrated supervision checklist, and provision of feedback for improvement. Regular meeting on performance review and planning has to be strengthened at all levels. Service providers: Provision of health information on benefit of colostrum feeding to communities such as mothers, adolescents, and other influential. So that providing counseling on the importance of colostrum breast milk: strengthen antenatal care, skilled delivery, postnatal care within the first two to three days and get counseling on the importance of colostrum breast milk activities must be give attention.

8. REFFERENCES

1. Harakeh S, Almatrafi M, Bukhari R, Alamri T, Alshehri A, Al Amri S, et al. Colostrum knowledge among Saudi mothers in Jeddah, Saudi 3 Arabia 4. Arabia. 2020;4:5.
2. Organization WH. 2012-2013 biennium report: Department of Nutrition for Health and Development: evidence and programme guidance. World Health Organization; 2014.
3. 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.
4. Petersen Williams P, Washio Y, Myers B, Jaspan H, Browne FA, Wechsberg WM, et al. Cannabis use and breastfeeding: do we know enough? : SAGE Publications Sage UK: London, England; 2020. p. 7-10.
5. Mugadza G, Zvinavashe M, Gumbo FZ, Pedersen BS. Early breastfeeding initiation and incidence of neonatal sepsis in Chipinge District Zimbabwe. Int J Contemp Pediatr. 2018;5(1):1-5.
6. Smith ER, Hurt L, Chowdhury R, Sinha B, Fawzi W, Edmond KM, et al. Delayed breastfeeding initiation and infant survival: a systematic review and meta-analysis. PloS one. 2017;12(7):e0180722.
7. Berkat S, Sutan R. The effect of early initiation of breastfeeding on neonatal mortality among low birth weight in Aceh Province, Indonesia: an unmatched case control study. Advances in Epidemiology. 2014;2014.
8. 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.
9. Tadese 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.
10. Ersino G, Henry CJ, Zello GA. Suboptimal feeding practices and high levels of undernutrition among infants and young children in the rural communities of Halaba and Zeway, Ethiopia. Food and nutrition bulletin. 2016;37(3):409-24.
11. Bisrat Z, Kenzudine A, Bossena T. Factors associated with early initiation and exclusive breastfeeding practices among mothers of infant's age less than 6 months. J Pediatr Neonatal Care. 2017;7(3):00292.
12. Yeshambel Wassie A, Atnafu 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.
13. 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.
14. Oot L, Sommerfelt A, Sethuraman K, Ross J. Estimating the effect of suboptimal breastfeeding practices on child mortality: a model in profiles for country-level advocacy. Technical Brief-Food and nutrition technical assistance III project. 2015.
15. Srikanth L, Subbiah K, Srinivasan S. Beliefs and practices of newborn feeding in tribal areas of India: a decennary review. Int J Community Med Public Health. 2017;4(2):281-5.

16. Group NS. Timing of initiation, patterns of breastfeeding, and infant survival: prospective analysis of pooled data from three randomised trials. The Lancet Global Health. 2016;4(4):e266-e75.
17. Ghani I. An intervention approach for improving nutritional status of mothers and children in Kashmir (India). life. 2022;35(36):31.
18. Sultana F, Sheba IT. Factors Associated With Pre-Lacteal Feeding Practices Among Mothers Having Children Aged 0-36 Months in Bangladesh: Evidence From Bangladesh Demographic and Health Survey 2017-18. Global Pediatric Health. 2022;9:2333794X221079550.
19. Wu H, Zhao M, Magnussen CG, Xi B. Global prevalence of WHO infant feeding practices in 57 LMICs in 2010–2018 and time trends since 2000 for 44 LMICs. EClinicalMedicine. 2021;37.
20. Rogers NL, Abdi J, Moore D, Nd'iangui S, Smith LJ, Carlson AJ, et al. Colostrum avoidance, prelacteal feeding and late breast-feeding initiation in rural Northern Ethiopia. Public health nutrition. 2011;14(11):2029-36.
21. Abie BM, Goshu YA. Early initiation of breastfeeding and colostrum feeding among mothers of children aged less than 24 months in Debre Tabor, northwest Ethiopia: a cross-sectional study. BMC research notes. 2019;12(1):1-6.
22. Zewde GT. Assessment of knowledge, attitude and practices of colostrum feeding among postnatal mothers in Harar Town Governmental Hospital Harar, Ethiopia 2019. Journal of Pediatrics Research Reviews & Reports SRC/JPRRR-107 DOI: doi org/1047363/JPRRR/2020 (2). 2020;104:2-6.
23. 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.
24. 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.
25. 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.
26. Dashti M, Scott JA, Edwards CA, Al-Sughayer M. Predictors of breastfeeding duration among women in Kuwait: results of a prospective cohort study. Nutrients. 2014;6(2):711-28.
27. Gebreyesus H, Girma E, Cherie N. Colostrum avoidance and associated factors among mothers of children aged less than 12 months in Kombolcha town, South Wollo zone, Ethiopia. Medico Research Chronicles. 2017;4(05):545-59.
28. Kebede B, Gebeyehu A, Sharma HR, Yifru S. Prevalence and associated factors of neonatal mortality in North Gondar Zone, Northwest Ethiopia. Ethiopian Journal of Health Development. 2012;26(2):66-71.
29. 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.
30. 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.
31. 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.
32. 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.
33. 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).
34. 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.
35. 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.
36. Nigussie J, Girma B, Molla A, Mareg M. Colostrum avoidance and associated factors in Ethiopia: A systematic review and meta-analysis. 2020.
37. 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.
38. Hadona EA, Weldehawariat FG, Sorrie MB. Colostrum Avoidance Practices and Its Associated Factors Among Mothers of Children Aged Less Than 12 Months in Jinka Town, South Ethiopia, 2019. 2020.
39. 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.
40. 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.
41. Wubet GM, Zemamu LY, Adan GM, Getu BD. Knowledge, and Practice of Mothers and Its Associated Factors on Colostrum Feeding of Neonates at Este (Mekane-eyesus), South Gondar Amhara, North West, Ethiopia: Community Based Cross-sectional Study 2020. 2021.
42. 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.
43. Joshi SK, Barakoti B, Lamsal S. Colostrum feeding: knowledge, attitude and practice in pregnant women in a teaching hospital in Nepal. 2012.
44. 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.
45. Engebretsen IMS, Nankabirwa V, Doherty T, Diallo AH, Nankunda J, Fadnes LT, et al. Early infant feeding practices in three African countries: the PROMISE-EBF trial promoting exclusive breastfeeding by peer counsellors. International breastfeeding journal. 2014;9(1):1-11.

46. 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.
47. 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.

9 ANNEXES

ANNEX-A

Consent form

Hello, my name is. ----------I am student from Wolkite University This study is conduct with the objective of assessing knowledge, attitude and practice of colostrum breast-feeding among lactating women in selected Kebeles in Sodo Woreda.

As the study is directly related focused on lactating women, you are one of the women who had been selected randomly to participate in this study. Therefore, you are kindly requested to participate in this study and provide the essential information required from you. I would like to ask you a few questions, but you can refuse to answer any question I ask. You may end the interview at any time. You can also refuse to participate in the study completely. Your refusal will not restrict you from obtaining the required medical care when you need. The interview will last approximately 20 minutes. Your responses will be keep confidential and there will be no way of linking your individual responses to the results of the study findings. I would like to inform you that the responses that you provide to the questions are very essential for the successful accomplishment of the study objectives. Are you voluntary to respond to the questions?

Yes…….proceed for the interview

No……. proceed to the next participant

ANNEX-B

Information sheet

Research title: Assessment of knowledge about colostrum, attitude towards colostrum, and practice of colostrum feeding and its associated factors among lactating women in a selected Kebeles Sodo Woreda, Gurage Zone, SNNPR, Ethiopia.

Institution: Wolkite University College of Medicine & Health Sciences department of Public Health**.**

Research investigator: Tesfaye Birhanu

Address & contact details of research investigator:

tesfayebirhanu823@gmai.com 0926212921/0935006902

The research will be a cross-sectional study aimed to assess practice and associated factors among lactating women at selected kebeles in Sodo Woreda, Gurage Zone, SNNPR, Ethiopia

Responsible data collector: four BSc. midwifery nurses are responsible for the data collection. The principal investigator for its completeness will check all the collected data. The data will not include participant identifiers.

Involved participant: All lactating women who are living in selected kebeles and fulfill the inclusion criteria are included.

Risks of the study: there is no associated risk with the study.

Benefits of the study: intervention will be make on the community regarding appropriate colostrum breast feeding practices in lactating women.

If you feel discomfort with the study, it is your right to drop out from the study. If you have any questions regarding this study and if would like to be informed of the results after its completion, please feel free to contact the principal investigator.

ANNEX-C

Questionnaire on mothers' knowledge, attitude, and practices and associated factors among lactating women at selected kebeles in Sodo Woreda Ethiopia.

Part I- Socio-demographic information

Instruction: Please, carefully read the following questions and write their age and circle the number which best describes response of the respondents

	Questions	Coding categories
101	Age	_____Years
102	Religion	1. Orthodox 2.Muslim 3. Protestant 4.Others
103	Residence	1. Rural 2 Urban
104	Educational level of the mother	1. Unable to read and write 2 Able to Read and write 3 Primary education 1. Secondary education 5 Diploma and above
105	Occupation of the mother	1 House wife 2 Government employee 3 Private employee 4 Daily laborer 5 Merchant 6. Others
106	Marital status	1. Single 2 Married 3 Divorced 4 Widowed
107	Partner's Educational status	1. Unable to read and write 2 Able to Read and write 3 Primary education 4 Secondary education 5 Diploma and above
108	Partner's occupation	1. Government employee 2. Private employee 3. Daily laborer 4.Merchant
109	Family size	1. 1-3 2. 4-6 3. >6
110	Monthly Family Income	1 <1000 2 1001-2000 3 2001-3000 4 3001-4000 5 >4000ETB

111	What is the water source for the family?	1 protected well 2 protected spring 3-piped water 4 public tap 5 river 6 bore hole 7 unprotected well 8 unprotected spring.
112	What is household's latrine condition?	1 improved latrine 2 not improved latrine
113	Does they have electricity?	1 Yes 2 No
114	What is the floor materials of the house?	1 cemented 2 non cemented (dung)
115	Household possession of communication	1 Radio 2. TV 3 mobile telephone 4 public phone 5 refrigerator
116	What is the means of transport	1 bycle 2 animal drawn 3 Motor cycle 4 car 5 foot
117	Ownership agricultural land	In hectar_____
118	Ownership of farm animals	_____(Number)

Part II- Utilization of maternal health care services by lactating women during pregnancy

No.	Questions	Coding categories
201	Parity	1. prim gravida 2. multigravida
202	Antenatal care visit	1. Yes 2. No
203	Number of ANC visit	1. One time 2. Two time 3. Three time 4. Four time
204	Counseled on timely initiation of breast feeding during ANC visit	1 Yes 2 No
205	Place of delivery	1. Health institution 2. Home
206	Mode of delivery	1. Cesarean section 2. Vaginal delivery
207	Postnatal care visit	1. Yes 2. No

Part III- Knowledge of lactating women towards colostrum breast milk

No.	Questions	Coding categories
301	Have ever heard about colostrum feeding	1 Yes 2 No
302	Source of information	1 health care provider 2 health extension worker 3 mass media(TV/Radio)
303	Colostrum gives natural immunity	1 Yes 2 No 3 I don't know
304	Colostrum is the best nutrition for the new born	1 Yes 2 No 3 I don't know
305	Colostrum is thick, sticky and yellowish in color	1 Yes 2 No 3 I don't know
306	Time of initiation of the first breast milk	1 Within 1 hour 2 Within six hours 3 After 24 hours 4 I don't know
307	For how many days do the colostrum feeding stays?	1 For 1 day 2 For 2 days 3 For 3 days 4 more than 3 days
308	What content does of the Colostrum contains?	1 water 2.protein 3 carbohydrate 4 minerals 5.none

Part IV- Attitudes of lactating mothers towards colostrum breast milk feeding

401	Baby' do not like colostrum breast milk	1. agree 2. strongly agree 3. disagree 4. strongly disagree
402	Colostrum causes diarrhea	1 agree 2 strongly agree 3 Disagree 4 strongly disagree
403	Colostrum makes the baby sick	1 agree 2 strongly agree 3 disagree 4 strongly disagree
404	Colostrum is a dirty part of milk	1. agree 2. strongly agree 3. disagree 4. strongly disagree
405	Colostrum milk is difficult to digest	1 agree 2 strongly agree 3 disagree 4 strongly disagree
406	Necessary to discard colostrum	1 agree 2 strongly agree 3 disagree 4 strongly disagree

407	Colostrum is forbidden in culture	1 agree 2 strongly agree 3 disagree 4 strongly disagree
408	Colostrum impairs growth and development	1 agree 2 strongly agree 3 disagree 4 strongly disagree
409	My family says it should not to be given	1 agree 2 strongly agree 3 disagree 4 strongly disagree
410	Colostrum breast milk causes constipation	1 agree 2 strongly agree 3 disagree 4 strongly disagree

Part V- colostrum breast milk feeding practices among lactating mothers.

501	Have you feed colostrum to your baby with in the first 3 days of after birth?	1 Yes 2 No
502	If yes when did initiate of first breast milk	1 Within one hr after delivery 2 Within six hrs after delivery 3 After 24 hrs after delivery 4 After discard some of colostrum
503	If no,Q1 why did not feed colostrum?	1 Abdominal cramping & diarrhea 2 Difficult to digest 3 I believe it is polished

		4 Medical reason(ill health) 5 Breast can't secret 6 Culture
504	Did you fed other foods before breast milk (Pre-lacteal feeding)	1 Yes 2 No
505	If yes , what did you give the baby?	1 Non- human milk 2 Plain water 3 Butter 4 Water & sugar 5 Others

Annex VI: Focus group discussion & key informant interview guide for colostrum feeding

KAP. UC _____ Village Name _____Cluster No _____ Team No ___ Date: __ /_07_ / 2023

(Kindly Use these questions as a guideline in focus group discussion, probe the community group for more and more information

1. What do you know about colostrum? & when to give to the newborn baby? Why?
2. What do you say about its importance to the newborn baby?
3. What is the community traditional belief & attitudes about colostrum? Why?
4. What are the major problems you think that prevent from giving colostrum to the newborn baby? In addition, its solutions.
5. What are the community practice of colostrum feeding to the newborn baby? in your areas.

Annex IV: Amharic Questionnaires (**የአማርኛ መጠይቅ**)

ጤና ይስጥልኝ :: ስሜ .....ይባላል፡፡ ይህ ጥናት በወልቂጤ ዩኒቨርስቲ በስነ-ምግብ የማስተርስ ትምህርት ተማሪ በሆነው ተስፋዬ ብርሃኑ የሚደረግ ነው፡፡ ይህ መጠይቅ የተዘጋጀው እናቶች ስለ እንገር ወተት ያላቸውን ግንዘቤ፤ አመለካከትና ልምድ የዳሰሳ ጥናት ለማድረግና ያሉበትን ደረጃ ለማወቅ ነው፡፡ የጥናቱ ተሳታፊዎች የሚመረጡትም በእጣ ሲሆን እርስዎም የተመረጡት በዕጣ ነው፡፡ በጥናቱ ወቅት እርስዎ የሚሰጡን ማናቸውም አይነት መረጃዎች ለዚህ ጥናት ብቻ ይውላሉ ለሌላ አካል ተላልፈው አይሰጡም፡፡ የእርስዎ ስም ወይም ማንነት አይመዘገብም በምትኩ መለያ ቁጥር የሚሰጠው ይሆናል፡፡ ማንኛውም በዚህ ጥናት የሚሳተፍ ወይም የሚሰራ ሰው ስለእርስዎ ምንም አይነት መረጃ አይነገረውም፡፡ በጥናቱ ላይ ያለመሳተፍ፣ በፈለጉት ሰዓት መጠይቁን የማቋረጥና መመለስ የማይፈልጉትን ጥያቄዎች የመተው ወይም ያለመመለስ ሙሉ መብት አለዎት፡፡ በጥያቄው መሳተፍዎም ሆነ ያለመሳተፍዎ በሚያገኙት የጤና አገልግሎት ላይ የሚኖረው አዎንታዊም ሆነ አሉታዊ ተፅዕኖ የለውም፡፡ ቃለ መጠይቁን በሙሉ ማጠናቀቅ በአማካይ 20-30 ደቂቃ ያህል ተጨማሪ መረጃ ከፈለጉ ከታች ባለው አድራሻ መጠየቅ ይቻላል፡፡

ተስፋዬ ብርሃኑ :-+251926212921/0935006902

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት

1. አዎን, በፊርማዎ ያረጋግጡልኝ _____

2. አይደለሁም አመስግናለሁ

የቃለ መጠይቅ መለያ ቁጥር .....

የጥናቱ ቦታ .....

የጠያቂው ስም ..... መለያ ቁጥር.....

የተቆጣጣሪው ስም .....

መጠይቅ የተደረገበት ቀን ....ወር ..... ዓ/ም .....

መጠይቁ የተጀመረበት ሰዓት ..... ያለቀበት ሰዓት .....

1. ጠቃላይ ማህበራዊ መጠይቆች

ተ.ቁ	ጥያቄዎች	ምላሽ	እለፍ/ሬ
101	ዕድሜሽ ስንት ነው?	_____(በ ቁጥር)	
102	ኃይማኖትሽ ምንድነው?	1. ኦርቶዶክስ 2. መስሊም 3. ፕሮቴስታንት 4. ሌላ _____	
103	የት ነዉ የምትኖሪዉ?	1. ከተማ 2. ገጠር	
104	የትምህርት ደረጃሽ ?	1 ማንበብና መፃፍ የማትችል 2 ማንበብና መጻፍ የምትችል 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ኮላጅ እና ከዚያ በላይ	
105	ስራሽ ምንድነው ?	1 የቤት እመቤት 2 የመንግስት ሰራተኛ 3 የግል ድርጅት ተቀጣሪ 4 የቀን ሰራተኛ	
106	የጋብቻ ሁኔታ ?	1. ያገባች 2. ያላገባች 3. የፈታች 4. ባል የሞተባት	
107	የትዳር አጋርሽ የት/ት ደረጃ	1 ማንበብና መፃፍ የማይችል 2 ማንበብና መጻፍ የሚችል 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ኮሌጅ እና ከዚያ በላይ	
108	የትዳር አጋርሽ የስራ ሁኔታ	1.የመንግስት ሰራተኛ 2.የግል ድርጅት ተቀጣሪ 3.የቀን ሰራተኛ 3.ነጋዴ	
109	የቤተሰብ አባላት ብዛት	1; 1-3 2; 2-4 3; › 6	
110	ወርሃዊ የቤተሰብ ገቢ	1 <1000 2 1001-2000 3 2001-3000 4 3001-4000 5 >4000ETB	
111	ቤተሰቡ ውሃ ከየት ነው የሚጠቀመው?	1 የተከለለ ጥልቅ የጉድጋድ ውሃ 2 የተከለለ ምንጭ 3. በእጅ የሚገፋ ፓንፕ ውሃ 4.የቧንቧ ውሃ 5.የወንዝ ውሃ 6 በሰው የተቆፈረ ጉድንድ 7 ያልተከለለ ጥልቅ ጉድንድ ውሃ 8 ያልተከለለ ምንጭ	

112	ቤተሰቡ የሚጠቀመው መፀዳጃ ቤት ሁኔታ ምን ይመስላል ?	1 የተሻሻለ መፀዳጃ ቤት 2 ያልተሻሻለ መፀዳጃ ቤት	
113	ኤሌክትሪክ መብራት አለው?	1 አዎ 2 አይ	
114	የመኖሪያ ቤት ወለሉ ምንድነው ?	1 በሲሚንቶ የተገነባ 2 በእበት የተለቀለቀ	
115	በቤት ውስት የሚገኝ ቁሳቁስ	1 ራዲዮ 2 ቴሌቪዥን 3 የእጅ ሞባይል 4 የቤት ስልክ 5 ፍሪጅ	
116	ቤተሰቡ የሚጠቀመው ትራንስፖርት ምንድነው ?	1ብስክሌት 2 የፈረስ ጋሪ 3 ሞተር ብስክሌት 4 መኪና 5 በእግር	
117	የመሬት ይዞታ በጥማድ	----------(በጥማድ)	
118	የቤት እንስሳት የበሬ ብዛት	---------- (በቁጥር)	

ክፍል ሁለት፡ እናቶች የጤና አገልግሎት ተጠቃሚነት ሁኔታ የያዘ መጠይቅ

ተ.ቁ	ጥያቄ	ምላሽ	እለፈ/ፊ
201	ይህ ህጻን ስንተኛ ልጅሽ ነዉ?	1 የመጀመሪያ 2 ሁለተኛ እና ከዚያ በላይ	
202	ይህ ህጻን እርጉዝ እያለሽ የቅድመ ወሊድ ክትትል ነበረሽ?	1. አዎ 2. አልነበረኝም	
203	በእርግዝናሽ ወቅት ስንት ጊዜ የጤና ምርመራ አደረግሽ ?	1. አንድ ጊዜ 2 ሁለት ጊዜ 3 ሶስት ጊዜ 4 አራት እና ከዚያ በላይ	
204	በእርግዝና ምርመራ ጊዜ እንደወለድሽ እንድታጠቢ ተነግሮሽ ነበር?	1. አዎን 2. አልተነገረኝም	
206	ይህ ህጻን የት ነው የተወለደው?	1. ቤት ውስጥ 2. የጤና ተቃም	
207	የወለድሽው በምንድ ነው?	1. በማህጸን 2. በኦፕራሲዮን	
208	የድህረ ወሊድ ክትትል አድርገሻል?	1 አዎ 2 አይደለም	

ክፍል ሶስት፡ እናቶች ስለ እንገር ማጥባት ያላቸው ግንዛቤ ጋር የተያያዙ ጥያቄዎች

ተ.ቁ	ጥያቄዎች	መልስ
301	ስለ እንገር ወትት ሰምተሽ	1. አዎ 2. አልስማሁም

	ታውቂያለሽ?	
302	ከየት ነበር የስማሽው ?	1. ከጤና ባለሙያ 2. ከጤና ኤክስቴንሽን ባለሙያ 3. ከሚዲያ 4. ከሌላ _____
303	እንገር የተፈጥሮ መከላከያ ዘዴ ነው ?	1 አዎ 2. አይ 3 አላውቅም
304	እንገር ወተት ለጨቅላ ህጻኑ ተመራጭ ምግብ ነው ?	1. አዎ 2. አይደለም 3 አላውቅም
305	እንገር ወተት ምን አይነት ወተት ነው?	1. ቢጫ 2. ነጭ 3 አላውቅም
306	እንገር ወተት መቼ ነው የሚጀመረው?	1. በ1 ሰዓት ውስጥ 2. በ6 ሰዓት ውስጥ 3 በተወለደ በ24 ሰዓት ውስጥ 4 አላውቅም
307	እንገር ወተት እስከመቼ ይቆያል?	1 ለ1 ቀን 2 ለ2 ሰዓት 3 ለ3 ቀን 4 ከ3 ቀን በላይ
308	እንገር ወተት ለህጻኑ ምን ምን ጥቅም ይሰጣል?	1. ውሃ ነው 2. ገንቢ ምግብ ነው 3 ሃይልና መቀት 4 የተለያዩ ማእድናትን 5 ምንም

ክፍል አራት፡እናቶች ስለእንገር ወተት ያላቸው አመለካከት የተያያዙ ጥያቄዎች

401	ጨቅላ ህጻኑ የእንገር ወተት አይወድም	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	ምሊሽሽ 1 ከሆነ ተ.ቁ 402 እሆፊ
402	እንገር ወተት ለህጻኑ ተቅማጥ ያመጣበታል?	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
403	እንገር ህጻኑን ያሳምመዋል?	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
404	እንገር ቆሻሻ የወተት ክፍል ነው?	1. እስማማለሁ 2. በጣም እስማማለሁ	

		3 አልስማማም 4 በጣም አልስማማም	
405	እንገር ለህጻኑ ሆድ አይፈጭለትም?	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
406	እንገር መወገድ ያለበት የወተት ክፍል ነው	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
407	እንገር ወተት በባህላችን መሰረት ማጥባት የተከለከለ ነው	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
408	እንገር ማጥባት የህጻኑን እድገት ይገታዋል	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
409	ቤተሰቦቼ እንገር መሰጠት የለበትም ይላሉ	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	
410	እንገር ለህጻኑ ማጥባት የሆድ ድርቀት ያመጣበታል	1. እስማማለሁ 2. በጣም እስማማለሁ 3 አልስማማም 4 በጣም አልስማማም	

ክፍል አምስት፡ እናቶች እንገርን ስለማጥባት ያላቸውን ልምድና ተሞክሮ የያዘ መጠይቅ

ተ.ቁ	ጥያቄ	ምላሽ	እለፈ/ፊ
501	ይህ ህጻን በመጀመሪያ 3 ቀናት የእንገር ወተት ጠጥቶ ነበር?	1 አዎ 2 አይደለም	
502	አዎ ከሆነ ጡት የጠባው በተወለደ በስንት ሰዓት ውስጥ ነው?	1 በተወለደ በመጀመሪያ 1 ሰዓት ውስጥ 2 በተወለደ በ6 ሰዓት ውስጥ 3 ከተወለደ ከተወለደ ከ24 ሰዓት በኃላ 4 የተወሰነ ከፈሰሰለት በኃላ	
503	ተ ቁ 501 አይ ከሆነ ለምንድነው ያልጠባው ?	1.የሆድ ቁርጠትና ተቅማጥ ስለሚያመጣበት 2 ሆዱ ስለማይፈጭለት 3 ቆሻሻነው ብዬ ስለማስብ 4 በህክምና (በህመም) ምክንያት 5 ጡቴ ስለማያመነጭ 6 ባህላችን ስለማይፈቅድ	

504	ለመጀመሪያ ጊዜ ጡት ማጥባት ከመጀመርሽ በፊት ተጨማሪ ምግብ ተጠቅመሻል ?	1. አዎን 2. አይደለም	
505	ተ.ቁ 504 አዎ ከሆነ ምን አይነት ምግብ ነው የተጠቀምሽው?	1.የጣሳ ወተት 2.ንጽህ ውሃ 3.ቅቤ 4.ስካር በውሃ 5.ሌላ	

አመሰግናለሁ!!!

ምእራፍ ስድስት: የቡድን ውይይት እና ቁልፍ የሆኑ ሰዎች በእንገር ወተት ዙሪያ ያላቸውን ግንዛቤ አመለካከትና አጠቃቀም የያዘ መጠይቅ ውይይት የተካሄደበት መንደር _____የቡድኑ ስም _____ __ቀን_: __ /_07_ / 2023(እ.ኤ.አ)

1 እንገር ምንድነው?፣ መቼስ ነው አዲስ ለተወለደ ጨቅላ ህጻን የሚሰጠው ? ለምን?

2.ስለ እንገር ወተት ጠቀሜታ ምን ታወቃላችሁ? ለህጻኑ ምን ጥቅም ይሰጠዋል ብላችሁ ታስባላችሁ?

3 ስለ እንገር ወተት በህብረተሰቡ ዘንድ ያለው አመለካከትና እምነት ምድነው ? ለምን?

4. እንግር ወተት ለጨቅላ ህጻኑ እንዳያጠቡ የሚያደርጋቸው መንስኤዎች ምንድናቸው ብላችሁ ታስባላችሁ?

5 በህብረተሰቡ ዘንድ ስለእንገር ወተት ለጨቅላ ህጻኑ ከማጥባት ጋር ተያይዞ ያለው ልምድ ምን ይመስላል? ለምን?