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Colostrum avoidance and associated factors among mothers of children under the age of six months in Sekota Zuria woreda, Waghimra zone, Ethiopia

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Abstract

Background Early initiation of breastfeeding (EIBF) and exclusive breastfeeding (EBF) are critical practices for ensuring optimal early-life and long-term well-being among human populations, particularly in resource-limited settings. Although Ethiopia enjoys a high rate of breastfeeding (BF) overall, common practices, such as colostrum avoidance, impede the nation from attaining the BF targets set by the World Health Organization (WHO).

Objective To assess colostrum avoidance and its associated factors among mothers of children under the age of six months in the Sekota Zuria Woreda of the Waghimra Zone, Ethiopia, 2022.

Methods A community-based cross-sectional study was conducted between June 26 and July 30, 2022, in the Sekota Zuria Woreda of the Waghimra Zone, Ethiopia. The study included 421 mothers of children under the age of six months, selected using a multistage sampling technique. Once written consent was obtained from all participants, a pretested and reliability-checked questionnaire was employed to interview and gather data. During the analysis, descriptive statistics and logistic regression models were employed to summarize and explore the statistical associations between the dependent and explanatory variables. In the bivariate logistic regression analysis, variables with a *P*-value of < 0.25 were exported to the multivariate logistic regression model for further analysis. Finally, using a *P*-value of < 0.05 as an indicator of statistical significance, the Adjusted Odds Ratio (AOR) at 95% Confidence Intervals (CI) was calculated.

Results According to this study, 19.0% (95% CI: 15.0–22.8%) of the mothers in Sekota Zuria Woreda avoided colostrum. In addition, mothers who did not receive Antenatal Care (ANC) (AOR = 2.9, 95% CI: 1.1–7.8), gave birth at home (AOR = 4.6, 95% CI: 2.0–10.8), lacked participation in the Women's Health Developmental Army (WHDA) (AOR = 4.7, 95% CI: 1.9–11.4), gave pre-lacteal feeds (AOR = 3.0, 95% CI: 1.2–7.1), had insufficient knowledge (AOR = 3.0, 95% CI: 1.2–7.6), and had a negative attitude toward colostrum feeding (AOR = 6.5, 95% CI: 3.0–14.2) were more likely to avoid colostrum.

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Conclusions In Sekota Zuria Woreda, the prevalence of colostrum avoidance is high, with nearly one in five mothers withholding colostrum from their newborns. This practice is primarily driven by poor utilization of healthcare services, lack of participation in the WHDA, inadequate knowledge, and negative attitudes toward colostrum. Creating an environment that encourages, enables, and supports mothers to utilize healthcare services and participate in the WHDA while also improving their knowledge and attitudes toward colostrum is crucial for decreasing the prevalence of colostrum avoidance in the Woreda.

Keywords Breastfeeding, Infant nutrition, Pre-lacteal feeding, Suboptimal breastfeeding

Background

Breastfeeding plays a vital role in meeting children's nutritional needs [1, 2]. This natural feeding approach provides children with a safe, clean, readily available, and accessible source of food, irrespective of geographical location [1, 2]. In addition, initiating BF within the first hour of birth promotes a strong mother-to-child bond, stimulates breast milk production, reduces the risk of postpartum hemorrhage, prevents neonatal hypothermia, and ensures that newborns receive the essential colostrum [3, 4].

In the long term, optimal BF also confers significant health benefits for both mothers and children because it reduces the risk of chronic diseases and certain types of cancer [5–8]. In addition, optimal BF can improve children's academic performance by enhancing their intelligence and cognitive development [9].

Recognizing these benefits, the WHO and UNICEF recommend EIBF and EBF for the first six months of life, followed by continued BF alongside appropriate complementary foods for at least 2 years [3, 10]. However, despite these recommendations, global BF rates remain suboptimal. According to 2023 data, only 47% of newborns worldwide were breastfed within the first hour of life, and only 48% were exclusively breastfed until six months of age [11, 12].

Scaling up BF to near-universal levels could have transformative effects. A recent study indicated that universal BF could prevent 823,000 under-five deaths annually, as well as 20,000 deaths due to breast cancer [6]. In addition to saving lives, improving BF rates could avert \$341 billion in annual global economic losses and contribute to the achievement of multiple Sustainable Development Goals (SDGs), including eradicating poverty and hunger, improving health and well-being, promoting gender equality, and protecting the environment [13, 14].

Suboptimal breastfeeding (SBF) practices remain a major barrier to achieving universal breastfeeding. One such practice is colostrum avoidance, which involves discarding or withholding colostrum, a nutrient-rich, yellowish fluid secreted by the mother's breast during the first few days postpartum [15]. Colostrum is exceptionally rich in antibodies, growth factors, vitamins, minerals, and other bioactive components that protect newborns against infections while supporting growth

and development [16, 17]. By depriving these critical nutrients, colostrum avoidance increases infants' vulnerability to infections such as sepsis, pneumonia, and diarrhea [18, 19].

Colostrum avoidance is particularly prevalent in parts of Asia and Africa, with studies reporting alarming rates in South Sudan (43.9%), Pakistan (27.9%), Bangladesh (43.9%), and India (92%) [20–23]. Similarly, in Ethiopia, despite the high rate of BF (95.5%) [24], SBF practices, such as colostrum avoidance, remain prevalent, impeding the nation from attaining the BF targets set by the WHO. Mothers in Ethiopia are primarily driven to avoid colostrum because of a combination of cultural, social, and informational factors. These include deeply held beliefs that colostrum is dirty, harmful, or insufficient for newborns; adherence to traditional or religious customs that discourage its use; and, in some cases, improper advice from family members or even healthcare professionals [25–34].

The severity of colostrum avoidance in Ethiopia became evident when a 2021 systematic review revealed a pooled prevalence of 19%, indicating that nearly one in five infants in the country are deprived of colostrum [35]. Further emphasizing this issue, studies conducted across various Ethiopian populations have reported high prevalences of colostrum avoidance, ranging from 6.3% in Axum to 79.8% in Kossaye [25–34]. These studies also identified several factors associated with colostrum avoidance, including infant sex, maternal education level, access to and utilization of health services, place of giving birth, maternal knowledge and attitudes toward colostrum feeding, timing of BF initiation, and the provision of pre-lacteal feeds [25–34].

In summary, although suboptimal breastfeeding practices, including colostrum avoidance, have been widely studied across various Ethiopian populations, significant local variations persist. This underscores the need for context-specific investigations to enhance the effectiveness of interventions aimed at promoting optimal breastfeeding practices. To date, no study has explored colostrum avoidance in Sekota Zuria Woreda, leaving a critical information gap. This study addresses this gap by providing the first comprehensive assessment of colostrum avoidance and its associated factors among mothers of infants under six months of age

in the area. Additionally, the study is expected to yield valuable insights for policymakers, healthcare providers, and community stakeholders. These insights can guide the design and implementation of tailored interventions that promote optimal BF practices in Sekota Zuria Woreda and beyond, ultimately contributing to improved infant health outcomes and alignment with global BF recommendations.

Methods and materials

Study area and period

The study was conducted between June 26 and July 30, 2022, in the Sekota Zuria Woreda of the Waghimra Zone. The Waghimra Zone is located approximately 720 km north of Addis Ababa (the capital city of Ethiopia). Sekota Zuria Woreda has 25 Kebeles (the smallest administrative unit in Ethiopia), with an estimated 100,828 people (50,525 males and 50,305 females) living in 23,448 households. Of the 50,305 women who lived in the Woreda, 23,775 were between the ages of 15 and 49. Additionally, the Woreda has six health clinics and 25 health posts that provide various health services, including maternal and child healthcare services.

Study design and participants

A community-based cross-sectional study was conducted to assess colostrum avoidance and its associated factors among mothers of children under the age of six months. Mothers who had resided in the study area for at least six months were included in the study, whereas mothers who were critically ill to the extent of being unable to provide information were excluded from the study.

Sample size determination

The sample size was calculated using the single-population proportion formula. The formula estimates the minimum sample size required to determine the proportion of the source population as a function of the desired level of significance, margin of error, and expected proportion. The assumptions used to calculate the sample size were as follows: 14.5% expected proportion of colostrum avoidance [28], 95% confidence level, and 5% margin of error. To account for the potential decreased variability associated with the multistage sampling design, a design effect of 2 was applied. An additional 10% was also included to account for potential non-responses, bringing the final sample size to 421.

Sampling procedure

This study adopted a multistage sampling technique to systematically recruit participants from the target population. In the first stage, a simple random sampling (SRS) technique was used to select eight out of twenty-five kebeles in the Woreda, ensuring a 30% representation

of the total number of kebeles. The sample size was then proportionally allocated across the selected kebeles based on the total number of mothers with infants under six months of age in each kebele, as obtained from the Community-Based Health Information System (CBHI). In the second stage, a SRS technique was applied once again to select the predetermined number of mothers from each kebele. The sampling frame for this process consisted of a detailed list of eligible mothers, including their corresponding household addresses (house numbers). This list was carefully compiled by reviewing records from the CBHI and family folders. The data collectors then visited the households of the selected mothers to conduct interviews. (Fig. 1)

Data collection tools and procedures

Data were collected by three well-trained nurses under the supervision of the principal investigator using a pre-tested and reliability-checked questionnaire. The questionnaire was developed after reviewing articles that had similar objectives to the current study [25–34]. The questionnaire comprised five sections: sociodemographic characteristics, SBF practices, maternal health service utilization, maternal knowledge, and attitudes toward colostrum feeding.

Quality control

The questionnaire was initially developed in English and subsequently translated into Amharic, with a reverse translation back into English performed by language experts to ensure linguistic and conceptual consistency. To enhance the quality of the data and minimize bias, comprehensive training was given to the data collectors over a period of one week. This training provided in-depth insight into the data collection tools and strategies to mitigate potential bias during interviews, ensuring a standardized approach among all collectors.

In addition, a pretest of the questionnaire was conducted on a pilot sample equivalent to 5% of the sample population drawn from a demographically similar population that resided outside the study area of interest. The insights gained from this pretest led to refinement in both the questionnaire content and interview procedures. To assess the internal consistency of the instrument, Cronbach's alpha was employed, affirming the tool's reliability and validity. Post-interview, each questionnaire was also meticulously reviewed for completeness.

During the data analysis phase, preliminary diagnostic assessments were conducted to ensure statistical robustness. In addition, a multicollinearity test was performed to confirm the absence of multicollinearity ($VIF < 10$). The model's adequacy was also evaluated using the Hosmer-Lemeshow goodness-of-fit test, demonstrating

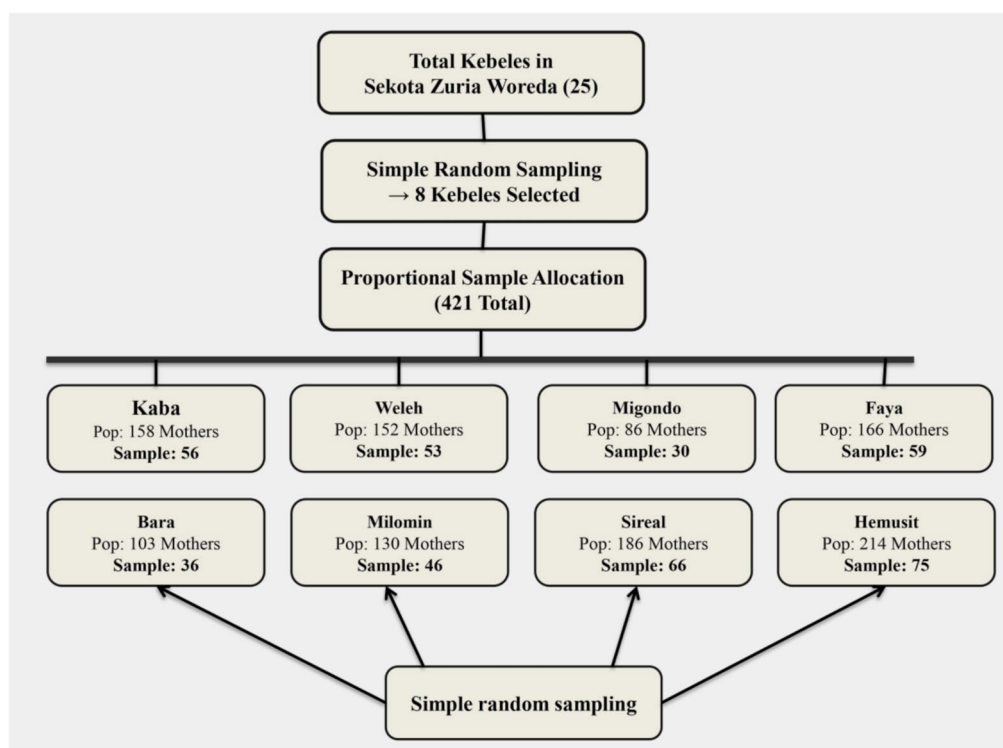


Fig. 1 Schematic representation of the sampling process for selecting mothers of children under six months in Sekota Zuria Woreda, Waghimra Zone, 2022

the model's suitability for subsequent analysis and interpretation.

Data processing and analysis

The collected data were checked, cleaned, and entered into Epi Data version 3.1 statistical software and then exported to SPSS version 20 for further analysis. Prior to analysis, the outcome variable was dichotomized into two groups (1=avoided colostrum and 0=feed colostrum). Descriptive statistics and logistic regression models were used to summarize and explore the statistical associations between the dependent and explanatory variables. The explanatory variables assessed for their association with colostrum avoidance included infant sex, maternal education and occupation, parity, place and mode of delivery, BF initiation time, pre-lacteal feeding, ANC and postnatal care (PNC) utilization, participation in the WHDA, involvement in the 1-to-5 network (a community-based health strategy where one model household, trained in health practices, supports five neighboring households to promote healthy behaviors like hygiene, sanitation, and disease prevention), maternal conferences, and knowledge and attitudes toward colostrum feeding. During the bivariate logistic regression analysis, variables with a P -value < 0.25 were considered significant and were included in the multivariate logistic regression model for further analysis. Finally, using a P -value of < 0.05 as

an indicator of statistical significance, the AOR at a 95% confidence interval (CI) was calculated.

Operational definitions

Good knowledge about colostrum A mother who answered more than 60% of the knowledge-related questions correctly was considered to have good knowledge [15].

Positive attitude toward colostrum feeding A mother who answered more than 60% of the attitude-related questions correctly was considered to have a positive attitude [15].

Pre-lacteal feeding If a mother gives fluid or food to a newborn, except for drugs, vitamins, minerals, and vaccines, before BF is initiated, pre-lacteal feeding is considered [24].

Ethics approval and consent

An ethical approval letter was obtained from the Institutional Review Board (IRB) of Debre Berhan University on June 6, 2022 (Protocol number: IRB-012). The letter was then submitted to the Sekota Zuria Woreda Health Office and the respective kebeles. The recruitment of mothers of children under the age of six months began on June 26, 2022 and ended on July 30, 2022. In accordance with

the ethical standards outlined in the Declaration of Helsinki, data collection commenced only after obtaining informed written consent from the study participants. The personal information of the participants was also kept confidential throughout the study.

Results

Sociodemographic characteristics

In this study, 421 mothers were interviewed, and the response rate was 100%. The youngest respondents were 18 years old, whereas the oldest were 44 years old, with a mean of 27 (± 5) years. Almost all respondents (93.6%) were Orthodox Christians, and more than two-thirds (76.7%) were ethnically Agew. The highest proportion of mothers were housewives (54.9%), followed by

governmental employees (28.5%) and non-governmental employees (10.2%). Of the index pregnancies, 69% and 52% were planned and resulted in male children, respectively. In terms of education, the plurality of mothers (39%) were illiterate. (Table 1)

Health service utilization and related characteristics

In terms of ANC utilization, more than half (65.3%) of the participants had a history of at least one ANC visit during their pregnancy. Of these, 42.2% had visited four or more times during their pregnancy. However, 8% or more of the mothers did not receive counseling regarding colostrum feeding during any of their antenatal visits. Regarding the preferred place of giving birth, the

Table 1 Sociodemographic characteristics of mothers with children under the age of six months in Sekota Zuria woreda, Waghimra zone, 2022

Variables	Frequency	Percentage (%)
Sex of the index child		
Female	204	48.5
Male	217	51.5
Pregnancy		
Planned	290	68.9
Unplanned	131	31.1
Age in years		
15–25	170	40.4
26–35	218	51.8
36–45	33	7.8
Occupation		
Housewife	231	54.9
Government employee	120	28.5
Non-governmental employee	43	10.2
Merchant	27	6.4
Ethnicity		
Agew	323	76.7
Amhara	98	23.3
Religion		
Muslim	12	2.9
Orthodox Christian	394	93.6
Protestant	15	3.6
Marital status		
Single	35	8.3
Married	370	87.9
Divorced	9	2.1
Widowed	7	1.7
Household head		
Mother	91	21.6
Not the mother.	330	78.4
Level of education		
Cannot read and write	163	38.7
Can read and write without formal education	55	13.1
Grade 1–8	54	12.8
Grade 9–12	31	7.4
College and above	118	28.3

majority (75.5%) chose healthcare facilities, but some (24.5%) did not. (Table 2)

Knowledge and attitude regarding colostrum feeding

Approximately 61% and 76.0% of the mothers had good knowledge and positive attitudes toward colostrum feeding, respectively. However, the analysis of individual questions yielded alarming results. For instance, 27.8% of mothers had never heard about colostrum and 91% were unaware of its specific nutritional content. Additionally, a comparison of colostrum avoidance among mothers with different levels of education yielded insightful results, as illustrated in Fig. 2. (Table 3) (Fig. 2).

Suboptimal breastfeeding practices

According to this study, the prevalence of colostrum avoidance among mothers of children under the age of six months living in Sekota Zuria Woreda was 19.0% (95% CI: (15.0- 22.8)). The most common reason for avoiding colostrum was the belief that it can cause neonatal illness (41.2%), followed by cultural prohibition (28.7%). The study also found that 18.5% of the mothers practiced pre-lacteal feeding, with 80.8% giving butter as pre-lacteal food. The primary reason for pre-lacteal feeding was culture (50%), followed by delayed milk secretion (16.7%). Regarding BF, most mothers (69.6%) initiated BF

Table 2 Health service utilization and related characteristics of mothers with children under the age of six months in Sekota Zuria woreda, Waghimra zone, 2022

Variables	Frequency	Percentage (%)
Parity		
Primiparous	130	30.9
Multiparous	291	69.1
ANC		
Yes	275	65.3
No	146	34.7
Number of ANC visits (n = 275)		
One	21	7.6
Two	49	17.8
Three	89	32.4
Four	116	42.2
Counseling on colostrum feeding (n = 275)		
Yes	253	92
No	22	8
Place of birth		
Health facility	318	75.5
Home	103	24.5
Mode of delivery		
Vaginal	382	90.7
Cesarean section	39	9.3
Neonatal illness		
Yes	55	13.1
No	366	86.9
Participated in a maternal conference		
Yes	260	61.8
No	161	38.2
Member of the 1-to-5 network		
Yes	198	47
No	223	53
Participated in the WHDA		
Yes	215	51.1
No	206	48.9
Received PNC at a health facility		
Yes	165	39.2
No	256	60.8
Received PNC at home		
Yes	212	50.4
No	209	49.6

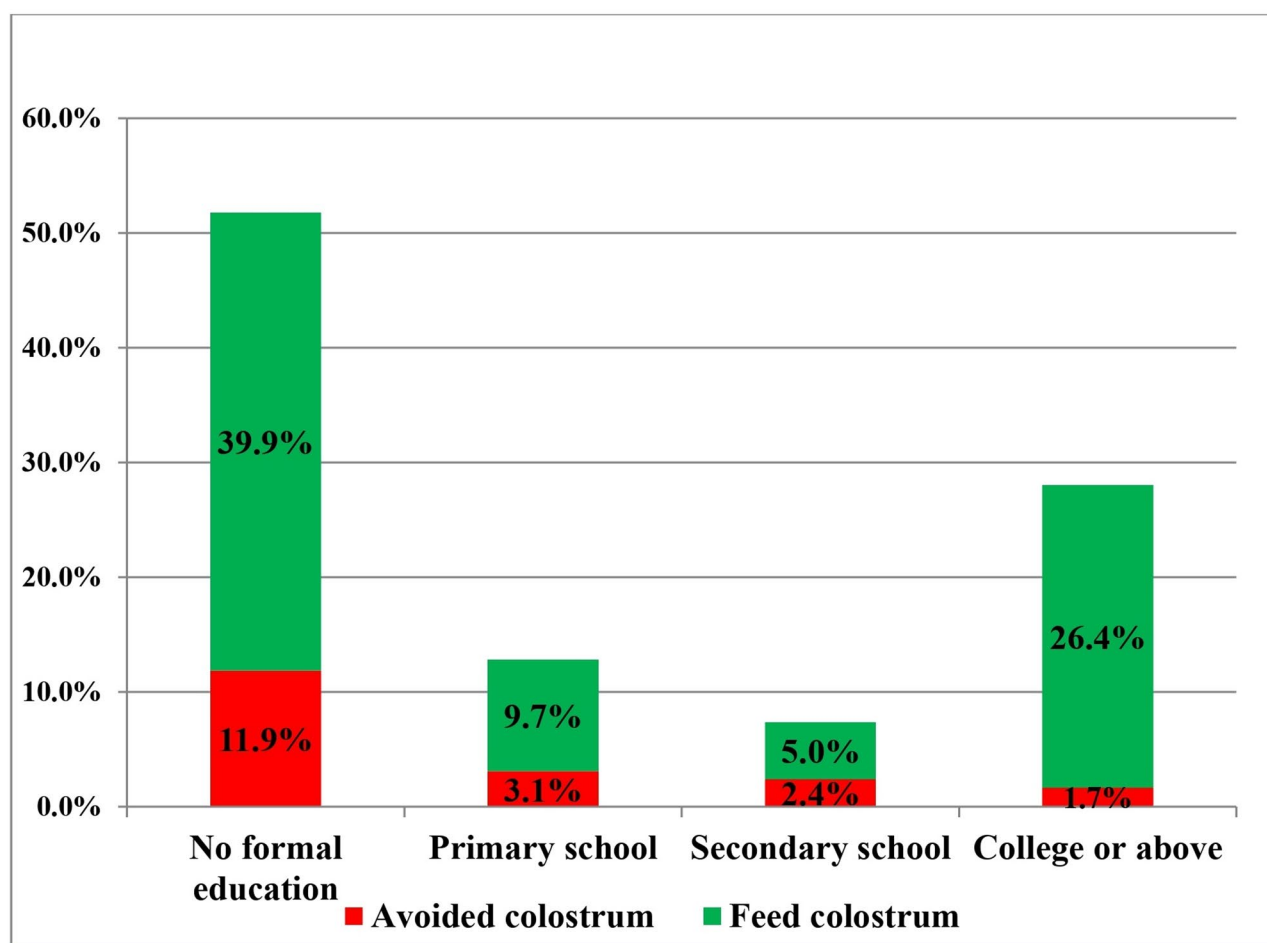


Fig. 2 Colostrum avoidance in relation to the educational status of mothers with children under six months in Sekota Zuria Woreda, Waghimra Zone, 2022

within the first hour of delivery, whereas the remaining 30.4% initiated BF after one hour had passed. (Table 4)

Factors associated with colostrum avoidance

In the multivariate logistic regression analysis, not receiving ANC, giving birth at home, lack of participation in WHDA, giving pre-lacteal feeds, having poor knowledge, and negative attitudes toward colostrum feeding were significantly associated with colostrum avoidance.

The analysis revealed several significant factors associated with colostrum avoidance. Specifically, mothers who did not receive ANC had 2.9 times higher odds of colostrum avoidance (AOR=2.9; 95% CI: 1.1–7.8), whereas home delivery increased the odds of avoidance by 4.6 times (AOR=4.6; 95% CI: 2.0–10.8). Participation in the WHDA program showed a protective effect, as non-participating mothers had 4.7 times higher odds of colostrum avoidance compared to participants (AOR=4.7; 95% CI: 1.9–11.4). Additionally, pre-lacteal feeding was associated with 3 times higher odds of avoidance compared to EBF (AOR=3.0; 95% CI: 1.2–7.1). Negative

attitudes toward colostrum feeding were also strongly associated with colostrum avoidance, with mothers exhibiting negative attitudes having 6.5 times higher odds of colostrum avoidance than those with positive attitudes (AOR=6.5, 95% CI: 3.0–14.2). Similarly, poor knowledge of colostrum feeding increased the odds of avoidance by 3 times (AOR=3.0, 95% CI: 1.2–7.6). (Table 5)

Discussion

Breastfeeding plays a critical role in promoting the health of both infants and mothers. However, a significant proportion of mothers (19% (95% CI: 15.0–22.8%)) in Sekota Zuria Woreda chose to avoid colostrum.

The prevalence of colostrum avoidance in this study is consistent with the prevalence reported in previous studies conducted in Nepal (16.5%) [36], Dilla Zuria, Ethiopia (15.9%) [30], Mizan Aman, Ethiopia (15.5%) [31], and Gozamen District, Ethiopia (22.1%) [32]. However, it was higher compared to the levels observed in studies conducted in Nzega District, Tanzania (9.1%) [37], Yaounde, Cameroon (11.2%) [38], Addis Ababa, Ethiopia (9.6%)

Table 3 Knowledge and attitude regarding colostrum feeding among mothers with children less than six months of age in Sekota Zuria woreda, Wahigmra zone, 2022

Variables	Frequency (n)	Percentage (%)
Have you ever heard of colostrum?		
Yes	304	72.2
No	117	27.8
Where did you obtain your information? (n = 304)		
Health professionals	175	57.5
Family	94	30.9
Media	17	5.6
Friends	18	5.9
What color is colostrum?		
Yellow	367	87.2
Others	54	12.8
Do colostrum protect against infectious diseases?		
Yes	328	77.9
No	93	22.1
Is colostrum an important component of breast milk?		
Yes	318	75.5
No	103	24.5
Do you know the contents of colostrum?		
Yes	38	9.0
No	383	91.0
If yes, what are they? (n = 38)		
Proteins	13	34.2
Minerals	15	39.4
Immunoglobulin	5	13.1
Carbohydrates	5	13.1
Should a child feed on colostrum when he/she is sick?		
Yes	89	21.1
No	332	78.9
If no, why? (n = 332)		
It hurts me	12	3.6
It harms the baby	320	96.4
Did you feed your baby colostrum when he or she was sick?		
Yes	316	75.1
No	105	24.9
Knowledge		
Good	255	60.6
Poor	166	39.4
Attitude		
Positive	320	76
Negative	101	24

[33], Bahir Dar, Ethiopia (8.8%) [34], and Aksum, Ethiopia (6.3%) [29]. Conversely, it was lower than the levels reported in Uttarakhand, India (92%) [20], East Central Pakistan (27.9%) [22], Jubek State, South Sudan (43.9%) [21], Gursum District, Ethiopia (69%) [39], Kombolcha, Ethiopia (31.4%) [27], and Nawabgonj Upazila, Bangladesh (37%) [23]. These discrepancies can be attributed to sociodemographic differences, including economic and cultural differences, among the populations residing in the respective study areas, which can significantly

influence infant feeding practices and access to maternal and child healthcare services.

In terms of factors linked with colostrum avoidance, this study revealed that the odds of engaging in colostrum avoidance was 3 times higher among mothers who did not receive antenatal care than among those who did. This finding aligns with the findings of similar studies conducted in Aksum, Ethiopia [29], Debre Tabor, Ethiopia [25], Lawra District, Ghana [40], and Wolaita Sodo, Ethiopia [41]. The consistent findings mentioned can be attributed to the significant opportunity that ANC visits

Table 4 Suboptimal breastfeeding practices of mothers with children under the age of six months, in Sekota Zuria woreda, Waghimra zone, 2022

Variables	Frequency	Percentage
Avoided colostrum		
Yes	80	19.0
No	341	81.0
Reasons for avoidance (n = 80)		
Causes illness in neonates	41	51.2
Cultural	22	27.5
Others ^a	17	21.3
Gave pre-lacteal feeds		
Yes	78	18.5
No	343	81.5
Type of pre-lacteal feeds (n = 78)		
Butter	63	80.8
Others ^b	15	19.2
Reasons for pre-lacteal feeding (n = 78)		
Inadequate breast milk secretion	10	12.8
Delayed milk secretion	13	16.7
Cultural	39	50
Maternal illness	12	15.4
Infant feeding	4	5.1
BF initiation		
Before one hour,	293	69.6
After one hour,	128	30.4

^aDirty portion of the breast milk; it is too thick to swallow^bWater, cows' milk, and honey

provide to educate and support mothers. ANC visits provide healthcare professionals with an important opportunity to actively engage with expectant mothers and their families and provide critical information on the benefits of colostrum feeding while dispelling prevalent myths that discourage its consumption.

As expected, the odds of colostrum avoidance were 3 times higher among mothers who gave pre-lacteal feeds than among those who did not. This finding is consistent with those of other studies conducted in North Wollo, Ethiopia [42] and Gozamen District, Ethiopia [37]. Such findings can be explained by the fact that the provision of pre-lacteal feeds such as water, herbal concoctions, and glucose water delays the establishment of BF. As mentioned earlier, initiating BF within the first hour after birth is crucial for exposing newborns to colostrum. Therefore, when mothers provide pre-lacteal feed, they essentially miss the critical window for colostrum feeding.

In line with most of the studies conducted in Ethiopia, mothers who delivered at home had 4.6 times higher odds of colostrum avoidance compared with those who delivered at a healthcare facility. This finding is consistent with the findings of studies conducted in Bahir Dar, Ethiopia [34], Northern Wollo, Ethiopia [42], Aksum, Ethiopia [29], Wolaita Sodo, Ethiopia [41], Jinka, Ethiopia [26], and Ambo, Ethiopia [43]. The above studies reached

the same conclusion as this study because giving birth at home exposes mothers to the cultural beliefs held by traditional birth attendants and other family members, who may promote colostrum avoidance. In contrast, delivery in healthcare facilities enables mothers to receive timely obstetric and newborn care, along with professional guidance on optimal BF practices.

Participation in the WHDA also played a significant role, with mothers who did not participate having 4.7 times higher odds of colostrum avoidance than those who participated. Although this specific finding lacks support from other studies, WHDA platforms provide mothers with opportunities for peer support, where they can share experiences, receive encouragement, and discuss challenges related to BF. Such support networks can empower mothers, reinforce positive attitudes toward colostrum feeding, and address any concerns or misconceptions shared within the community.

Lastly, mothers with inadequate knowledge about colostrum feeding had a 3 times higher odds of practicing colostrum avoidance than those who were well-informed. This finding is consistent with the findings of studies conducted in Jinka, Ethiopia [26], Raya Kobo, Ethiopia [44], and Bure District, Ethiopia [28]. Similarly, mothers with a negative attitude toward colostrum feeding had 6.5 times higher odds of avoiding it than those with a positive attitude, similar to the finding of a study in Bure District,

Table 5 Bivariate and multivariate analyses of factors associated with colostrum avoidance in Sekota Zuria woreda, Waghimra zone, 2022

2022

Variables	Colostrum avoidance		COR	AOR
	Yes	No		
Mother's educational status				
Unable to read and write	43 (10.2%)	120 (28.5%)	5.7 (2.4, 13.1)	1.6 (0.5–5.3)
Can read and write with out formal education	7 (1.7%)	48 (11.4%)	2.3 (0.7, 7.0)	1.5 (0.4, 6.4)
Grade 1–8	13 (3.1%)	41 (9.7%)	5.0 (1.9, 13.5)	1.7 (0.46, 6.4)
Grade 9–12	10 (2.4%)	21 (5.0%)	7.5 (2.6, 22.1)	2.8 (0.6, 12.8)
College and above	7 (1.7%)	111 (26.4%)	1	1
ANC				
No	63 (15.0%)	83 (19.7%)	11.5 (6.4, 20.8)	2.9 (1.1, 7.8)*
Yes	17 (4.0%)	258 (61.3%)	1	1
Place of birth				
Home	55 (13.1%)	48 (11.4%)	13.4 (7.6, 23.6)	4.6 (2.0, 10.8)*
Health Facility	25 (5.9%)	293 (69.6%)	1	1
Pregnancy				
Not planned	43 (10.2%)	88 (20.9%)	3.3 (2.0, 5.5)	1.5 (0.7, 3.3)
Planned	37 (8.8%)	253 (60.1%)	1	1
Participated in a maternal conference				
No	58 (13.8%)	103 (24.5%)	6.1 (3.5, 10.5)	0.6 (0.2, 1.7)
yes	22 (5.2%)	238 (56.5%)	1	1
Participated in the WHDA				
No	65 (15.4%)	141 (33.5%)	6.2 (3.4, 11.2)	4.7 (1.9, 11.4)*
yes	15 (3.6%)	200 (47.5%)	1	1
Gave pre-lacteal feeds				
Yes	34 (8.1)	44 (10.5)	5.0 (2.9, 8.6)	3.0 (1.2, 7.1)*
No	46 (10.9%)	297 (70.5%)	1	1
BF initiation				
After an hour,	48 (11.4%)	80 (19.0%)	4.9 (2.9, 8.1)	1.7 (0.8, 3.7)
Within an hour	32 (7.6%)	261 (62.0%)	1	1
Received PNC at home				
No	61 (14.5%)	148 (35.2%)	4.2 (2.4, 7.3)	1.1 (0.4, 2.9)
Yes	19 (4.5%)	193 (45.8%)	1	1
Received PNC at healthcare facilities				
No	63 (15.0%)	193 (45.8%)	2.8 (1.6, 5.1)	0.4 (0.17, 1.2)
Yes	17 (4.0%)	148 (35.2%)	1	1
Knowledge of colostrum feeding				
Poor	67 (15.9%)	99 (23.5%)	12.6 (6.7, 23.9)	3.0 (1.2, 7.6)*
Good	13 (3.1%)	242 (57.5%)	1	1
Attitude toward colostrum feeding				
Negative	59 (14.0%)	42 (10.0%)	20.0 (11.0-36.2)	6.5 (3.0, 14.2)*
Positive	21 (5.0%)	299 (71.0%)	1	1

'1' reference category; * significant at P -value < 0.05

Ethiopia [28]. Adequate knowledge about the significance of colostrum feeding and the risks associated with SBF fosters a positive attitude among mothers, motivating them to provide colostrum for their babies.

Conclusion

Contrary to the recommendations of the WHO and UNICEF, a significant proportion of mothers with children under the age of six months in Sekota Zuria Woreda avoided colostrum. Lack of ANC follow-up, home

delivery, pre-lacteal feeding, lack of participation in the WHDA, and poor knowledge and negative attitudes toward colostrum feeding were the factors that were found to influence the practice.

To reduce the prevalence of colostrum avoidance in the Woreda, interventions that enhance maternal knowledge and attitudes regarding colostrum feeding, improve the quality of counseling services on optimal BF, and promote healthcare delivery and participation in the WHDA should be designed and implemented. These

interventions should also target mothers before, during, and after pregnancy. In addition to developing new interventions, strengthening existing initiatives and programmes that are critical for promoting breastfeeding in Ethiopia is essential. These include the Baby-Friendly Hospital Initiative (BFHI), Alive & Thrive Ethiopia, the National Infant and Young Child Feeding (IYCF) Strategy, and workplace breastfeeding promotion initiatives, such as the establishment of breastfeeding corners in offices, universities, and factories. Furthermore, scaling up breastfeeding-sensitive programs like the Health Extension Program (HEP), the Community Health Workers (CHWs) Program, and mHealth and digital breastfeeding support platforms will play a significant role in improving and sustaining optimal breastfeeding practices in Ethiopia.

Strengths and limitations of the study

Distinguishing itself from other similar studies, this research examined previously unexplored factors, such as involvement in the WHDA, the 1-to-5 network, and maternal conferences. However, as in all cross-sectional studies, this study faced the inherent limitation of the chicken-and-egg dilemma (temporal ambiguity), which makes it challenging to establish causality. Therefore, appropriate caution should be exercised when interpreting the findings. Additionally, the absence of qualitative data to complement the quantitative results can be noted as another limitation of the study.

Abbreviations

ANC	Antenatal care
AOR	Adjusted odds ratio
BF	Breastfeeding
CI	Confidence interval
EBF	Exclusive breastfeeding
EIBF	Early initiation of breastfeeding
IRB	Institutional review board
SBF	Suboptimal breastfeeding
SRS	Simple random sampling
UNICEF	United nations children's fund
WHO	World health organization

Supplementary Information

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Supplementary Material 1

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Author contributions

FZ: Conceptualized the research idea, Designed the study methodology, Collected and analyzed data, Wrote the original manuscript draft and reviewed and revised the manuscript. MD: Conceptualized the research idea, Designed the study methodology, Collected and analyzed data, and Wrote

the original manuscript. AD: Designed the study methodology, Provided academic and research mentorship, Contributed to the research design and methodology, Reviewed and provided critical feedback on the manuscript and approved the final version of the manuscript. SM: Provided guidance and supervision throughout the research process, Assisted in study design and methodology development, Reviewed and edited the manuscript for critical intellectual content. BM: Provided guidance and supervision throughout the research process, Assisted in study design and methodology development, Reviewed and edited the manuscript for critical intellectual content.

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Data availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Consent for publication

All authors have read and approved the final manuscript for publication.

Competing interests

The authors declare no competing interests.

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References

1. United Nations Children's Fund. UNICEF DATA. [cited 2024 Nov 23]. Breastfeeding. Available from: <https://data.unicef.org/topic/nutrition/breastfeeding/>
2. Arora A, UNICEF DATA. 2018 [cited 2023 Dec 14]. Breastfeeding: A mother's gift, for every child. Available from: <https://data.unicef.org/resources/breastfeeding-a-mothers-gift-for-every-child/>
3. UNICEF, WHO. Capture the moment: early initiation of breastfeeding: the best start for every newborn. New York: UNICEF; 2018.
4. Louis-Jacques AF, Stuebe AM. Enabling breastfeeding to support lifelong health for mother and child. *Obstet Gynecol Clin North Am*. 2020;47:363–81.
5. Chowdhury R. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatr*. 2015;104(467):96–113.
6. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*. 2016;387(10017):475–90.
7. Horta BL, Loret de Mola C, Victora CG. Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and meta-analysis. *Acta Paediatr Oslo nor* 1992. 2015;104(467):30–7.
8. Oot LA, Sommerfelt E, Sethuraman K, Rossimze J. Estimating the effect of suboptimal breastfeeding practices on child mortality: a model in PROFILES for country-level advocacy. Technical brief [Internet]. 2015 [cited 2023 Dec 14]. p. 1–9. Available from: <https://www.fantaproject.org/sites/default/files/resources/PROFILES-Breastfeeding-effect-Technical-Brief-Sept2015.pdf>.
9. Horta BL, Loret de Mola C, Victora CG. Breastfeeding and intelligence: a systematic review and meta-analysis. *Acta Paediatr Oslo nor* 1992. 2015;104(467):14–9.
10. World Health Organization. Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. World Health Organization; 2017 [cited 2023 May 1]. 120 p. Available from: <https://apps.who.int/iris/handle/10665/259386>
11. United Nations Children's Fund, Division of Data, Analysis, Planning and Monitoring. (2022). Global UNICEF Global Databases: Infant and Young Child

- Feeding: Exclusive breastfeeding. New York; 2022 Oct. Available from: <https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding/>
12. United Nations Children's Fund, Division of Data, Analysis, Planning and Monitoring. Global UNICEF Global Databases: Infant and Young Child Feeding: Ever breastfed, Early initiation of breastfeeding, Exclusively breastfed for the first two days after birth. New York; 2023 Oct. Available from: <https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding/>
13. Katsinde SM, Chirwa S. Breast feeding and the sustainable development goals. *Indian J Pharm Pract*. 2016;9(3):146–51. <https://doi.org/10.5530/ijopp.9.3.2>
14. 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? *Lancet Lond Engl*. 2016;387(10017):491–504.
15. 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.
16. Bryant J, Thistle J, Anatomy. Colostrum. StatPearls. Treasure Island. (FL): StatPearls Publishing; 2022.
17. Ballard O, Morrow AL. Human milk composition: nutrients and bioactive factors. *Pediatr Clin North Am*. 2013;60(1):49–74.
18. Debes AK, Kohli A, Walker N, Edmond K, Mullany LC. Time to initiation of breastfeeding and neonatal mortality and morbidity: a systematic review. *BMC Public Health*. 2013;13(S3):S19.
19. Oot L, Sethuraman K, Sommerfelt AE. The effect of late breastfeeding initiation on neonatal mortality: A model in PROFILES for Country-Level advocacy. Washington, DC: FANTA/FHI 360; 2018.
20. Mukherjee K. Colostrum avoidance and breastfeeding practices among mothers of Khos tribal community of Uttarakhand: A community-Based Cross-Sectional study. *J Anthropol Surv India*. 2018;67:45–55.
21. Tongun JB, Sebit MB, Ndeez G, Mukunya D, Tylleskar T, Tumwine JK. Prevalence and determinants of pre-lacteal feeding in South Sudan: a community-based survey. *Glob Health Action*. 2018;11(1):1523304.
22. Asim M, Ahmed ZH, Hayward MD, Widen EM. Prelacteal feeding practices in Pakistan: a mixed-methods study. *Int Breastfeed J*. 2020;15(1):53.
23. Islam MS, Kaiser R. Colostrum feeding status in a selected rural area of Bangladesh. *J Nutr Health Food Eng*. 2019 Mar 2 [cited 2023 Jan 17];9(9). Available from: <https://medcraveonline.com/medcrave.org/index.php/JNHFE/article/view/18890>
24. Federal Ministry of Health. Ethiopia Mini Demographic and Health Survey. (2019). 2021 May [cited 2023 Jan 8]. Available from: <https://dhsprogram.com/publications/publication-FR363-DHS-Final-Reports.cfm>
25. Addisu D, Melkie A, Bezie M, Gedefaw G. Determinants of colostrum avoidance among postpartum mothers in North West Ethiopia. *J Midwifery Reprod Health*. 2020;8(4):2504–11.
26. Hadona EA, Weldehawariat FG, Sorrie MB. Colostrum Avoidance and Associated Factors Among Mothers of Children Aged Less Than 12 Months in Jinka Town, South Ethiopia, 2019. 2020.
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 Res Chron*. 2017;4(05):545–59.
28. Mose A, Abebe H, Dheresa M, Mengistie B, Wassihun B. Colostrum avoidance practice and associated factors among mothers of children aged less than six months in bure district. *PLoS ONE*. 2021;16:245233–245233.
29. 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 Res Notes*. 2018;11(1):601.
30. Reddy S, Abuka T. Determinants of exclusive breastfeeding practice among mothers of children under two years old in Dilla Zuria district, Gedeo zone, SNNPR, Ethiopia, 2014. *J Pregnancy Child Health*. 2016;3(224):10–4172.
31. Wudu MA. Determinants of early days of newborn feeding malpractice among mothers of children less than one year of age in Mizan-Aman town, Southwestern Ethiopia. *Pediatr Health Med Ther*. 2020;12:79–89.
32. G/slassie M, 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. *Arch Public Health*. 2021;79(1):44.
33. Temesgen SA, Getachew F, Molla G, Fikade E, Ashenafi S, Kedir I. Prevalence of prelacteal feeding and associated factors among mothers in addis Ketema sub City, addis Ababa, Ethiopia. *Ethiop J Public Health Nutr*. 2021;4(2):146–52.
34. Ayalew T, Asmare E. Colostrum avoidance practice among Primipara mothers in urban Northwest Ethiopia. A cross-sectional study. *BMC Pregnancy Childbirth*. 2021;21(123).
35. Biset G, Dagnaw K, Abebaw N. A systematic review and meta-analysis of colostrum avoidance practice among breastfeeding mothers in Ethiopia, December 2021. *J Neonat Nurs*. 2023;29:33–42.
36. 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. *Int Breastfeed J*. 2019;14:14.
37. Safari JG, Masanyiwa ZS, Lwelamira JE. Prevalence and factors associated with child malnutrition in Nzega district, rural Tanzania. *Curr Res J Soc Sci*. 2015;7(3):94–100.
38. Tambe BA, Mimboe CS, Nchung JA, Bakwo CB, Nyobe EC, Pauline N, et al. The determinants of exclusive breastfeeding in Cameroon, Sub-Saharan Africa. *Trends Gen Pract*. 2018;1(3):2–6.
39. Abdilahi MA, Nur AM, Jibril AD. Prevalence of acute malnutrition and associated factors among Under-Five children in gursum district, Somali region, Ethiopia. *Sci J Public Health*. 2020;8(4):123.
40. Saaka M, Ali F, Vuu F. Prevalence and determinants of essential newborn care practices in the Lawra district of Ghana. *BMC Pediatr*. 2018;18(1):173.
41. 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.
42. Liben ML, Yimer NB, Feleke FW. Nearly one-in-five mothers avoid colostrum in North Wollo zone, Ethiopia: an institution-based cross-sectional study. *J Nutr Sci*. 2021;10:e100.
43. 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.
44. 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. *J Trop Pediatr*. 2015;61(5):357–63.

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