RESEARCH



Early initiation of breastfeeding and exclusive breastfeeding practices and associated factors among first-time mothers attending governmental maternal and child health clinics in Gondar town, Northwest Ethiopia: a mixed method study



Frieselam Zewdu^{1,2*}, Solomon Mekonnen¹ and Azeb Atenafu¹

Abstract

Background Early initiation of breastfeeding and exclusive breastfeeding are among those optimal breastfeeding practices endorsed by World Health Organization to reduce child morbidity and mortality. However, worldwide, less than half of the mothers practiced early initiation and exclusive breastfeeding including first-time mothers who need even more emphasis as their decision to initiate early and exclusively breastfeed their first child raises the likelihood of doing the same for the subsequent. This study aimed to assess early initiation and exclusive breastfeeding practices and associated factors among first-time mothers attending governmental maternal and child health clinics in Gondar town, Northwest Ethiopia.

Methods A facility-based cross-sectional quantitative study on 885 first-time mothers selected by two-stage sampling complemented by a phenomenological qualitative study on 23 purposively chosen participants was conducted from February 24 to May 27, 2021. The quantitative study involved a pre-tested structured questionnaire and binary logistic regression was done for data analysis. The qualitative study involved in-depth interview, and the data was thematically analyzed.

Result In this study, 74.7% (95% CI 71.8, 77.5) of the mothers practiced early initiation while 46.8% (95% CI 43.5, 50.1) of them breastfed exclusively. Vaginal delivery (AOR 5.63, 95% CI 3.64, 8.71), not giving prelacteal feeding (AOR 5.54, 95% CI 3.50, 8.78) and colostrum feeding (AOR 2.89, 95% CI 1.85, 4.52) were predictors of early initiation of breastfeeding. On the other hand; delivery at a health facility (AOR 3.13, CI 1.58, 6.18), number of PNC visits [1 visit (AOR 1.88, CI 1.27, 2.77), 2–3 (AOR 1.97, CI 1.25, 3.12) and \geq 4 (AOR 3.61, CI 1.53, 8.54)], not giving prelacteal (AOR 2.14, 1.55, 1.55).

*Correspondence: Frieselam Zewdu zfrieselam@gmail.com

Full list of author information is available at the end of the article



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

CI 1.32, 3.48), husband's support (AOR 2.34, CI 1.13, 4.83) and health workers' support (AOR 4.34, CI 1.98, 9.53) were found to be determinants for exclusive breastfeeding which were also shown in the qualitative.

Conclusion The magnitudes of early initiation and exclusive breastfeeding practices were lower than the national target and global recommendation for universal coverage plus most of the significant factors were maternal and child health service related factors. So, strengthening the services is crucial and the main focus should be on first-time mothers.

Keywords Early initiation of breastfeeding, Exclusive breastfeeding, First-time mothers, Maternal and child health clinics, Gondar town, Mixed method study

Background

Breastfeeding has an unrivaled effect on a child's health, survival, and development. So, the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend optimal breastfeeding practices which are "initiation of breastfeeding within the first hour after birth, exclusive breastfeeding for the first 6 months and continued breastfeeding for two years or more, together with safe and adequate complementary feeding starting in the sixth month" [1].

Early initiation of breastfeeding which is initiating breastfeeding within one hour of birth has benefits for both the infants and the mothers. The advantage of early initiation of breastfeeding lies on the colostrum which is rich in nutrients and immunoglobulins needed to fight diseases, for avoiding prelacteal feeds, and also for the betterment of exclusive breastfeeding [2, 3]. Exclusive breastfeeding (EBF), which is an infant's intake of only human milk with no liquids/solids of any type (no water, no juice, and no foods) given apart from vitamins, minerals, and medications until six months [4, 5], is considered as a key child survival strategy and an essential public health strategy for improving the health of children and mothers by decreasing their morbidity and mortality and help manage healthcare costs in a community [6, 7].

Though the recommendation is for every mother, the infant feeding choice of a first-time mother will need even more emphasis as their decision to initiate breastfeeding early and exclusively breastfeed their first child will raise the likelihood of doing the same for all subsequent children because women mostly repeat their feeding decision for their first child to the later children [8–10] and this makes it the right time and stage for intervention.

Globally, about 823,000 under-five children's lives would be saved every year if breastfeeding was scaled up to near universal levels and prevent 20,000 annual maternal deaths from breast cancer [11]. Besides, 33% of neonatal deaths could be prevented if early initiation of breastfeeding is practiced [12] and death in the first six months is 14 times less likely among those exclusively breastfed than those not exclusively breastfed [1].

Conversely, 40 to 60% of stunting among underfive children is because of delayed initiation and non-exclusive breastfeeding [13] with over two-thirds of under-five children's mortality is caused by inappropriate breastfeeding practices, and of these deaths, 41% of them occurred in Sub-Saharan Africa [14] whereas, in Ethiopia, an estimated number of 70,000 infant deaths (24% of the total annual infant death) is contributed by suboptimal breastfeeding [15]. Beyond the health importance, about \$302 billion or 0.49% of the world gross national income is lost annually from suboptimal breastfeeding predominantly by costs related to lower intellectual capacity and deaths of mothers and children [16].

Despite the above facts, the practice is far lower than desired to safeguard the health of women and their children. Worldwide, breastfeeding is initiated early for less than half of the newborns while only 41% of infants under six months are breastfed exclusively which is far below the 2030 universal goal of 70% [17].

In Ethiopia, the government developed various programs like the National Nutrition Programme (NNP) and the Seqota Declaration to reduce undernutrition and there, increasing breastfeeding practice was included as one of the major strategies for program implementation [18]. But still, the practice is not satisfactory as the practice of early initiation of breastfeeding among all mothers is 73% [19] while EBF is 59% from 24 h dietary recall [20] which is below their national target of 80% set for 2020 [21].

Besides, there is no specific data on the magnitude of early initiation of breastfeeding and exclusive breastfeeding practices among first-time mothers on a country level and only few studies were done in parts of the country. Moreover, there is no such study in the study area, hence this study is aimed at assessing early initiation of breastfeeding and exclusive breastfeeding practices and associated factors among first-time mothers attending governmental maternal and child health (MCH) clinics in Gondar town, Northwest Ethiopia.

Methods

Study design

A mix of facility-based cross-sectional quantitative study and phenomenological qualitative study was employed.

Study area and period

This study was conducted in MCH clinics of Gondar town public health facilities. Gondar town is located in Amhara National Regional State, 727 km away from Addis Ababa, the capital city of Ethiopia, in a northwest direction. Based on the 2007 Central Statistical Agency (CSA) report, an estimated population of 207,044 lives in the town [22], and according to the recent population projection (during the time of the study), Gondar town's population is estimated to be 390,644 from which 52% are females and 31% are in childbearing age [23]. The town has six sub cities with 25 urban and 11 rural kebeles (the smallest administrative units); it has one referral hospital and eight health centers (all providing MCH services) [23]. The study was done from February 24 to May 27, 2021.

Source population

All first-time mothers with a child aged 6 up to 24 months attending MCH clinics of Gondar town public health facilities.

Study population

All first-time mothers with a child aged 6 up to 24 months attending MCH clinics of the selected public health facilities in Gondar town while for the qualitative, those attending University of Gondar Comprehensive Specialized Hospital.

Inclusion criteria

Those first-time mothers with a child aged 6 up to 24 months visited MCH clinics of randomly selected public health facilities during the study period while for qualitative, those visited University of Gondar Comprehensive Specialized Hospital.

Exclusion criteria

Those mothers who never breastfed their child.

Sample size determination

The sample size was determined by using single population proportion formula, $\mathbf{n} = \mathbf{Z}^2 \mathbf{p} (\mathbf{1} - \mathbf{p}) / \mathbf{w}^2$, Where $\mathbf{n} =$ required sample size, $\mathbf{Z} =$ critical value for normal distribution at 95% confidence level (1.96), p = prevalence of

• Then, with the assumption of a 10% non-response rate and design effect of 1.5, the sample size for the first objective by using early initiation proportion is: $601 \times 1.5 = 901.5 \approx 902$.

error = 4% = 0.04.

For exclusive breastfeeding, there wasn't any study done in Ethiopia on first-time mothers so, by taking a 50% estimated proportion the sample size for the second objective is **633**.

- The sample size for the third and fourth objectives was computed. (Table 1)
- The maximum sample size is **902** from the first objective and it was taken as the final sample size to do the study.

The sample size was distributed to each health facility by using the probability proportional to size (PPS) formula based on the average client flow of the MCH clinics of the health facilities in the previous three months before the data collection began.

• Qualitative sampling ended when data saturation was reached.

Sampling technique and procedure

Two-stage sampling was used to select the study participants. Initially, the hospital and 50% of the health centers (four health centers) were selected of the overall 9 health facilities (one hospital & eight health centers) by using simple random sampling (1st stage). Then, the sample size was distributed to each selected health facility by using the PPS formula, and from each selected health facility, individuals were chosen by using systematic random sampling (2nd stage). The sampling interval (K) was determined by dividing the total of the average client flow of the MCH clinics of the selected health facilities in the previous three months by the total sample size. i.e. N/ total sample size = k^{th} which is 2074/902 = 2.

 Table 1
 Sample size for factors associated with early initiation of breastfeeding among first-time mothers as computed by Epi info

 version 7.2.2.6 [24]

S.N	Factors	Assumptions							
		Power	Ratio	CL	COR	Proportion	Design effect	Contingency	Sample size
1	Sex of child (male)	80%	1	95%	2.187	69.2	1.5	10%	531
2	Antenatal Care Visit	80%	1	95%	2.259	81.3	1.5	10%	762
3	Mode of delivery	80%	1	95%	0.083	94.6	1.5	10%	89
4	Social support (religious father's)	80%	1	95%	0.501	46.9	1.5	10%	505

Thus, every other individual in each health facility was selected until the allocated sample size for each health facility was reached. The lottery method was used to determine the starting individual in each of the selected health facilities.

For the qualitative, purposive sampling was used for selecting individuals. First, University of Gondar Comprehensive Specialized Hospital was chosen purposively as it is a mainstream for hosting various types of people from every corner of the catchment area. Then those first-time mothers who were available in the Expanded Program on Immunization (EPI) and pediatrics outpatient department were purposively selected and included in the study and the sample was collected until saturation was reached. Subsequently, a total of 23 first-time mothers were studied qualitatively.

Study variables Dependent variables

- Early initiation of breastfeeding.
- Exclusive breastfeeding.

Independent variables

- Socio-demographic and economic factors: sex of the child, age of the child, age of the mother, mother's religion, residence, marital status, mother's educational status, father's educational status, mother's occupation, father's occupation, wealth index.
- Maternal and child health service related factors: delivery place, Antenatal Care (ANC) visit which is the care provided by skilled health-care professionals to pregnant women in order to ensure the best health conditions for both the mother and the baby during pregnancy, number of ANC visits, Postnatal Care (PNC) visit which is defined as a care given to the mother and her newborn baby immediately after birth and for the first six weeks of life, number of PNC visits.
- Health-related factors: maternal illness, child illness.
- Social support factors: any support given to the mother as emotional (e.g. nurturance), informational (e.g. advice), or companionship (e.g. sense of belonging); tangible (e.g. financial assistance) related to breastfeeding directly or indirectly which includes grandmothers' support, husband's, health workers, religious fathers' support, other's support.
- Breastfeeding related beliefs

Operational definitions

- **First-time mother**: a mother who gives birth for the first time (has given birth only once).
- Early initiation of breastfeeding: initiating breastfeeding within one hour of birth [3]. So, those mothers who initiated breastfeeding within an hour after birth were taken as practicing early initiation of breastfeeding.
- Exclusive breastfeeding: child receives only breast milk and no other liquids or solids given with the exception of oral rehydration solution, supplements, or medicines until six months [5]. Those mothers who continuously exclusively breastfed since seven days of life [25] were regarded as practicing exclusive breastfeeding.
- **Prelacteal feeding**: giving any solid or liquid foods other than breast milk during the first 3 days after birth [26, 27].

Data collection procedures Instrument

Data was collected from participants by using a structured interviewer-administered questionnaire. The questionnaire had questions about the socio-demographic and socio-economic characters of the participant, questions about maternal and child health services, healthrelated factors, social support factors, information sources, and questions about the practice of breastfeeding especially early initiation of breastfeeding and exclusive breastfeeding that were derived from various literatures that based their study according to WHO recommendations of optimal breastfeeding [28-32] so that validity of the questions could be maintained which was also assured by using single item measurements which were carefully and precisely worded. Besides, the reliability was checked by using Cronbach's alpha and it was above 0.7.

For qualitative, an in-depth interview was conducted to collect the data by using an interview guide with openended questions about the importance of breastfeeding, feeding of prelacteal and colostrum, early initiation of breastfeeding and EBF practices and related beliefs and barriers, and also the support the mothers gain or the influence they face for their practice of early initiation of breastfeeding and EBF. Additional questions in support of the objective of the study were also asked based on the answers the mothers gave. Each interview was conducted face-to-face by the local language, Amharic, in the allocated setting. The whole interview was recorded by an audio recorder.

Data collectors

For the data collection, five BSc nurses and two with BSc in other science were recruited, and four BSc nurses with more seniority than the data collectors supervised the whole process of the data collection.

Before the data collection started, a one-day training was given for the recruited data collectors and supervisors on the objective and purpose of the study, confidentiality of the information gathered, respondents' right to withdraw from the study at any time & their informed consent, techniques of interviewing the respondents and how to collect the data.

The principal investigator conducted the in-depth interview.

Data quality control

The quality of the data was assured through appropriate design, proper translation (the questionnaire was prepared in English language and translated to Amharic and then it was translated back to English language for consistency), and pretesting of the questionnaire was done on some first-time mothers visiting Tseda Health Center which wasn't chosen for the study and some modification on the questionnaire was done where necessary.

The recruited supervisors closely supervised the data collection process including the way the interviewer asks the question and how the participant responds. The collected questionnaires were examined for completeness and consistency at the end of each interview day. In addition, after all the questions were entered into the appropriate software, each questionnaire was manually crosschecked against the entered ones.

For qualitative, the interview guide was prepared by including keywords in a way that enables gathering all the information needed about the topic of interest and it was pretested on two first-time mothers who weren't included in the actual study. During the interview, appropriate probing techniques were used and the whole interview was audio-recorded in order not to miss anything and so, complete data was assured. Then, proper transcription and translation were conducted soon after data collection.

Data processing and analysis

The collected data from the structured questionnaire was manually checked for completeness and consistency. Then, it was entered into EpiData version 4.6 and each questionnaire was manually checked against the entered data for correctness. Next, it was exported to Statistical Package for Social Science (SPSS) version 20, and data management was done. After all this, analysis was performed accordingly.

Descriptive analysis was used to look for the overall distribution of the study subjects with the variables under

study, and presented as frequency and percentage. Since

there are two outcome variables, two logistic models were used. A binary logistic regression model was fitted to identify factors associated with the outcome variables. At first, bivariable logistic regression was done for each independent variable against the dependent variable to assess their independent effect, then multivariable logistic regression analysis was performed for those variables shown a *p*-value of less than or equal to 0.25 in the binary analysis to control for the confounders and identify the significant independent factors. The odds ratio with a 95% Confidence Interval (CI) was calculated to show the degree of association between dependent and independent variables and a P value of < 0.05 was considered statistically significant. Multi-collinearity was checked by using variance inflation factor (VIF) and none of the independent variables were co-linear. The Hosmer-Lemeshow goodness of fit test was estimated at a p-value of 0.664 for early initiation of breastfeeding and 0.493 for exclusive breastfeeding analysis, suggesting the models fitted the data well.

For the wealth index, Principal Component Analysis (PCA) was performed and the final computed value was divided into 5 quintiles to show the wealth distribution among the participants.

For qualitative, each day after the data was collected, it was transcribed verbatim on a paper, and then translated from Amharic to English language on a Microsoft Word the next day. After the whole data was translated, it was checked three times to pick possible codes. Initial codes for analyzing the data were picked from the interview guide and additional codes were picked from the data obtained from the interview. Those codes were checked over and over to check for similarity, and then themes were constructed from them. Thereafter, thematic analysis was performed and the result was written using those themes.

Results (Quantitative)

Socio demographic and economic characteristics of respondents

Out of 902 first-time mothers intended to be studied, a total of 885 mothers with a child aged 6–24 months participated in the study giving a response rate of 98.12%. Male children were a little bit higher in number (54%) than females and most of the children were in the age range of 6–11 months (49.6%). (Table 2)

Maternal and child health service utilization of the mothers

Among the respondents, the majority of them (92%) gave birth at a health facility while most of them (80%) had vaginal delivery. Regarding ANC visit, 96.9% of the mothers had a visit while 77.3% of the participants had a PNC

Table 2Socio-demographic and economic charactersticsof first-time mothers attending governmental MCH clinics ofGondar town, Northwest Ethiopia and also their child's and thefather's, 2021

Characters	Category	Frequency	Percent
Sex of child	Male	478	54.0
	Female	407	46.0
Child's age	6-11months	439	49.6
	12–17	288	32.5
	18–24	158	17.9
Mother's age	15–19 years	39	4.4
	20–24	385	43.5
	25–29	380	42.9
	30–34	71	8.0
	≥35	10	1.1
Religion	Orthodox Tewahido	795	89.8
	Muslim	83	9.4
	Others*	7	0.8
Residence	Urban	839	94.8
	Rural	46	5.2
Marital status	Married	809	91.4
	Others**	76	8.6
Mother's	Unable to read and/or write	71	8.0
educational	Can read and/or write	121	13.7
status	Primary school	112	12.7
	Secondary school	280	31.6
	Tertiary level	301	34.0
Father's	Unable to read and/or write	78	8.8
Educational	Can read and/or write	151	17.1
status	Primary school	87	9.8
	Secondary school	223	25.2
	Tertiary level	327	36.9
Mother's	Housewife	589	66.6
occupation	Daily laborer	41	4.6
	Employee (GO/NGO)	181	20.5
	Merchant	61	6.9
	Others***	13	1.5
Father's	Daily laborer	122	13.8
occupation	Employee (GO/NGO)	333	37.6
	Merchant	184	20.8
	Farmer	60	6.8
	Others****	167	18.9
Wealth	Lowest	176	19.9
quintile	Second	179	20.2
	Middle	176	19.9
	Fourth	178	20.1
	Highest	176	19.9

* Protestant, Jew **Single, divorced, widowed, separated *** Farmer, self employed... **** Driver, construction worker, self employed...

visit with a majority of them (51.9%) visited only once. (Table 3)

Social support

Concerning the support they gain for their child feeding decision, 18% of the mothers said they had the support of

Table 3Maternal and child health service utilization of first-timemothers attending governmental MCH clinics of Gondar town,Northwest Ethiopia, 2021

Variables	Category	Frequency	Percent
Delivery place	At home	71	8.0
	At health facility	814	92.0
Mode of delivery	Vaginal delivery	708	80.0
	Caesarean section	177	20.0
ANC follow-up	Yes	858	96.9
	No	27	3.1
Number of ANC visits	1–4	418	47.2
	≥5	440	49.7
PNC visit	Yes	684	77.3
	No	201	22.7
Number of PNC visits	1	459	51.9
	2–3	192	21.7
	≥4	33	3.7

Table 4	Social support for breastfeeding practice of first-time
mothers	attending governmental MCH clinics of Gondar town,
Northwe	st Ethiopia, 2021

Variables	Category	Frequency	Percent
Grandmother	Yes	95	10.7
	No	790	89.3
Husband	Yes	134	15.1
	No	751	84.9
Mother-in-law	Yes	43	4.9
	No	842	95.1
Health workers	Yes	159	18
	No	726	82
Other supporters*	Yes	123	13.9
	No	762	86.1
No support	Yes	375	42.4
	No	510	57.6

*Neighbors, friends...

the health workers while 42.2% of them said no one supported them and it was their own decision. (Table 4)

Breastfeeding practice and information

Among the first-time mothers who participated in the study, 74.7% (95% CI: 71.8, 77.5) of them practiced early initiation of breastfeeding and among those who had delayed initiation of breastfeeding, the majority of them (7.1%) said they were too sick to breastfeed. 13.2% of the mothers had given prelacteal feeds to their child while colostrum was given by the majority of the mothers (84.7%).

Regarding exclusive breastfeeding, only 46.8% (95% CI: 43.5, 50.1) of the mothers practiced it while the most duration (32.3%) among those who didn't practice was 4 up to 5 months and water was the most listed first additional food/drink (22.6%). The most described reason (14.7%) for failing to breastfeed exclusively was due to child sickness.

Concerning breastfeeding information, the majority of the mothers (71.5%) had information about breastfeeding, and among the sources they got information from, health institution was listed by most of the mothers (Table 5).

Factors associated with early initiation of breastfeeding practice

A binary logistic regression model was fitted to identify factors associated with the outcome variable. First, bivariable logistic regression analysis was done to test an association between early initiation of breastfeeding and the independent variables. A *P* value of ≤ 0.25 was used as a cut-off for determining an association. So, sex of the child, mother's educational status, mode of delivery, number of PNC visits, prelacteal feeding, colostrum feeding, and social support (husband, other supporters like neighbors) were found to be associated with early initiation of breastfeeding.

Then, those variables that were found to have an association with early initiation of breastfeeding in the bivariable logistic analysis were fitted for multivariable analysis. Hence, mode of delivery, prelacteal feeding, and colostrum feeding were found to be significantly associated with early initiation of breastfeeding.

The odds of practicing early initiation of breastfeeding was 5.63 times higher for mothers who had a vaginal delivery (AOR 5.63, 95% CI 3.64, 8.71) than those who had a caesarean delivery. Not giving prelacteal feeding was also very much associated with the practice of early initiation of breastfeeding (AOR 5.54, 95% CI 3.50, 8.78). Furthermore, the likelihood of initiating breastfeeding early was 2.89 times higher among mothers who gave colostrum to their child (AOR 2.89, 95%CI 1.85, 4.52) than those who discarded it. (Table 6)

Factors associated with exclusive breastfeeding practice

In bivariable logistic regression analysis, child's age, religion (mother's), residence, marital status, delivery place, number of PNC visits, prelacteal feeding, colostrum feeding, social support (grandmother's support, husband's, mother-in-law's, health workers', other supporters like neighbors, friends, and no support) and early initiation of breastfeeding were independently associated with exclusive breastfeeding practice.

After controlling for cofounders with multivariable logistic regression analysis, delivery place, number of PNC visits, prelacteal feeding, and social support (husband's, health workers') were found to be statistically and significantly associated with exclusive breastfeeding.

The odds of practicing exclusive breastfeeding was 3.13 times more likely among those who delivered their child at a health facility (AOR 3.13, CI 1.58, 6.18) than those who delivered at home. The likelihood of breastfeeding

exclusively was 1.88, 1.97, and 3.61 times higher among those who had one (AOR 1.88, CI 1.27, 2.77), 2 up to 3 (AOR 1.97, CI 1.25, 3.12) and \geq 4 PNC visits (AOR 3.61, CI 1.53, 8.54) respectively than those who didn't have any visit. The odds of practicing EBF was 2.14 times higher among those who didn't give prelacteal feeding (AOR 2.14, CI 1.32, 3.48) than their counterparts.

Concerning support system, those first-time mothers who had the support of their husband in their child-feeding decision were 2.34 times more likely to practice EBF (AOR 2.34, CI 1.13, 4.83) than those who didn't have and those who had health workers' support were 4.34 times more likely to practice EBF (AOR 4.34, CI 1.98, 9.53) than their counterparts. (Table 7)

Qualitative result

Sociodemographic characterstics of the study participants

A total of 23 first-time mothers with a child aged 6 up to 24 months had participated in the in-depth interview. The majority of them had a male child (61%) and 52% of the children were in the age range of 6–11 months while 65% of the mothers were 18–24 years old and most of the mothers (83%) were housewives. (Table 8)

Thematic analysis

Immediate initiation

Most of the mothers believed in early initiation of breastfeeding and most initiated it immediately after birth.

"I think breast milk should be given immediately... for the child not to be hungry." Mother number 2 (M2).

"After I gave birth, they gave him (the child) to me immediately and I breastfed him immediately." M14.

Colostrum for initiation

Though some mothers thought breastfeeding should be initiated early in order to give the colostrum to the child, there were also mothers whose initiation was delayed in order to discard the colostrum.

"It (breastmilk) has to be given immediately. Because the one which I think is called colostrum, the one with the yellow color, is beneficial for the child as the doctors said. To get the colostrum, the child should be breastfed immediately." M6. "Since my breasts didn't have enough milk, I milked the first one and discarded it to secrete the other milk... as it was thick and might be old, I thought it might make him sick, thus I didn't give him." M3. **Table 5** Breastfeeding practice and information among first-time mothers attending governmental MCH clinics of Gondar town,Northwest Ethiopia, 2021

Breastfeeding practices	Categories	Frequency	Percent
How long after birth did you first put the child to the breast?	Immediately/within 1 h	661	74.7
	After an hour/few hours	138	15.6
	1–6 h	120	13.6
	7–23 h	18	2.0
	After a day	29	3.3
	After few days	57	6.4
	2–4 days	35	4.0
	5–7 days	9	1.0
	≥8 days	13	1.5
If not immediately or within 1 h, what was the reason?	The child was sick	54	6.1
	l was sick	63	7.1
	I had caesarean delivery	59	6.7
	Other*	48	5.4
Did you give anything to drink/eat other than breast milk to the infant within the 1st 3 days of	Yes	117	13.2
delivery?	No	768	86.8
If ves, what prelacteal feed was given for your infant?	Water	10	1.1
	Butter	23	26
	Cow milk	12	14
	Other**	72	81
What was the reason for introducing such prelacteal feed?	To clean infant's howel/	9	1.0
mat has the reason of introducing such predeted reed.	throat /Mouth	, ,	1.0
	To calm/sooth the baby	13	1.5
	It is a culture/tradition	12	1.4
	Other***	83	9.4
Did you feed the colostrum to your infant during the 1st 5 days after birth?	Yes	750	84.7
	No	135	15.3
If you didn't give colostrum, why?	It gives abdominal pain to the baby	19	2.1
	It is dirty, like "pus"	23	2.6
	It is a tradition/culture	25	2.8
	Other****	68	7.7
Before the age of 6 month, have you ever fed anything in addition to breast milk to the child?	Yes	471	53.2
	No	414	46.8
For how long since birth does your child took only breast milk (no other food/drink given)?	≤1	67	7.6
	2–3	118	13.3
	4–5	286	32.3
	≥6	414	46.8
What additional food/drink did you give the child for the first time?	Water	200	22.6
	Tea/sugar solution	11	1.2
	Cow's milk	72	8.1
	Formula milk	91	10.3
	Adult food	41	4.6
	Other****	56	6.3
Why did you give this additional food/drink at this age?	I had to return to work	60	6.8
	l didn't have enough milk	91	10.3
	The child was sick	130	14.7
	I was sick	15	1.7
	It is a right age for complementation	48	5.4
	To teach the child eat- ing adult food	48	5.4
	Other*****	79	8.9

Table 5 (continued)

Breastfeeding practices		Categories	Frequency	Percent
Did you breastfed your child the previous day?		Yes	839	94.8
		No	46	5.2
Have you ever get any information on breast feeding?		Yes	633	71.5
		No	252	28.5
Information source	Health institution	Yes	400	45.2
		No	233	26.3
	Books	Yes	11	1.2
		No	622	70.3
	Massmedia	Yes	124	14.0
		No	509	57.5
	Neighbors	Yes	91	10.3
		No	542	61.2
	Other sources******	Yes	97	11.0
		No	536	60.6

*Lack of milk secretion, the child was asleep... ** Sugar solution, formula milk *** Lack of milk secretion, the mother was sick... **** Lack of milk secretion, the child was sick, the child couldn't suck... ***** Soup, cerifam, pastini, porridge... ****** To quench his thirst, hot climate, for stomachache... ****** Family, school lesson...

Table 6 Bivariable and multivariable logistic regression model predicting the likelihood of practicing early initiation of breastfeeding among first-time mothers attending MCH clinics of Gondar town, Northwest Ethiopia, 2021

Variables			Early initiation of breastfeeding		COR (95%CI)	AOR (95%CI)
			Yes (N&%)	No (N&%)		
Sex		Female	314 (35.5%)	93 (10.5%)	1	1
		Male	347 (39.2%)	131 (14.8%)	0.78 (0.58, 1.07)	0.81 (0.57, 1.15)
Mother's Educa	tional level	Unable to read and/ or write	56 (6.3%)	15 (1.7%)	1	1
		Can read and/or write	99 (11.2%)	22 (2.5%)	1.20 (0.58, 2.51)	0.96 (0.42, 2.16)
		Primary school	82 (9.3%)	30 (3.4%)	0.73 (0.36, 1.48)	0.85 (0.39, 1.86)
		Secondary school	210 (23.7%)	70 (7.9%)	0.80 (0.43, 1.51)	0.88 (0.44, 1.77)
		Tertiary level	214 (24.2%)	87 (9.8%)	0.66 (0.35, 1.23)	0.85 (0.42, 1.72)
Mode of deliver	ry	Caesarean section	82 (9.3%)	95 (10.7%)	1	1
		Vaginal delivery	579 (65.4%)	129 (14.6%)	5.20 (3.66, 7.39)**	5.63 (3.64, 8.71)**
Number of PNC	2 visits	0	165 (18.6%)	36 (4.1%)	1	1
		1	346 (39.1%)	113 (12.8%)	0.67 (0.44, 1.02)	0.76 (0.47, 1.23)
		2–3	124 (14.0%)	68 (7.7%)	0.40 (0.25, 0.63)**	0.77 (0.43, 1.39)
		≥4	26 (2.9%)	7 (0.8%)	0.81 (0.33, 2.01)	0.75 (0.28, 2.04)
Prelacteal feedi	ng	Yes	47 (5.3%)	70 (7.9%)	1	1
		No	614 (69.4%)	154 (17.4%)	5.94 (3.94, 8.94)**	5.54 (3.50, 8.78)**
Colostrum feed	ing	No	72 (8.1%)	63 (7.1)	1	1
		Yes	589 (66.6%)	161 (18.2%)	3.20 (2.19, 4.68)**	2.89 (1.85, 4.52)**
Social support	Husband	No	549 (62.0%)	202 (22.8%)	1	1
		Yes	112 (12.7%)	22 (2.5%)	1.87 (1.15, 3.04)*	1.63 (0.95, 2.80)
	Other support-	No	576 (65.1%)	186 (21.0%)	1	1
	ers (neighbors, friends…)	Yes	85 (9.6%)	38 (4.3%)	0.72 (0.48, 1.10)	1.05 (0.64, 1.70)

* *p*-value \leq 0.05 ** *p*-value \leq 0.001

Butter as prelacteal

Most of the mothers gave various things to the children in their early neonatal days, and butter was the famous one.

"If they are given butter, it is even better for them not to be hungry. Better than my breast milk, she sleeps soundly when she is given the butter." M1. "I didn't give him water but of course we did give him butter...Obviously, because it is a culture." M11.

The empty breasts and formula milk

The majority of the mothers thought that they had insufficient breast milk, hence they gave their children formula milk before the age of six months (in the early neonatal days or after that).

Table 7 Bivariable and multivariable logistic regression model predicting the likelihood of practicing exclusive breastfeeding among first-time mothers attending MCH clinics of Gondar town, Northwest Ethiopia, 2021

Variables			EBF		COR (95%CI)	AOR (95%CI)
			Yes (N&%)	No (N&%)		
Child's age		6–11 months	197 (22.3%)	242 (27.3%)	1.02 (0.71, 1.48)	1.10 (0.73, 1.66)
		12-17	147 (16.6%)	141 (15.9%)	1.31 (0.89, 1.94)	1.30 (0.85, 2.01)
		18–24	70 (7.9%)	88 (9.9%)	1	1
Religion		Orthodox Tewahido	380 (42.9%)	415 (46.9%)	0.69 (0.15, 3.09)	0.94 (0.19, 4.52)
		Muslim	30 (3.4%)	53 (6.0%)	0.42 (0.09, 2.02)	0.60 (0.12, 3.12)
		Others	4 (0.5%)	3 (0.3%)	1	1
Residence		Urban	398 (45.0%)	441 (49.8%)	1.81 (0.98, 3.36)	0.87 (0.41, 1.82)
		Rural	16 (1.8%)	30 (3.4%)	1	1
Marital Status		Married	389 (44.0%)	420 (47.5%)	1.89 (1.15, 3.11)	1.24 (0.72, 2.14)
		Others	25 (2.8%)	51 (5.8%)	1	1
Delivery place		At home	13 (1.5%)	58 (6.6%)	1	1
		At health facility	401 (45.3%)	413 (46.7%)	4.33 (2.34, 8.03)***	3.13 (1.58, 6.18)***
Number of PNC	2 visits	0	73 (8.2%)	128 (14.5%)	1	
		1	223 (25.2%)	236 (26.7%)	1.66 (1.18, 2.33)**	1.88 (1.27, 2.77)***
		2–3	95 (10.7%)	97 (11.0%)	1.72 (1.15, 2.57)**	1.97 (1.25, 3.12)**
		≥4	23 (2.6%)	10 (1.1%)	4.03 (1.82, 8.94)***	3.61 (1.53, 8.54)**
Prelacteal feeding		Yes	33 (3.7%)	84 (9.5%)	1	1
		No	381 (43.1%)	387 (43.7%)	2.51 (1.64, 3.84)***	2.14 (1.32, 3.48)**
Colostrum feed	ling	Yes	364 (41.1%)	386 (43.6%)	1.60 (1.10, 2.34)*	1.27 (0.82, 1.96)
		No	50 (5.6%)	85 (9.6%)	1	1
Social support	Grand mother	Yes	34 (3.8%)	61 (6.9%)	0.60 (0.39, 0.94)*	0.87 (0.41, 1.82)
		No	380 (42.9%)	410 (46.3%)	1	1
	Husband	Yes	81 (9.2%)	53 (6.0%)	1.92 (1.32, 2.79)***	2.34 (1.13, 4.83)*
		No	333 (37.6%)	418 (47.2%)	1	1
	Mother-in-law	Yes	13 (1.5%)	30 (3.4%)	0.48 (0.24, 0.93)*	0.60 (0.24, 1.51)
		No	401 (45.3%)	441 (49.8%)	1	1
	Health workers	Yes	115 (13.0%)	44 (5.0%)	3.73 (2.56, 5.44)***	4.34 (1.98, 9.53)***
		No	299 (33.8%)	427 (48.2%)	1	1
	Own decision	Yes	155 (17.5%)	220 (24.9%)	0.68 (0.52, 0.89)**	1.14 (0.52, 2.47)
		No	259 (29.3%)	251 (28.4%)	1	1
	Other supporters (neighbors, friends)	Yes	43 (4.9%)	80 (9.0%)	0.57 (0.38, 0.84)**	0.76 (0.35, 1.67)
		No	371 (41.9%)	391 (44.2%)	1	1
Early initiation of	of breastfeeding	Yes	319 (36.0%)	342 (38.6%)	1.27 (0.93, 1.72)	1.02 (0.71, 1.45)
		No	95 (10.7%)	129 (14.6%)	1	1

* *p*-value \leq 0.05 ** *p*-value \leq 0.01 *** *p*-value \leq 0.001

"After she was born, my breasts couldn't secrete milk. I tried my best, but since I delivered by operation, I couldn't take any drink immediately as I had to wait because of the wound. So, until I took some drink, my breasts didn't have milk. Hence, she didn't breastfeed immediately rather we bottle-fed her...It was formula milk." M15.

"I would have been happy if I didn't give him anything else but my breasts were empty and he lost weight and had decrement from his birth weight. I thought that it was because my breasts were empty. So, I gave him formula milk." M19.

Water for thirst, for stomachache

When the mothers asked what additional food/drink they gave their child before six months, the most listed one was water, and the reason was either to quench their thirst or to ease their stomachache.

"He had recurrent stomachache and we gave him drinking water to cure it." M8.

"I gave her water before the age of three months because she had a stomachache. Since water restores the burp, it is presumed to cure it." M1.

"It is believed that the milk makes them thirsty and especially when it is hot, they need water. He was crying so much; I told the doctor about it and he advised me to give him water, so I gave him water by **Table 8** Socio-demographic characteristics of first-time mothers attending governmental MCH clinics of Gondar town, Northwest Ethiopia, 2021 (Qualitative study) (n = 23)

Characters	Category	Frequency	Percent
Sex of child	Male	14	61
	Female	9	39
Child's age	6-11months	12	52
	12–17	8	35
	18–24	3	13
Mother's age	18–24 vears	15	65
inotale buge	> 25	8	35
Religion	Orthodox Tewahido	20	87
nengion	Muslim	20	0/ 0
	lows	2	1
Pasidanca	Jews	10	+ 02
Residence	Dural	19	17
	Rural	4	17
Marital status	Married	20	8/
	Single	1	4
	Separated	2	9
Mother's educa- tional status	Unable to read and/or write	2	9
	Primary school	7	31
	Secondary school	7	30
	Tertiary level	7	30
Mother's	Housewife	19	83
occupation	Employee (GO/NGO)	3	13
	Farmer	1	4

the water bottle's lid. Maybe they cry because they are thirsty, so it will be better if they drink water." M6.

Following the early trend

Some mothers expressed that how their family grew up eating is valuable and credible hence, they tried to feed their children likewise.

"When we were a child, our mothers gave us everything and we were healthy.But now, the children get sick when we give them anything additional because of the time we are in, I think. We grew up eating everything, including butter and other things but now it is not like that." M6.

"It doesn't have any problem if I give her additional food before 6 months. Since we and our siblings grew up like that, I believe it doesn't have any problem." M10.

The people around

As they were first-time mothers, their breastfeeding practice was influenced by their family, neighbors, or the community. On the contrary, some mothers said they were not influenced and it was their own decision. "My husband said that non-exclusive breastfeeding is a harmful practice and a child should only take breast milk. Hence, I did what he told me to. Since I believe he knows better than me, I listen to him." M10.

"It was my family's influence. As it is my first child, I take much advice from my family." M8.

"Since I saw my neighbors' children grow up without exclusive breastfeeding, I thought it was a must, and I had done it likewise." M12.

"It was my decision not to give him anything before six months; otherwise, the community, even my mother and my neighbors said that he should taste everything when he is just little. However, maybe because I already accepted the six-month thing, I didn't give him anything." M6.

Health workers' role

The mothers also expressed how they tend to do whatever the health workers say regarding their children's feeding practices.

"As I gave birth at a hospital, he was breastfed immediately." M16.

"Here, the midwives told us not to give the children anything else until six months, and the nurses, when we came for immunization." M13.

"When I gave birth here (the hospital), they advised me to give only breast milk until six months. Hence, I didn't give him anything additional." M3.

Discussion

Optimal breastfeeding is vital for child health and survival. The global recommendation for universal coverage of early initiation of breastfeeding and EBF is set at 90% [11, 33, 34] and Ethiopia had set an 80% target practice of early initiation of breastfeeding and EBF for 2020 [21]. But this very study found that the proportion of mothers who initiated breastfeeding early was 74.7% (95% CI 71.8, 77.5) and the proportion for exclusive breastfeeding was 46.8% (95% CI 43.5, 50.1).

The practice of early initiation of breastfeeding was higher than a study done in Bahirdar (Ethiopia) which showed 65% prevalence [24], 48.2% in Great Accra (Ghana) [35], and in Vietnam of 16.7% [36]. The possible explanation for this variation could be the methodological difference between these studies and the current study; like the community-based study in Bahirdar, the small sample size in Ghana, and the self-administered questionnaire used in the Vietnamese study. On the other hand, it was lower than the practice of early initiation of breastfeeding in Bedassa (Ethiopia) with a proportion of 81.1% [37] and in China of 93.75% [38]. This discrepancy could be due to maternal and child health service-related reasons as in the study from Bedassa which revealed a little bit higher number of mothers had vaginal delivery than the current study while the study from China included only mothers that delivered at a hospital. Besides when compared with the studies done among all mothers (both primiparous and multiparous), it is in line with the nationwide study of Ethiopia (Ethiopian Demographic and Health Survey (EDHS), 2016) which revealed that the practice of early initiation of breastfeeding was 73% [19] and with the study from Alwar district, Rajasthan, India which showed that 72.8% of lactating mothers initiated early breastfeeding [39].

Regarding exclusive breastfeeding, the result was a lot higher than a study conducted in Jordan which revealed that the practice was done only by 2.1% of first-time mothers [40] and in Wajir County (Kenya), 39.4% of the mothers practiced EBF [41]. This difference might be due to methodological variations of the studies as in Kenya which employed a smaller sample size than this study while the study that was done in Jordan employed a prospective cohort study. On the other hand, it was lower than the result found by a study done in Bedessa (Ethiopia) that revealed a magnitude of 93.7% [37] which could be due to health facility delivery that was fairly better than the current study and when compared to allmothers, it was also lower than Mini EDHS, 2019 which showed that the practice of EBF by Ethiopian mothers was 59% [20] and East African study of 55.9% [42]. The possible explanation for this difference could be because of their difference in study methods like in the Mini EDHS which used a 24-hour recall method and the systematic review used by the East African study. Furthermore, it was in line with an all mothers study from Guraghe (Ethiopia) with a prevalence of 49.2% [43].

This study showed that mode of delivery, prelacteal feeding, and colostrum feeding were found to be significantly associated with early initiation of breastfeeding.

The likelihood of practicing early initiation of breastfeeding was 5.63 times higher among mothers who had a vaginal delivery as compared to those who had a cesarean delivery which was in line with the study done among first-time mothers in Bahirdar (Ethiopia) [24]. In addition, when compared to studies done on all mothers, the study is in line with a finding from the rural eastern zone of Tigray (Ethiopia) [44] and in agreement with results from Mekelle (Ethiopia) [28] and Ghana [45], which all showed that those who had vaginal delivery were more likely to initiate breastfeeding early than those who delivered by cesarean section. This might be explained by the mothers' condition following cesarean delivery and postoperative care procedures that could disrupt mother-infant interaction that could delay the onset of breastfeeding [46].

In this study, not giving prelacteal feed to the children was significantly associated with the practice of early initiation (AOR 5.54, 95% CI 3.50, 8.78) but as this is a cross-sectional study, it is not clear whether not giving prelacteal feeding is a cause or consequence of early initiation of breastfeeding but the study done in Great Accra (Ghana) [35] revealed that those first-time mothers who initiated breastfeeding within one hour were less likely to use any prelacteal feed. On the other hand, an all-mothers study from Dabat (Ethiopia) revealed that increased odds of early initiation of breastfeeding were observed among mothers who did not give prelacteal feeds [27] and in Kilimanjaro (Tanzania), not giving prelacteal feeds was significantly associated with a higher prevalence of early initiation of breastfeeding [47]. This could be justified by the fact that giving other foods to the infant before breast milk reduces the infant's sucking ability, hence the mother's milk secretion which will then make the mother feed the infant foods other than breast milk; the opposite is true for colostrum feeding [31, 48].

In this very study, the odds of initiating breastfeeding early was 2.89 times higher among mothers who gave colostrum to their child than those who discarded it which was supported by the result from an all-mothers study in Axum (Ethiopia), in which mothers who didn't give colostrum to their newborn were less likely to practice early initiation of breastfeeding [48]. The reason might be due to an array of beliefs regarding colostrum like not having any nutritional value and being risky to the infant's health [49]. Hence, the mothers wait until the "other milk" is secreted.

Regarding exclusive breastfeeding, delivery place, number of PNC visits, prelacteal feeding, and social support (husband, health workers) were found to be statistically and significantly associated.

The odds of practicing exclusive breastfeeding was 3.13 times more likely among those who delivered their child at a health care facility than those who delivered at home which is in line with the study done among all-mothers in Azezo (Ethiopia) [50] and in agreement with a study from Hawassa (Ethiopia) [51] which revealed that mothers who delivered at a health care facility exclusively breastfed their infants more than those who delivered at home. This may be due to the breastfeeding counseling that might have been given to the mothers at the health facility during their immediate postpartum period.

The odds of practicing EBF was 1.88, 1.97 and 3.61 times higher among those who had one, 2 up to 3 and \geq 4 PNC visits respectively than those who didn't have a visit which is in agreement with a meta-analysis done in Ethiopia which revealed that those mothers who had at least one PNC visit had nearly twice higher chance of practicing EBF than those who had no any PNC follow-up [14] and also consistent with a study from India which

also indicated that one or more PNC visits brings higher likelihood of breastfeeding exclusively [52]. This could be attributed to the breastfeeding support that is given as part of essential routine post natal care when mothers have their PNC visit [53].

Concerning the support system, those first-time mothers who had the support of their husbands were 2.34 times more likely to practice EBF than those who didn't have; which is in line with an all-mothers study from Motta (Ethiopia) [31] and in agreement with the result from Indonesia where 40.6% of first-time mothers were influenced by their husbands to decide anything related to breastfeeding and family support was an important influencing factor on breastfeeding rates [54]. This could be because, in developing countries like Ethiopia and Indonesia, the husband plays a major role in decisionmaking about family and household matters as he is usually a source of income for the household and since the culture allows his dominancy. Thus, the power they have could affect every little decision that is made in the house even infant feeding decisions. Hence, the mothers are more likely to practice EBF if the husband says so.

Limitation

As the study included mothers of children 6 up to 24 months, it might have been difficult for some mothers to remember the exact time of breastfeeding initiation and exclusive breastfeeding duration and so, the study might be subjected to potential recall bias. Even so, efforts were made to minimize the bias; like using more expressive words while asking about the practices and using well-defined events like immunization schedules to help them remember the event of interest. For the qualitative part, as it used purposive sampling, it may have caused a selection bias.

Conclusion

The magnitude of early initiation of breastfeeding and EBF practices were lower than the national target and the global recommendation for the universal coverage of early initiation of breastfeeding and EBF respectively. Mode of delivery, prelacteal feeding, and colostrum feeding were determinants for the practice of early initiation of breastfeeding and for EBF practice; delivery place, number of PNC visits, prelacteal feeding, and social support (husband's, health workers') were factors associated with it.

According to the in-depth interview, most of the mothers believed in and practiced early initiation of breastfeeding. On the other hand, when they were asked about exclusive breastfeeding, there were mothers who started additional food/drink before six months of age, and water was the most given either to quench the children's thirst or to ease their stomachache. Besides, lack of milk secretion was a mutual barrier to the practice of early initiation of breastfeeding and EBF and was repeatedly listed in various dimensions of the quantitative and qualitative parts.

Hence, health care professionals especially those working in delivery units and PNC clinics should provide continuous breastfeeding education and counseling to first-time mothers with a prime focus on early initiation of breastfeeding and EBF, avoidance of improper child feeding practices like prelacteal feeding, and colostrum discarding. Mothers should be properly supported to tackle any problem and misconception regarding low milk secretion and breastfeeding initiation after cesarean delivery. Besides, husbands should be counseled on how to support their lactating spouse.

Abbreviations

AOR	Adjusted Odds Ratio
ANC	Antenatal Care
COR	Crude Odds Ratio
CI	Confidence Interval
EBF	Exclusive Breastfeeding
EPI	Expanded Program on Immunization
IRB	Institutional Review Board
IYCF	Infant and Young Child Feeding
MCH	Maternal and Child Health
NNP	National Nutrition Program
PNC	Postnatal Care
PPS	Probability Proportional to Size
SPSS	Statistical Package for Social Science
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Acknowledgements

First, we would like to thank the University of Gondar, College of Medicine and Health Sciences, Institute of Public Health for the approval of the ethical clearance. We also would like to thank Gondar town's health office for allowing us to use the study areas, and we are grateful to the health facilities for their cooperation. We extend our gratitude to all study participants, data collectors, supervisors, and finally, to family and friends.

Author contributions

FZ did conceptualization and wrote the original draft. FZ and AA designed the study. FZ and SM did the analysis. SM and AA edited the manuscript. All authors (FZ, SM and AA) interpreted the findings, and approved the final version of the manuscript.

Funding

No funding was obtained for this study.

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from Institutional Review Board (IRB) of the University of Gondar, College of Medicine and Health Sciences, Institute of Public Health (Ref No/ IPH/1352/2013 Date: Feb 15/2021). Permission to do the study was granted from Amhara Institute of Public health and then from Gondar town health bureau and also from the selected health facilities and finally, verbal consent was obtained from each study participant after explaining the objective, purpose, and procedure of the study. They were informed about the voluntary nature of the study, the benefits of the study, the possible risks/discomforts from the study, and their right to withdraw from

the study at any time. Besides, the confidentiality of the study was explained clearly and was assured by keeping their anonymity.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹Department of Human Nutrition, Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia ²Nutrition Unit, University of Gondar Comprehensive Specialized Hospital, Gondar, Ethiopia

Received: 17 November 2024 / Accepted: 28 March 2025 Published online: 08 April 2025

References

- 1. United Nations Children's Fund. Breastfeeding: A Mother's Gift, for Every Child. 2018.
- Senanayake P, O'Connor E, Ogbo FA. National and rural-urban prevalence and determinants of early initiation of breastfeeding in India. BMC Public Health. 2019;19:896.
- United Nations Children's Fund, World Health Organization. Capture the moment: early initiation of breastfeeding: the best start for every newborn. United Nations Children's Fund; 2018.
- Gartner LM, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ, et al. Breastfeeding and the use of human milk. Pediatrics. 2005;115(2):496–506.
- World Health Organization. Exclusive breastfeeding for optimal growth, development and health of infants. World Health Organization https://www. who.int/elena/titles/exclusive_breastfeeding/en/ Published. 2019.
- Lessen R, Kavanagh K. Position of the academy of nutrition and dietetics: promoting and supporting breastfeeding. J Acad Nutr Dietetics. 2015;115(3):444–9.
- United Nations Children's Fund. The state of the world's children 2008: Child survival. UNICEF; 2007.
- DaVanzo J, Starbird E, Leibowitz A. Do women's breastfeeding experiences with their first-borns affect whether they breastfeed their subsequent children? Soc Biol. 1990;37(3–4):223–32.
- 9. Intiful F, Osei C, Steele-Dadzie R, Nyarko R, Asante M. Views of first-time expectant mothers on breastfeeding: A study in three health facilities in Accra, Ghana. Adv Public Health. 2017;2017(1):4894026.
- Schafer EJ, Campo S, Colaizy TT, Mulder PJ, Ashida S. Influence of experiences and perceptions related to breastfeeding one's first child on breastfeeding initiation of second child. Matern Child Health J. 2017;21(6):1288–96.
- Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 2016;387(10017):475–90.
- Smith ER, Hurt L, Chowdhury R, Sinha B, Fawzi W, Edmond KM, et al. Delayed breastfeeding initiation and infant survival: a systematic review and metaanalysis. PLoS ONE. 2017;12(7):e0180722.
- 13. United Nations Children's Fund. A successful start in life: improving breastfeeding in West and central Africa. New York: UNICEF; 2010.
- Habtewold TD, Sharew NT, Alemu SM. Evidence on the effect of gender of newborn, antenatal care and postnatal care on breastfeeding practices in Ethiopia: a meta-analysis andmeta-regression analysis of observational studies. BMJ Open. 2019;9(5):e023956.
- Hoche S, Meshesha B, Wakgari N. Sub-optimal breastfeeding and its associated factors in rural communities of Hula district, Southern Ethiopia: a crosssectional study. Ethiop J Health Sci. 2018;28(1):49–62.
- Nguyen PH, Kim SS, Tran LM, Menon P, Frongillo EA. Early breastfeeding practices contribute to exclusive breastfeeding in Bangladesh, Vietnam and Ethiopia. Matern Child Nutr. 2020:e13012.
- 17. World Health Organization. Enabling women to breastfeed through better policies and programmes: Global breastfeeding scorecard 2018. 2018.
- Awoke N, Tekalign T, Lemma T. Predictors of optimal breastfeeding practices in Worabe town, silte zone, South Ethiopia. PLoS ONE. 2020;15(4):e0232316.
- 19. Federal Democratic Republic of Ethiopia. Ethiopian Demographic and Health Survey. 2016.

- 20. Federal Democratic Republic of Ethiopia. Ethiopian Mini Demographic and Health Survey. 2019.
- Federal Democratic Republic of Ethiopia. National nutrition program 2016–2020. Federal Democratic Republic of Ethiopia Addis Ababa, Ethiopia; 2016.
- 22. Ethiopian Central Statistical Agency. Population and Housing Census of 2007. 2007.
- 23. Gondar city administration's municipality office development plan preparation monitoring and evaluation group. Gondar city administration 2019's budget year annual statistical magazine. 2019.
- Ayalew T, Tewabe T, Ayalew Y. Timely initiation of breastfeeding among first time mothers in Bahir Dar City, North West, Ethiopia, 2016. Pediatr Res. 2019;85(5):612–6.
- Greiner T. Exclusive breastfeeding: measurement and indicators. Int Breastfeed J. 2014;9:18.
- Temesgen H, Negesse A, Woyraw W, Getaneh T, Yigizaw M. Prelacteal feeding and associated factors in Ethiopia: systematic review and meta-analysis. Int Breastfeed J. 2018;13:49.
- Derso T, Biks GA, Tariku A, Tebeje NB, Gizaw Z, Muchie KF, et al. Correlates of early neonatal feeding practice in Dabat HDSS site, Northwest Ethiopia. Int Breastfeed J. 2017;12:25.
- 28. Berhe H. Determinants of breastfeeding practice among mothers of children aged less than 24 months attending governmental maternal and child health clinics in Mekelle town, Northern Ethiopia. Addis Ababa: University Electronic Library; 2011.
- 29. Muluken A. Assessement of prevalence of prelactal feeding and associated factors among mothers of children less than one year of age in Mizan-Aman town Benchmaji zone. South West Ethiopia: Addis Ababa University; 2015.
- Tamir G. Assessment of optimal breastfeeding among working and Stayat-Home mothers in Bahir Dar town Amhara regional state. North West of Ethiopia: Addis Ababa University; 2010.
- Tewabe T, Mandesh A, Gualu T, Alem G, Mekuria G, Zeleke H. Exclusive breastfeeding practice and associated factors among mothers in Motta town, East Gojjam zone, Amhara regional State, Ethiopia, 2015: a cross-sectional study. Int Breastfeed J. 2016;12:12.
- 32. Aserese AD, Atenafu A, Sisay M, Sorrie MB, Yirdaw BW, Zegeye MK. Adequate vitamin A rich food consumption and associated factors among lactating mothers visiting child immunization and post-natal clinic at health institutions in Gondar town, Northwest Ethiopia. PLoS ONE. 2020;15(9):e0239308.
- 33. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS, Group BCSS. How many child deaths can we prevent this year? Lancet. 2003;362(9377):65–71.
- Black R, Alderman H, Bhutta Z, Gillespie S, Haddad L, Horton S, Lartey A. Executive summary of The Lancet maternal and child nutrition series. Maternal and Child Nutrition Study Group, editors, Maternal and Child Nutrition. 2013:1–12.
- Nortey T. Breastfeeding behaviour among first time mothers visiting selected health facilities in Ga East district of greater Accra region. University of Ghana; 2015.
- Le Thi Bich N. Factors associated with breastfeeding initiation among firsttime mothers in Thai Nguyen. Vietnam: Burapha University; 2015.
- Lake E, Gelaw K. Prevalence of timely initiation of breastfeeding practice among primiparous mothers at Bedessa town, Wolaita zone, Southern Ethiopia, 2018: A community based cross-sectionals study. J Pregnancy Child Health. 2019;6(408):2.
- Wan H, Tiansawad S, Yimyam S, Sriaporn P. Factors predicting exclusive breastfeeding among the first time Chinese mothers. Pac Rim Int J Nurs Res. 2015;19(1):32–44.
- Chand H, Chopra M, Sharma J. Disparity in knowledge, attitude and practice among mothers of children under three years of age about early initiation of breastfeeding, exclusive breastfeeding and continued breastfeeding in Alwar district, Rajasthan, India. Int J Sci Rep. 2020;6(4):146.
- Dasoqi KA, Safadi R, Badran E, Basha AS, Jordan S, Ahmad M. Initiation and continuation of breastfeeding among Jordanian first-time mothers: a prospective cohort study. Int J Women's Health. 2018;10:571–7.
- 41. Mohamed MJ, Ochola S, Owino VO. Comparison of knowledge, attitudes and practices on exclusive breastfeeding between primiparous and multiparous mothers attending Wajir district hospital, Wajir County, Kenya: a cross-sectional analytical study. Int Breastfeed J. 2018;13:11.
- Dukuzumuremyi JPC, Acheampong K, Abesig J, Luo J. Knowledge, attitude, and practice of exclusive breastfeeding among mothers in East Africa: a systematic review. Int Breastfeed J. 2020;15:70.

- 44. Gebremeskel SG, Gebru TT, Gebrehiwot BG, Meles HN, Tafere BB, Gebreslassie GW, et al. Early initiation of breastfeeding and associated factors among mothers of aged less than 12 months children in rural Eastern zone, Tigray, Ethiopia: cross-sectional study. BMC Res Notes. 2019;12:671.
- Apanga PA, Kumbeni MT. Prevalence and predictors of timely initiation of breastfeeding in Ghana: an analysis of 2017–2018 multiple indicator cluster survey. Int Breastfeed J. 2021;16:35.
- Prior E, Santhakumaran S, Gale C, Philipps LH, Modi N, Hyde MJ. Breastfeeding after Cesarean delivery: a systematic review and meta-analysis of world literature. Am J Clin Nutr. 2012;95(5):1113–35.
- Kiwango F, Mboya IB, John B, Hashim T, Msuya SE, Mgongo M. Prevalence and factors associated with timely initiation of breastfeeding in Kilimanjaro region, Northern Tanzania: a cross-sectional study. BMC Pregnancy Childbirth. 2020;20:505.
- Alemayehu M, Abreha K, Yebyo H, Zemichael K, Gebremichael H. Factors associated with timely initiation and exclusive breast feeding among mothers of axum town, Northern Ethiopia. Sci J Public Health. 2014;2(5):394–401.
- 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 Nutr. 2011;14(11):2029–36.

- 50. Asemahagn MA. Determinants of exclusive breastfeeding practices among mothers in Azezo district, Northwest Ethiopia. Int Breastfeed J. 2016;11:22.
- Adugna B, Tadele H, Reta F, Berhan Y. Determinants of exclusive breastfeeding in infants less than six months of age in Hawassa, an urban setting, Ethiopia. Int Breastfeed J. 2017;12:45.
- Smittenaar P, Ramesh B, Jain M, Blanchard J, Kemp H, Engl E, et al. Bringing greater precision to interactions between community health workers and households to improve maternal and newborn health outcomes in India. Global Health: Sci Pract. 2020;8(3):358–71.
- 53. Warren C, Daly P, Toure L, Mongi P. Postnatal Care. Opportunities for Africa's Newborns. Cape Town, South Africa: Partnership for Maternal, Newborn and Child Health, Save the Children. UNFPA, UNICEF, USAID, WHO and Partners. The Partnership for Maternal Newborn ….
- Nandini N, Chalidyanto D, Pudjirahardjo WJ, Putri NK, editors. Breastfeeding among First Time Mothers. 2nd International Symposium of Public Health (ISoPH); 2017.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.