

Determinants of exclusive breastfeeding practice in Southern Ethiopia

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Abstract

Exclusive breastfeeding for the first six months of life followed by optimal complementary feeding are critical public health measures for reducing and preventing morbidity and mortality in young children since breastfeeding supports infants' immune systems and helps protect them from chronic illnesses later in life. However, rate of exclusive breastfeeding practice is very low especially in developing countries. The aim of this study was to evaluate the practice of mothers towards exclusive breastfeeding and identifying determinants of exclusive breastfeeding practice among mothers with index infant to six months. A community based cross sectional study design was carried out from August to September, 2017. Face to face interview was conducted using pretested and structured questioner to collect data from mothers of index infant from 0 to 6 months of age. Forty five key informants were selected purposively from range of backgrounds for in-depth interview on exclusive breastfeeding knowledge, perceptions and practices. The data was entered to Epi-data version 3.1 and exported to Statistical Packages for Social Sciences (SPSS) version 21.0 for analysis. A total of 591 respondents participated in the survey. Only 88 (14.9%) of infants were exclusively breastfed. The majority 344 (58.2%) of the respondents hadn't sufficient knowledge about exclusive breastfeeding, and only 222 (37.6%) of participants had positive attitude to exclusive breastfeeding. Initiation of breastfeeding within an hour after delivery was practiced by only a few mothers 194 (32.8%). Prelacteal feeds were given to above half of the infants 314 (53.1%). Sufficient knowledge and positive attitude towards exclusive breastfeeding, antenatal care ≥ 4 attendance, infant's age (0-60 days), early initiation of breast feeding, and avoiding traditional prelacteal feeds can significantly raise the odds of exclusive breastfeeding practice.

Keywords: Exclusive breastfeeding, infants' health, initiation time, mothers, prelacteal feeds, knowledge, attitude and practice.

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Introduction

Breast feeding is an integral part of the reproductive process with important implications for the health of the mother and baby; it is a unique way of providing ideal food for the healthy growth and development of infants. Exclusive breastfeeding (EBF) means infant is given its entire nutrient from human breast milk and receives no even water, other liquids, tea, herbal preparations or any complementary foods during the first six months of life with the exception of vitamins, mineral supplements or medicines (Rahman et al. 2017; Regassa 2014; Liben et al. 2017). Thereafter, infants should receive nutritionally adequate and safe

complementary foods while continued breast feeding up to two years of age and beyond. Exclusive breast feeding for the first six months of life followed by optimal complementary feeding are critical public health measures for reducing and preventing morbidity and mortality in young children since breastfeeding supports infants' immune systems and helps protect them from chronic conditions later in life such as obesity, diarrhea, respiratory infection, diabetes and heart diseases (Danso 2014; Shaili et al. 2012; Newby et al. 2014). Formula feeding during the period of EBF increases the health risks to both the baby and mother. It raises the risk of death from diarrhea and incidence of acute respiratory tract infections in infants (Wan et al. 2015).

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In addition, mothers also receive benefits from EBF as it helps to keep space between children, provide mother infant bondage, cardiovascular diseases, decreased risk for iron deficiency anemia, endometrial cancer, less risk of osteoporosis, decrease obesity, it is cost-effective, and reduce the risk of ovarian and breast cancers (Yeneabat, Belachew, and Haile 2014). The family and society as a whole would also benefit by decreasing medical costs as sick care visits, prescriptions and hospitalizations, reduced environmental burden for the disposal of bottles and formula cans, reduced energy demands for the production and transportation of artificial feeding products (Akinyinka, Olatona and Oluwole 2016). Diminutions in child mortality are related with improved coverage of effective interventions to prevent or treat the most important causes of child death, especially timely initiation, exclusive breast feeding up to 6 months and ideal complementary feeding later, avoiding prelacteal feeds, essential immunizations, vitamin A supplementation, birth spacing, improve hygiene and sanitation, disease prevention and treatment (Sholeye, Abosedo, and Salako 2015; USAID 2017; EHNRI 2013). According to WHO 2012 report 6.9 million under five children were died globally in 2011, an estimated 1 million lives could have been saved by exclusive breastfeeding (Danso 2014). Exclusive breastfeeding stands out as the least expensive and most effective intervention for child survival (Ali 2014; EHNRI 2013). However, in developing countries, only 37% of children less than 6 months of age are exclusively breastfed (USAID 2017). Due to low quality of child health services, poor socio-economic conditions, and low level of maternal education and inadequate dietary intake, early childhood morbidity and mortality in several Sub-Saharan African countries have been unacceptably high. About 24% of children less than 5 years were reported to be moderately or severely underweight in sub-Saharan Africa. In eastern and southern Africa, the situation is almost alike, with 23% of under-fives being moderately or severely underweight (Sholeye, Abosedo, and Salako 2015; Kever et al. 2014). Mothers' employment, length of maternity leave, inadequate knowledge on breast feeding, negative attitude towards EBF, late initiation of breast feeding, prelacteal feeding, absence of ANC follow up, lack of social support and absence of self confidence in breast feeding are factors related with exclusive breastfeeding (USAID 2017; Wan et al. 2015). Different researches have shown that mothers with poor knowledge of EBF exhibit negative attitude about EBF and these accounts for the low rate of the practice (Wan et al. 2015; Ali 2014; USAID 2017). The key to successful breastfeeding is information, education and communication systems aimed at behavior change. Health information and education greatly influenced mothers' knowledge, attitude and practice towards EBF (USAID 2017). Even though mothers can get information from different sources, the role of the health care professionals are significant in providing women with the information they need to make them accept and practice EBF (Ali 2014; Akinyinka, Olatona and Oluwole 2016; Wan et al. 2015; USAID 2017). In Ethiopia less than five years children mortality has dropped half from 166 deaths as of 1000 live births in 2000 to 88 deaths per 1000 live births in 2011. Likewise, the percentage of malnutrition in less than five years children has also dropped significantly in the previous ten years. For example, the rate of stunting dropped from 58% in 2000 to 44% in 2011 and the ratio

of underweight has again reduced from 41% in 2000 to 29% in 2011 (EHNRI 2013). Even though inspiring results in the reduction of under-five morbidity and mortality, the rate of timely initiation of breastfeeding, reduction of prelacteal feeding and exclusive breast feeding practices have still less improved specially among rural communities of Ethiopia in the past decade (USAID 2017; EHNRI 2013). Therefore, the present study was designed to evaluate the practice of mothers towards exclusive breastfeeding and identifying its determinants in southern Ethiopia.

Materials and Methods

Study setting and sample

A community based cross sectional study was conducted from August to September 2017 in the rural community of Anlemo district, southern Ethiopia. According to the last census (Central Statistical Authority 2007), projection for 2017 the district has a total population of 89,319 with 2,879 children's under one, 7,422 under three, 13,945 under five and 3,090 mothers at fertility age. Five health centers and 27 health posts are giving service to the community in the district. Fifty healthcare staffs are engaged in the health centers and 54 female health extension workers are also allocated to implement the health extension program at the community level. Both quantitative and qualitative methods were used to collect data through face to face interview of mothers of index infant from 0 to 6 months age. Forty five key informants were selected purposively from range of backgrounds for in-depth interview on exclusively breastfeeding perceptions and practices. The sample size was determined by using a single population proportion formula, $((z_{\alpha/2})^2 \cdot p(1-p)/d^2)$ by considering the proportion of exclusive breastfeeding 50%, with a margin of error of 5% at the 95% confidence level, a design effect of 1.5 and adding 5% non-response rate, the final sample size was calculated to 605. The multi-stage sampling method was used to select the study participants. In the first stage, 8 kebeles were randomly selected by lottery method from 27 rural kebeles in the district. Then, the sample was proportionally allocated to the selected kebeles. In the second stage, households with mothers having infants from 0-6 months were selected systematically (K^{th}) interval from health extension registration book. The next respondents were identified systematically forwards by adding cumulatively (K^{th}) intervals to the first randomly selected participant. We have randomly selected one mother if there were more than one eligible child with different mothers.

Measurement

The quantitative data were collected using structured questionnaire, and the in-depth interview guide for qualitative data were developed after reviewing different literature (Sitko 2013; USAID 2017; EHNRI 2013). A structured questionnaire was used to collect data on the socio-demographic characteristics, maternal and child characteristics, knowledge on breastfeeding, traditional beliefs and practices about infant feeding. In-depth interview guide was also used to create explanations of women's knowledge, attitude and practices related to infant feeding. The main target of the in-depth interview was to capture mothers' first-hand knowledge, attitude and practices about EBF. The questionnaire was prepared in English and translated to local

language “Hadiyisa” and retranslated to English language by different independent language experts to confirm the reliability and content of translation. Eight diploma Nurses for data collection and two Bachelor of Science nurses were recruited for supervisors. Two days training was given; this mainly dealt with the purpose of the study, handling ethical issues during data collection, and the technique of data collection using the prepared questionnaires, field methods, inclusion–exclusion criteria and record keeping. Pre-testing was carried out on 5% of the sample population prior to actual data collection in a rural kebele having similar status to the study community, and corrections were made to the questionnaire based on the pretest findings. Sixteen five-point Likert scale items, from “strongly disagree” to “strongly agree” were used to assess women's knowledge and attitude to breastfeeding, containing respondents' knowledge and attitude to infants health, mother's health, cost effectiveness and effects on material relationship. The original Likert scale item was converted to a numeric scale (that means, 1, 2, 3, 4 and 5), with a higher score shows a higher participant's agreement with the item tested. The entire knowledge and attitude scores have been computed and indiscriminately classified at 2 levels: sufficient knowledge and positive attitude (score of 30.0 “75% of the total score of 40” and above) and insufficient knowledge and negative attitude (score less than 30.0) (Ali 2014). The computed variable has the mean 20.93 and a standard deviation of 4.551 for knowledge score and the attitude score has mean 23.99 and a standard deviation of 3.142. The Cronbach's alpha confirmed internal consistency of the item, which was put at 0.997 for knowledge, and 0.977 for attitude items.

Data analysis

The completed questionnaires were coded and entered in to Epi-data version 3.1 and exported to Statistical Packages for Social Sciences (SPSS) version 21.0 for analysis. The Likert scale items were re coded in to dichotomous variables to run binary logistic regression analysis. Frequency distribution, mean, standard deviation and percentage calculations were employed for most of the variables. Bivariate and multivariate logistic regressions analyses with 95% confidence interval (CI) were performed to test the statistical significance relationship between variables. First, crude odds ratios and 95% confidence intervals of each factor was done by using bivariate logistic regression to identify candidate variables for the multivariable model. Then, variables with P-value less than 0.25 in the bivariate analysis were selected for multivariable logistic regression. Finally, variables only P-value of less than 0.05 in multivariable analysis were taken as significance and included in the final model. The qualitative data was analyzed by coding or tagging, organizing, probing, and comparing of the ideas. On the end of the discussion, participants were asked to provide records on final narrative. Once data are tagged or coded by theme, we sought the patterns among the themes. This might means understanding what kinds of people or conditions led to certain themes (Sitko 2013). Responses were categorized under the themes and subthemes using an open coding system and the results were presented by narrative in triangulated with the quantitative outcomes by well-said verbatim of the study participants as illustrations.

Operational Definitions

Attitude

Attitude was measured by asking 8 five point likert scale items. The total score has been computed and classified at 2 levels: Those who answer 75% and above were considered as positive attitude and below 75% were considered negative attitude (Ali 2014).

Exclusive Breastfeeding

Defined as infant is given its whole nutrient from human breast milk only and takes no even water, other liquids, tea, herbal preparations or any complementary foods for the first six months of life with the exception of vitamins, mineral supplements or medicines if indicated (Regassa 2014)

Early initiation

For this study it is defined as according to world health organization (WHO) recommendations the proportion of children put to the breast within the first hour of birth and ensures the infant receives colostrum (Sanusi et al. 2016; USAID 2017).

Knowledge

Knowledge was measured by asking 8 five point likert scale questions. The total score has been computed and classified at 2 levels: Those who answer 75% and above were considered as sufficient knowledge and below 75% were considered insufficient knowledge (Ali 2014).

Prelacteal feeds

Non-breast milk foods or any liquid or solid food given to infants before breastfeeding is initiated (USAID 2017).

Traditional practice

It is the way of doing something that has existed for a long time in a particular group of societies as a religious or cultural belief (Ella et al. 2016 and Keever et al. 2014).

Ethical considerations

Ethical approval was obtained from Jimma university ethical clearance committee then letter of support from department of health education and promotion. Before data collection verbal consent was obtained from each participant.

Results

Socio demographic characteristics

A total of 591 mothers participated in this study, making the response rate of 97.7%. Four in ten (40.8%) of the participants were aged 26-35 years of age. About one-third (37.4%) of the respondents had children aged 60-120 days. The majority 469 (79.3%) of the participants were married. More than half (55.2%) of the respondents were Christian followers. Concerning educational level the majority 240 (40.6%) of the participants were illiterate. Three hundred thirty three (56.3%) of mothers were house wife. Forty four percent of respondents had

husbands who completed elementary school. Two-thirds (65.8%) of participants had one to two children. Around 248 (42.0%) of mothers had at least 4 ANC visits. About half of the respondents (53.5%) of deliveries conducted in the home. The majority 475 (80.4%) of mothers had normal vaginal delivery (**Table 1**).

Table 1. Socio demographic characteristic of mothers in Anlemo district, Southern Ethiopia, 2017.

Variables	Number	Percent
Mother's age (in years)		
≤25	176	29.8
26-35	241	40.8
>35	174	29.4
Infants age (in days)		
0-60	179	30.3
61-120	221	37.4
121-180	191	32.3
Marital Status		
Married	469	79.3
Divorce	73	12.4
Widow	49	8.3
Religion		
Christian	326	55.2
Muslim	211	35.7
Others	54	9.1
Educational Level		
Illiterate	240	40.6
Elementary	209	35.4
Secondary & above	142	24.0
Occupation (mother's)		
Farmer	135	22.8
House wife	333	56.3
Governmental	59	10.0
Merchant	64	10.9
Husband's educational level		
Illiterate	139	23.5
Elementary	261	44.2
Secondary & above	191	32.3
Infant's birth order		
1-2	389	65.8
≥3	202	34.2
ANC attendance		
No	100	16.9
1-3	243	41.1
≥4	248	42.0
Place of delivery		
Home delivery	316	53.5
Institutional delivery	275	46.5
Mode of delivery		
Normal vaginal delivery	475	80.4
Caesarian section	116	19.6

Knowledge and attitude of mothers to EBF

More than half (55.8%) of the mothers agreed that breast gives the baby all the needed nutrients during the first six months of life. One thirds (37.2%) of the respondents agreed that EBF infants have fewer diarrheas and BF helps for quicker recovery during illness. About half (54.3%) of the mothers disagreed that formula fed babies are more intelligent than breastfed babies. Regarding the attitude of mothers the majority (65.5%) agreed with EBF leads to child malnourishment. Above half (58.3%) disagreed that BF is stressful and boring to mothers (Table 2). Regarding the overall knowledge and attitude of mothers, the majority 344 (58.2%) of the participants hadn't sufficient knowledge about EBF, and only 222 (37.6%) of mothers had positive attitude to practicing EBF confidently (**Figures 1,2 and Table 2**).

Practice of mothers to exclusive breastfeeding

The majority 366 (61.9%) of respondents were educated about EBF. Among this figure around half (50.8%) of them had heard from health professionals. However, only 186 (36.7%) of them knew correct meaning of EBF. Among the total participants, 256 (43.3%) of them believe that EBF is giving the baby breast milk and clean water for the first six months. The majority 395 (66.8%) of mothers hadn't planned to EBF before birth. Only 88 (14.9%) of the mothers exclusively breast fed. About forty five percent of those who exclusively breastfed had children aged 0 to 60 days. The majority 397 (67.2%) of the mothers didn't initiate breast feeding in the first hour of delivery. About half of the respondents, 314 (53.1%) of the respondents offered prelacteal feeds, and their traditions was the main reported cause 197 (62.7%). One hundred ninety three (32.6%) of the mothers were developed breast problem. However, the majority 104 (53.9%) of them didn't stop breast feeding during the breast problem. About 382 (64.6%) of the babies have ever been sick. Among the sick, 265 (69.4%) of them didn't continue breast feeding. Regarding feeding frequency, the majority 256 (43.3%) of the respondents fed their baby less than 6 to 8 times per day. About 266 (45.0%) of less than five years children fed approximately for less than 20-30 min length of time for each BF. Only 108 (18.3%) of the mothers had regular feeding intervals whether a baby seems hungry or not (**Table 3**).

Factors associated with exclusive breast feeding practice

Age of infants [AOR: 0.41, 95 % CI: (0.15, 0.91)], Knowledge of mothers towards EBF [AOR: 2.04, 95 % CI: (1.65,7.07)], ANC attendance [AOR: 5.74, 95 % CI: (1.88,9.12)], attitude of mothers [AOR: 4.41, 95 % CI: (2.98,9.43)], initiation time of BF [AOR: 0.39, 95 % CI: (0.12,0.84)], and prelacteal feeds [AOR: 3.50, 95 % CI: (1.43,9.76)], were statistically significant variables in the multivariable logistic regression analyses (**Table 4**).

Discussion

In this study only 88 (14.9%) of mothers have practiced exclusive breastfeeding. This study was comparable with the study done in Hong Kong, 13.4% (Leung et al. 2006), In the United States, 13.3% (Ali 2014), in Mosul City, 15.0% (Al-hially 2010), and the Nigeria

Table 2: Knowledge and attitude towards exclusive breast feeding among mothers in Anlemo district, Southern Ethiopia, 2017.

Items	SA		A		N		D		SD	
	N	%	N	%	N	%	N	%	N	%
Knowledge and attitude items										
Knowledge										
BF gives the baby all the needed nutrients during the first six months of life	113	19.1	217	36.7	10	1.7	105	17.8	146	24.7
EBF infants have fewer diarrheas and BF helps for quicker recovery during illness	75	12.7	145	24.5	23	3.9	195	33.0	153	25.9
Formula fed babies are more intelligent than breastfed babies	108	18.3	129	21.8	33	5.6	170	28.8	151	25.5
BF does not protect the mother against ovarian and breast cancer	161	27.2	216	36.5	-	-	148	25.0	66	11.2
BF does not protect the mother against postpartum hemorrhage	112	18.9	188	31.8	42	7.1	164	27.7	85	14.4
BF helps mothers to lose weight	128	21.6	201	34.0	9	1.5	142	24.0	111	18.8
BF reduce infant mortality due to common childhood illness	200	33.8	217	36.7	38	6.4	83	14.0	53	9.0
EBF is needed up to 6 month	135	22.8	263	44.5	-	-	137	23.2	56	9.5
Attitude										
BF is stressful and boring to mothers	68	11.5	167	28.2	11	1.9	181	30.6	164	27.7
BF causes pains in the nipple	118	20.0	188	31.8	31	5.2	159	26.9	95	16.1
EBF leads to child malnourishment	130	22.0	257	43.5	-	-	138	23.3	66	11.2
EBF reduces family expenses	167	28.2	205	34.7	-	-	105	17.7	114	19.3
EBF makes infants uncomfortable	93	15.7	140	23.7	7	1.2	215	36.4	136	23.0
EBF makes the child very healthy	153	25.9	176	29.8	2	0.3	150	25.4	110	18.6
Prelacteal feed helps the baby	95	16.1	148	25.0	31	5.2	159	26.9	158	26.7
Colostrum is bad for infants health	114	19.3	203	34.3	1	0.2	139	23.5	134	22.7

SA: strongly agree, A: agree, N: neutral, DA: disagree, SD: strongly disagree

Demographic and Health Survey (NDHS) in 2013 reported an exclusive breastfeeding rate of 17.0% (Akinyinka, Olatona and Oluwole 2016). This finding was higher than the study conducted in different areas. Lower percent of exclusive breastfeeding practice were reported from mothers attending primary health care center in Saudi Arabia (7.3%), and much smaller proportions were listed from other regions of Saudi Arabia: in Riyadh only (0.8%) of children were exclusively breastfed for the first four to six months, and the amount increases to (1.7%) among babies at the age of six months in Jeddah (Ali 2014; Mahmoud et al. 2014). In rural area of Uttaranchal only (5.1%) of children were exclusively breastfed for the first six months, and in Orissa (8.6%) of respondents continued exclusive breast feeding up to six months of life (Shaili et al. 2012). In the city of Feira de Santana, Brazil only (6.5%) of exclusive breastfeeding prevalence was stated (Vieira, Silva, and Vieira 2003). In Dhaka Slums, Sholeye et al. (2015) reported (5.0%) of exclusive breastfeeding rate at six months of age while in the first month of life much higher mothers practiced it (53.0%) (Sholeye, Abosede, and Salako 2015). Another finding showed a prevalence of (3.3%) at six months of age among the first-time Chinese mothers whereas the proportion increased to (34.2%) at four months of age (Wan et al. 2015). Much higher prevalence were reported from different regions, in Kumasi Metropolis, Ghana (48.0%) (Danso

2014), in Calabar municipal, in Nigeria urban mothers (24%) (Ekanem 2012), in Egypt (68.0%) (Mahmoud et al. 2014), in Malaysia (44.1%) (Alina, Manan, and Isa 2013), and around fifty percent was reported in Kwango district, Democratic Republic of the Congo (Bekere et al. 2014). These differences could be due to the variation in beliefs, traditions, and awareness towards child feeding among regions regarding EBF practice, the level of development in relation to education, health information dissemination and communication. According to world health organization recommendation breastfeeding should be initiated within one hour of delivery (WHO 2003; Sanusi, Leshi, and Agada 2016; USAID 2017). However, in this study only 194 (32.8%) of mothers' commenced breastfeeding within an hour, and prelacteal feeds were practiced by 314 (53.1%) of participants. Different studies showed that late initiation of breastfeeding and giving prelacteal feed may be due to mother's illiteracy, home delivery, wrong beliefs, lack of knowledge towards infant feeding, less milk secretion, fractured or inverted nipples, fear of previous nipple pain, mother too tired to feed; and baby was sleeping or sick (Shaili et al. 2012; Yeneabat, Belachew, and Haile 2014). The most important reasons mentioned in the present study were family beliefs and traditions 197 (62.7%), some perceived that breast unable to secrete milk on time 119 (30.0%), nipples pain 108 (27.2%), believed that clostridium isn't good for infants 91

Table 3 Mother's practice towards exclusive breast feeding in Anlemo district, Southern Ethiopia, 2017.

Variables	Frequency	Percent
Have you ever heard about EBF?		
Yes	366	61.9
No	161	27.2
I don't know	64	10.8
If yes, where did you first learn about EBF, n=366?		
Health professionals	186	50.8
Mass media	53	14.5
Friends or family	127	34.7
What is the meaning of EBF?		
Giving the baby breast milk alone for six months	217	36.7
Giving the baby breast milk and infant formula	94	15.9
Giving the baby breast milk and clean water	256	43.3
Others	24	4.1
Have you planned EBF?		
Yes	196	33.2
No	395	66.8
Did you EBF your child?		
Yes	88	14.9
No	503	85.1
EBF by age (n=88)		
0-60 days	40	45.4
61-120 days	27	30.7
121-180 days	21	23.9
Did you initiate breastfeeding in the 1st hour of delivery?		
Yes	194	32.8
No	397	67.2
If no, why (n=397)?		
Clostridium is not good	91	22.9
Nipples pain	108	27.2
Breast milk did not flow on time	119	30.0
Baby was sick or sleep	79	19.9
Did you offer prelacteal feeds?		
Yes	314	53.1
No	277	46.9
If yes, why (n=314)?		
It is our tradition	197	62.7
It is good for the infant	117	37.3
What was given (n=314)?		
Butter	172	54.8
Water	127	40.4
Other	15	4.8
Did you develop breast problems?		
Yes	193	32.6
No	398	67.3
Did you stop breastfeeding during the breast problem (n=193)?		
Yes	89	46.1
No	104	53.9

Variables	Frequency	Percent
Has your child ever been sick?		
Yes	382	64.6
No	209	35.4
Did you continue to BF even when the baby was sick (n=382)?		
Yes	117	30.6
No	265	69.4
If you are BF, how many times do you feed your baby per day?		
<6-8 times	256	43.3
≥6-8 times	179	30.3
I didn't remember	156	26.4
What is the estimated length of time for each BF?		
<20-30 min	266	45.0
≥ 20-30 min	174	29.4
I didn't remember	151	25.5
When do you feed your baby?		
When baby seems to be hungry or crying	367	62.1
At regular intervals whether baby seems hungry or not	108	18.3
When the breasts engorge	116	19.6

BF: breastfeeding, EBF: exclusive breast feeding

(22.9%), baby was sick or sleep 79 (19.9%), and some of them believe that prelacteal feed is good for infants 117 (37.3%). This finding was supported by qualitative result as four house wives and two farmer mothers stated "...we didn't remember the exact initiation time after delivery, but we didn't initiate breast milk immediately after delivery because we were tired and the baby was also sleep". And a 29 age merchant mother reported "...I was delayed to initiate breast feeding because we were busy with different activities such as cleaning the baby, cutting umbilical cord, and clothing him". In addition, three government employee mothers reported "...we deferred to start breastfeeding since we were fear of nipple pain, and we perceived that breast milk start to flow by itself without be sucked by the baby." In the study area it's very common beliefs that, child takes prelacteal feed like butter and water for his/her healthy life. This indicates that population of rural areas of Anlemo district believe more in traditions. Butter 172 (54.8%), and water 127 (40.4%) were the most popular prelacteal feeds used in the community. This finding was also supported by qualitative result as a 37 years merchant and 45 years government employee mothers reported "...some of we mothers in our kebele are giving very fresh butter to our newborn immediately after birth in addition we drop pure water in to his or her mouth with our fingers. These things make the child very healthy because it will wash and clean him from different dirty fluids inside him and it can also prepare the baby to suck the breast well." In addition a 26 age health extension worker reported "...most of mothers were informed from us (health extension workers) and from 1 to 5 group leaders, so they already know the risk of giving prelacteal feeds, but some mothers practiced it especially when they delivered in their home with traditional birth attendance because they believe with their traditions." Mothers' with infant age 121-180 days were 60% less

Table 4 Factors associated with EBF practice, using multivariable logistic regression model, Anlemo district, Southern Ethiopia, 2017.

Variables	EBF		OR(95% C.I)	
	Yes	No	COR,(95% C.I)	AOR, (95% C.I)
Age of infants (in days)				
0-60	59	120	1	1
61-120	18	203	0.59(0.16,0.83)	0.53 (0.16,7.89)
121-180	11	180	0.52(0.18,0.97)	0.41(0.15,0.91)
Knowledge towards EBF				
Insufficient	13	331	1	1
Sufficient	75	173	2.88(1.13,11.60)	2.04(1.65,7.07)
ANC follow up				
No	2	98	1	1
1-3	32	211	1.99(1.22,5.67)	2.44(0.79,4.61)
≥4	54	194	5.96(1.11,6.90)	5.74(1.88,9.12)
Attitude to EBF				
Negative	9	360	1	1
Positive	79	143	4.57(2.15,11.60)	4.41(2.98,9.43)
Early initiation				
Yes	55	139	1	1
No	33	364	0.37(0.10,0.76)	0.39(0.12,0.84)
Prelacteal feeds				
Given	20	294	1	1
Not given	68	209	3.65(1.05,9.65)	3.50(1.43,9.76)

Multivariable model: Adjusted for mother's age, mother's occupation, marital status, mothers educational level, religion, birth order, mode of delivery, husband's educational level, number of children, breast problem, infant health, feeding frequency, place of delivery, plan of EBF, and length of feeding

likely practice exclusive breastfeeding compared to those who have baby of age 0-60 days. This result was comparable with different findings (Agho et al. 2011; Alemayehu, Haidar, and Habte 2005). This finding also supported by qualitative result as a 40 year farmer mother reported “...we weren't feeding our infants exclusively breast milk after 2 or 3 months because it can't enough to him and even before graduating one month we gave fresh butter and clean water make him healthy by avoiding abdominal cramp and dryness during defecation.” And two house wives stated that “...it is impossible to feed only breast milk up to six months as we informed from health workers because our breast milk will reduce its milk production after three or four months but to the opposite the baby needs more food than before, so he crying, and open his mouth when we eat...” In addition a 32 years old farmer mother and two governmental worker mothers reported “...we couldn't continue exclusive breast feeding after two months, we practiced complimentary feeding such as cow milk, even at one month of life to encourage and acclimate him to take foods later on.” Another important finding of this study was that, the odds of exclusive breast feeding practice among mothers with sufficient knowledge and positive attitude were 2.0, 4.4 times more practiced exclusive breast feeding compared to their counterparts respectively. This result was in line with different studies. In Ethiopia, mothers with high knowledge of breastfeeding had more than 3 times higher odds of EBF compared with mothers with low knowledge of breastfeeding (Egata, Berhane, and Worku 2013), and in Tanzania, mothers with “good” breastfeeding knowledge had more than 2 times higher odds of EBF compared with those with poor knowledge (USAID 2017). Chinofunga and Matiashe (2013),

showed that maternal negative attitude caused interruption to exclusive breastfeeding among Vungu, Zimbabwe mothers. Therefore, the more the positive attitude towards EBF may indicate the more she is likely to practice exclusive breastfeeding (Sholeye, Abosede, and Salako 2015; Wan et al. 2015; Chinofunga and Matiashe 2013). Mothers who attend ANC 4 and above were 5.7 times more likely practice EBF compared with mothers who didn't attend ANC or mothers had ANC 1-3 attendance. Different studies found a positive association between ANC attendance and EBF practice since ANC provides an opportunity to counsel women on EBF (USAID 2017). It is the most appropriate time to inform and help mothers to plan and decide EBF before birth. In Nigeria, a study found that women who attend any ANC visit were 2.0 times more likely to practice EBF than those who didn't attend (Ugboaja et al. 2013), and in Kenya, women attending four or more ANC visits had 4.0 times more likelihood of practicing EBF than women who attended fewer than four ANC visits (USAID 2017). This study also identified that, late initiation and prelacteal feeding significantly reduced the odds of exclusive breast feeding practice. Mothers who didn't initiate breast feeding within an hour after birth were 60% less practice EBF compared with their counterparts. This might be due to the fact that mothers had good awareness about early initiation and also they had good awareness about EBF. Besides, early initiation of breastfeeding is more common among children whose mothers were assisted at delivery by a health professional than among children delivered at home and so, they might get professional counsels. Mothers who didn't give prelacteal feeding were 3.5 more practice EBF than mothers gave prelacteal feed. The reason for this could be mothers who have practiced prelacteal feeding might be less

knowledgeable about the time frame of initiating breast feeding and period of EBF, they might not be attend ANC and counseled about EBF and also they might be delivered at their home by traditional birth attendants. This finding was agreed with different studies (Premlata et al. 2014; Tewabe et al. 2017; USAID 2017).

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Conclusion

In conclusion, this study reported low rate of exclusive breast feeding practice compared with other findings in Ethiopia. Exclusive breast feeding practice may be enhanced by advancing mothers' knowledge and attitude through education and counseling about benefits of exclusive breast feeding especially during ANC session, and by avoiding late initiation and traditional prelacteal feeding practices among the rural community.

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Competing Interests

The authors have declared that no competing interests.

Data Availability

The data will be available upon request.

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Authors' Contributions

BE, AL, AT and TE developed the concept and method, collects data and drafts the manuscript, analyzed and interprets the data.

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