



Research article

Exclusive breastfeeding practice and associated factors among first-time mothers in Bahir Dar city, North West Ethiopia, removed: A community based cross sectional study



Tilksew Ayalew*

Department of Child Health Nursing, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia

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ABSTRACT

Background: Breastfeeding can offer the ideal food for infants. It contains all the necessary nutrients for the growth and development of infants and antibodies that can protect from many childhood illnesses. Understanding the extent of, and barriers to exclusive breastfeeding in Ethiopia is important for learning how to best improve level of exclusive breastfeeding. No single study has been conducted on first-time mothers in the country. . Therefore, this study aimed to assess prevalence of exclusive breastfeeding practice and associated factors among first-time mothers in Bahir Dar city, North West Ethiopia.

Method: A community-based cross-sectional study was conducted from March to April, 2016 among (n = 400) randomly selected first-time mothers in Bahir Dar city, northwest Ethiopia. Data were collected using structured interviewer-administered questionnaire and analyzed using SPSS version 20., bivariate and multivariate logistic regression analyses were carried out. Odds ratio with 95% confidence interval was used to measure the strength of association. Statistical significance was declared at P -value <0.05.

Results: Prevalence of exclusive breastfeeding practice 24 h before the survey was 57.3% (95%CI: 52.3%–62%). Mothers not being married (aOR = 2.79, 95 %CI: 1.08, 7.17), supported by their husband (aOR = 4.15, 95%CI: 2.13, 6.28), with no breast complication (aOR = 3.66, 95% CI: 2.13, 6.28), who had four or more antenatal care (aOR = 2.51, 95%CI: 1.49, 4.23) were more likely to practice exclusive breastfeeding.

Conclusion: A significant proportion of mothers had a low level of exclusive breastfeeding practice that was lower than the national recommended level. Mothers not being married, supported by their husbands, with no breast problems who had four or more antenatal care visits were more likely to practice exclusive breastfeeding. These results suggest that multi-sectorial and multi-disciplinary approaches are needed to increase exclusive breastfeeding in the first-time mothers.

1. Introduction

Optimal breastfeeding especially exclusive is the most important nutritional intervention to tackle child death and illnesses. EBF is considered as core practice to achieve a 2030 sustainable development agendas, specifically SDG 2-which focuses in ending hunger and improving nutrition worldwide; SDG3-which focuses in reducing child, and maternal mortality, and improving health for all people globally.

Breastfeeding can offer the ideal food for infants. It contains all the necessary nutrients for the growth and development of infants and antibodies that can protect them from many childhood illnesses [1, 2]. The World Health Organization and United Nations Children's Fund

recommended exclusive breastfeeding, which entails feeding infants with breast milk only, including expressed breast milk, and excluding water, other liquids, breastfeeding substitutes, and solid foods for the first six months of life. Thereafter, adequate complementary foods are introduced, and breastfeeding continues up to two years and beyond [1, 2, 3]. Besides facilitating the achievement of optimal growth and development, EBF reduces the occurrence of major causes of childhood, such as diarrheal diseases and acute respiratory infection [4]. Globally, Sub-optimal breastfeeding is responsible for 45% of neonatal infectious deaths, 30% diarrheal deaths and 18% acute respiratory infection deaths in children less than five years of age. Mortality rate in non-exclusive

* Corresponding author.

E-mail address: jonnyayu@mail.com.

breastfed infants is 14.4 times higher than exclusive breastfed infant [5, 6].

Even though the Ethiopian Health Sector Transformation Plan had planned to increase the proportion of exclusive breastfeeding to 70% by the end of 2020, only 58% mothers breastfed exclusively [7]. Moreover, 38%, 10% and 24% of children younger than 5 years of age were growth stunted, wasted and underweight, respectively [8]. The corresponding data were worse in Amhara region, northwest Ethiopia where 46% of children younger than 5 years of age had stunting, 10% were wasted and 28% were underweight [8]. Stunting, wasting, and underweight were defined as children having *z-scores* of less than 2 *standard deviations* for height-for-age, weight for height and weight for age respectively [8, 9].

Despite the public benefits of exclusive breastfeeding are well documented, the global rate of exclusive breastfeeding remains low (40%) [10]. It ranged between 23.7% in central Africa to the highest of 56.57% in Southern Africa [10]. In Ethiopia, previous studies demonstrated that the rate of exclusive breast feeding ranged between 29.3% Addis Ababa, Ethiopia to 81.1 % in Afar region, Ethiopia [11, 12, 13, 14, 15, 16, 17, 18, 19].

Previous studies in different settings have documented that different factors that affect exclusive breastfeeding. For example, marital status, antenatal care follow up, husband support, and breast problems, age of mothers, cultural and economic factors were found to affect exclusive breastfeeding [13, 14, 15, 16, 20, 21, 22, 23, 24, 25].

Although a considerable volume of volume of literature has been published on exclusive breastfeeding, little is known about exclusive breastfeeding in the first-time mothers' population. In Ethiopia where this study has been conducted, no single study has demonstrated the practice and associated factors of exclusive breastfeeding on the first-time mothers. First-time mothers might have several perceptions about breastfeeding based on what they have seen or heard from their community.

Despite they have the intention to breastfeed, many challenges and barriers of breastfeeding could force them to deviate from exclusive breastfeeding and restore to other feeding options [23]. Most of them could feel unskilled and unable to decide on their infant feeding options. A previous study from Kenya demonstrated that first time mothers were less likely to practice exclusive breastfeeding [24]. Successful breastfeeding practice in a first pregnancy was found to be a predictor of subsequent success breastfeeding practice [11, 13, 14, 16, 17, 19, 25, 26, 27, 28, 29, 30].

Therefore; the aim of this study was to assess the prevalence of exclusive breastfeeding and associated factors among first-time mothers with infants less than six months old in Bahir Dar, Northwest Ethiopia.

2. Methods

2.1. Study area and setting

This study was conducted in Bahir Dar city administration which is the capital city of Amhara Regional State from March to April, 2016. Bahir Dar city is located 578 km northwest of Addis Ababa, the capital city of Ethiopia Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia, the city has a total population of 221,991, of whom 49% are men and 51% are women. From female population, around 66% were reproductive age groups. The city has nine administrative sub cities. It has one public specialized referral hospital, one public general hospital, two private hospitals, ten health centers which give services for the population of the city [31, 32].

2.2. Study design, and population

A community-based, cross-sectional study design was used to assess exclusive breastfeeding practice of first-time mothers living in Bahir Dar

city administration. Randomly selected first-time mothers between the age of 15 and 49 years of age, having infants younger than six months of age (0–6 months), and who live at list for six months in Bahir Dar city were eligible for recruitment. First-time mothers who lived less than six months in Bahir Dar city, who are critically ill or unable to communicate, who were under 16 years old without parents or guardians were excluded.

2.3. Sample size and sampling technique

A total sample of 423 first-time mothers were selected using stratified sampling technique. . Sample was calculated using single population proportion formula by considering the following assumptions; $P = 50\%$; to get maximum sample size to represent the community; a 95% confidence interval (CI); a tolerable error of 5% and an anticipated 10% non-response rate. First, a total of 2500 mother-infant dyads of first-time mothers were accessed and listed from Health Information System (HIS) of Bahir Dar city health bureau in collaboration with the local health extension workers of the city administration. Then, this 2500 first-time mother-infant dyads were sorted and listed in their respective sub-city (*Tana, Belay Zeleke, Hidar11, Fasilo, Gingot20, Gish Abay, Shumabo, Shimb, and Sefeneslam in local language*). Besides, the total sample size ($n = 423$) was proportionally allocated to size to each sub-city. Finally, the study participants were selected from each sub-city by using simple random sampling method i.e. lottery method. The actual age of the infant was determined by asking the mother and reviewing the birth certificate card.

2.4. Data collection and data quality assurance

Data were collected using a pre-tested, structured, and interviewer-administered questionnaire which was adopted from previous studies [14, 30, 33, 34]. A 24 h recall infant diet method was used to determine the practice of exclusive breastfeeding. First, the English version of the questionnaire was prepared. Then, language experts translated it to local language (*Amharic*) and back to English to check consistency and accuracy. Three diploma nurses and two Bachelor of Science nurses were recruited as data collectors and supervisors respectively. To ensure data quality, training was given for supervisors and data collectors for two consecutive days on the overall content of questionnaire, how to approach participants and data collection process. Assigned supervisors closely managed the data collection process. Pre-test was done on 5% of the calculated sample size of women out of study area and readjustment was done on the questionnaire.

2.5. Measurement

2.5.1. Variables

The dependent variable was exclusive breast feeding practice, and the independent variables were sociodemographic characteristics, maternal health care service utilization, breastfeeding-related factors, information on breastfeeding, knowledge of exclusive breastfeeding, and barriers and supporting system of exclusive breastfeeding.

2.5.2. Operational definitions

Exclusive breastfeeding: Infant fed on only breast milk with the exception ordered medicines and vitamins by health professionals one day (24 h) before the survey was conducted [14].

Husband support: Husband who supports, encourages and promotes the mother's breastfeeding practice [23].

Nuclear family: A family composed of only father, mother, and children.

Extended family: A family composed from father, mother children and other relatives like grandparents.

2.6. Statistical analysis

The collected data were checked for completeness and consistency and then, coded and entered into EPI Info version 3.5.3 and transferred to SPSS version 20 for analysis. Descriptive statistics was used to summarize the socio-demographic characteristics and rate of exclusive breastfeeding. Bivariate logistic regression was performed to each independent variable with the dependent variable. Then, variables with p-value < 0.25 were included in multivariate logistics regression analysis. Strength of association was measured using odds ratio and 95% confidence intervals. Statistical significance was declared at P value < 0.05.

3. Results

3.1. Sociodemographic characteristics

All participants in this study were first time mothers living in Bahir Dar city. From 423 eligible first time mothers, 400 were interviewed in this study making the response rate 95.0%. The mean age of mothers was 26 years with standard deviation of (SD ± 4.08). More than half of participants (52.2%) were between the age of fifteen and twenty years old. Above two third (69%) of mothers were from Orthodox Christianity religion. The majority of study participants (87.3%) were from the Amhara ethnic group. Regarding educational status nearly one-third of mothers (33%) were not educated at all while another one-third of mothers (31.5%) were educated at college and above levels. Almost half of infants (53.5%) were male babies and (52.5%) were aged between 0-90 days. The average household income of respondents was 221.294 \$US per month with a standard deviation (SD ± 125.675) (Table 1).

3.2. Maternal health service utilization and breastfeeding related factors

The majority of mothers (90.8%) attended antenatal care follow up and two-third of these mothers (60.2%) attended in health center. On the other hand, only one hundred thirty three (36.6%) attended more than three antenatal care visits. More than two-third of mothers (76.3%) received breastfeeding counseling during their antenatal care visits. Regarding delivery, the majority (93.8%) of mothers delivered in health institution and more than three-fourth 329 (82.2%) of mothers were delivered by normal/spontaneous vaginal delivery (Table2).

3.3. Exclusive breastfeeding practice and related factors

Prevalence of exclusive breastfeeding practice a day (24 h) before the survey was 57.3 % (95%CI: 52.3%, 62%), and more than two-third (65%) of mothers practiced timely initiation of breastfeeding. among. mothers who did not exclusively breastfeed, (18.3%) gave mixed feeding, (15.3%) gave predominant breastfeeding and (9.5%) gave formula feeding to their infant. The main reasons mentioned for non-exclusive breastfeeding were; lack of information about exclusive breastfeeding 133 (33.8%) and lack of time due to work demand (25.3%). Regarding breastfeeding information 86% of mothers were informed about breastfeeding. Concerning breast c problem, almost half of mothers (51.5%) faced some type of breast problem. Regarding supporting system of mothers and breastfeeding, around 357 (89.5%) were supported by their husband (Table2).

3.4. Factors associated with exclusive breastfeeding practice

After adjusting confounding factors, marital status, number of ANC visits, husband support, and breast problem remained significant in multivariate logistic regression analysis at p-value <0.05. Marital status was found significantly associated with EBF. Participants who were not married were almost 3-folds more likely to practice exclusive breastfeeding (aOR = 2.79, 95 %CI: 1.09, 7.17) compared with married participants. Similarly, participants who had four or more antenatal care

Table 1. Socio-demographic Characteristics of first-time mothers having infants less than 6 months old, in Bahir Dar City, Northwest Ethiopia, 2016.

Variable	Category (n = 400)	Frequency	Percent (%)
Sex of infant	Male	214	53.5
	Female	186	46.5
Age of infant	0–90 days	210	52.5
	91–120 days	99	24.8
	121–150 days	39	9.7
	151–180 days	52	13
Age of mother	15–29 years	209	52.2
	30–49 years	191	47.8
Religion	Orthodox	276	69
	Muslims	95	23.75
	Others ^{1*}	29	7.25
Ethnicity	Amhara	349	87.3
	Oromo	33	8.3
	Others ^{2*}	18	4.4
Educational Level of mother	No formal education	132	33
	Primary school (1–8)	69	17.3
	Secondary school (9–12)	73	18.3
	College and above	126	31.5
Occupation of mother	employed	295	73.8
	Unemployed	105	26.2
Currently married	No	54	13.5
	Yes	346	86.5
Educational level of husband (n = 346)	Educate	155	44.8
	Uneducated	191	55.2
Husband occupation (n = 346)	Employed	185	53.5
	Unemployed	161	46.5
Type of family	Nuclear	325	81.2
	Extended	75	18.8
Household income ^{3*}	≤500 birr	3	0.75
	501–1499 birr	32	8
	≥1500 birr	365	91.25

Others 1* = Catholic, Protestant, Jehovah; Others2* = Tigrie, Agew, Gurage; 3* = 1 \$US = 17 Ethiopian Birr.

follow up visits were almost 2.5-folds more likely to practice exclusive breastfeeding (aOR = 2.51, 95%CI: 1.49, 4.23) compared with participants who had less than three ANC follow up visits. Husband support was also found to be significantly associated with EBF practice. Participants who were supported by their were four-folds more likely to practice exclusive breastfeeding (aOR = 4.15, 95%CI; 2.13, 6.28) compared to participants who were not supported by their husband. Furthermore, absence of breast problem was significantly associated with exclusive breastfeeding. Participants who did not face breast complication were 3.7-folds more likely to practice exclusive breastfeeding (aOR = 3.66, 95% CI: 2.13, 6.28) than mothers who faced breast problems (See Table 3).

4. Discussion

The prevalence of exclusive breastfeeding in this study area preceding 24 h of the survey was 57.3% which was lower than the national recommended level 70% [7]. It is consistent with studies conducted in; Motta town, Ethiopia 50.1% [14], Gahanna 64% [20], Debre Markos, Ethiopia 60.8% [29], Ecuador 62.8% [35] and Hawassa, Ethiopia 60.9% [16]. On the other hand, the result was higher than the studies done in; Indonesia 40% and 46% [36, 37] Saudi Arabia 43.9% [38], Nigeria 33.5% [39], Papua New Guinea 17% [40], Democratic Republic Congo 39% [41], Addis Ababa, Ethiopia 29.3% [11] and North West Ethiopia 30.7% [12]. However, the result was lower than studies conducted in;

Table 2. Maternal health service utilization and breastfeeding related factors first-time mothers having infants less than 6 months old, in Bahir Dar City, North west Ethiopia, 2016.

Variables	Category (400)	Frequency	Percent (%)
ANC follow up	Yes	363	90.8
	No	37	9.2
Place of ANC	Hospital	67	18.5
	Health Centre	222	61.2
	Private clinic	74	20.4
Number of ANC visits (n = 363)	≥4 visits	133	36.6
	<3 visits	230	63.4
Breastfeeding counselling (ANC) (n = 363)	Yes	277	76.3
	No	86	23.7
Place of birth	Health institution	375	93.8
	Home	25	6.2
Mode of delivery (n = 399)	Normal/vaginal	328	82.2
	Caesarian section	71	17.8
Husband support (n = 399)	Yes	357	89.5
	No	42	10.5
Informational status	Informed	344	86
	Not informed	56	14
Any breast complication	Yes	194	48.5
	No	206	51.5
Timely initiation of breastfeeding	Yes	260	65
	No	140	35
Infant feeding practice 24 h before the survey	Exclusive breastfed	229	57.3
	Predominant breastfed	61	15.3
	Mixed feeding	72	18.3
	Formula feeding	38	9.1
Who influenced you to give feedings other than breast milk (n = 374)	My own decision	92	24.6
	My husband	108	28.9
	My mother	76	20.3
	Mother in law	58	15.5
	Others *1	40	10.7
Colostrum feeding	Yes	365	91.2
	No	35	8.8
Reasons for not breastfed exclusively	Lack of information on EBF	135	33.8
	Lack of time due to work demand	101	25.3
	Insufficient breastfeeding	72	18
	Breast complication	55	13.6
	Maternal illness	37	9.3

ANC: Antenatal care; EBF: Exclusive breastfeeding; *1 = Friends, neighbors, other members of extended family.

Debre Birhan, Ethiopia 68.6% [17], Afar, Ethiopia 81.1% [19], Tigray, Ethiopia 70.2% [18], United States 73% [28] and India 87% [42]. The difference could be due to methodological variation, socio-cultural dissimilarity, and health care service utilization differences between the current study population and referenced population.

More than half of participants (52.2%) were between were young mothers (15–20) years old. This is because child marriage is common in Ethiopia [43]. Young mothers lack experience to raise their children including infant feeding [43]. Similarly, half of the mothers (51.5%) faced breast problems. This result suggests that lack of experience of breastfeeding could predispose first-time mothers to breast complications due to improper techniques of breastfeeding practice (Table). Previous studies have demonstrated that the most commonly attributed causes of breast problem are lack of experience, and improper techniques of breastfeeding [25, 27, 44].

Unexpectedly, participants who were not married were more likely to practice exclusive breast feeding compared with married participants. The finding is in line with a study done in Ethiopia [13] This could be due to birth related traditional practice of Ethiopian people. According to Ethiopian birth tradition, first-time mothers must go to the home of their

parents starting from the 8th month of pregnancy to prepare for birth. After birth, the mothers rest in their parents' house for 40 days and beyond with her infant, and the new mothers are never left alone [41]. This traditional practice gives an opportunity to new mothers to learn child care and breastfeeding practice skills. Usually, maternal grandmothers are responsible to transfer these skills to the new mothers [16]. Evidences from a systematic review from 85 cultural contexts in 48 countries showed that grandmothers play an important role in decision making related to maternal, and child health, including pregnancy, and delivery, newborn care and breastfeeding practice [14, 21, 45].

In this study, antenatal care was positively associate with exclusive breastfeeding practice. The result is consistent with studies done in; Nigeria [21] and Malawi [22]. This suggests that antenatal care has a significant impact on exclusive breastfeeding and mothers who attend antenatal care follow up could have a good opportunity to get nutritional counseling and education about infant feeding including exclusive breastfeeding. Previous studies demonstrated that health care professional support, breastfeeding education programs, breastfeeding promotion programs, and good access to health care in the antenatal period were reported as facilitator of exclusive breastfeeding [12]. Another

Table 3. Factors associated with exclusive breastfeeding among first-time mothers having infants less than six months in Bahir Dar City, North west Ethiopia, 2016.

Variable		Exclusive breastfeeding		COR (95%CL)	AOR (95%CL)
		Yes	No		
		(N& %)	(N& %)		
Sex of infant	Male	166 (77.6%)	48 (22.4%)	2.135 (1.380,3.304)	
	Female	115 (61.8%)	71 (38.2%)	1	
Maternal age	15–29	139 (66.5%)	70 (33.5%)	1	
	30–49	142 (74.3%)	49 (25.7%)	1.459 (0.946,2.251)	
Currently married	No	46 (85.2%)	8 (14.8%)	2.716 (1.240,5.948)	2.787(1.083,7.171)*
	Yes	235 (67.9%)	111 (32.1%)	1	1
No# of ANC follow up	≥4 visits	176 (76.5%)	54 (23.5%)	2.228 (1.405,3.533)	2.512(1.494,4.233)*
	<3 visits	79 (59.4%)	54 (40.6%)	1	1
Husband support	Yes	264 (73.9%)	93 (26.1%)	4.613 (2.370,8.980)	4.146(1.899,9.051)*
	No	16 (38.1%)	26 (61.9%)	1	1
Informational status	Informed	238 (69.2%)	106 (30.8%)	1	
	Not informed	43 (76.8%)	13 (23.2%)	1.473 (0.760,2.854)	
Breast problem	No	160 (82.5%)	34 (17.5%)	3.306 (2.082,5.250)	3.658(2.132,6.278)*
	Yes	121 (58.7%)	85 (41.3%)	1	1
Type of family	Nuclear	221 (68.0%)	104 (32.0%)	0.531 (0.288,0.980)	
	Extended	60 (80.0%)	15 (20.0%)	1	

* p-value <0.05 (significant); # = Number. Bolding indicates significance in multivariate regression.

study revealed that increased counseling efforts during antenatal care facilitates exclusive breastfeeding practice. Asfaw et al. concluded that the provision of infant feeding counseling during antenatal care, maintaining access to information on infant feeding through health institution and community health care system, and encouraging young mothers to practice exclusive breastfeeding through counseling can improve exclusive breastfeeding practice.

In this study, participants who were supported by their husband were found to practice exclusive breast feeding four times more likely compared with their counterparts. The finding is similar to the prior studies conducted in Motta, Ethiopia [14], United Kingdom [23] and Nepal [24]. This infers that husbands play an important role in the decision making about family and household affairs and which affects many aspects of family life including infant feeding practices. Previous study have revealed that husbands' support could improve the success of exclusive breastfeeding. On the other hand, a study from Nepal has demonstrate that mothers who received support from their husbands were ten times more likely to report confidence on breastfeeding than those who did not receive support [24]. A study from Kenya [27] has also evidenced that family support is a key factor in the success of exclusive breastfeeding with special focus on husband involvement.

Furthermore, participants without breast complication were found to practice exclusive breastfeeding about four times more likely compared with participants who had breast complication. The finding is in line with the studies done in Hawassa, Ethiopia [16], Zagazig, Egypt [25]. This finding suggests that in the absence of breast complication, mothers could continue to practice exclusive breastfeeding. This is supported by evidences from previous literatures which revealed that breast problem are the major barriers of exclusive breastfeeding [44]. A study from Thailand has documented that breast problems are the common reasons for non-exclusive breast feeding practice [46]. Another study from Australia [47] has shown that breast problem like persistent nipple pain are common reasons given by mothers for terminating exclusive breast feeding.

4.1. Limitation

This study has its own limitations. First, the study was cross-sectional in nature and that could not allow to determine causality. Second, men were not included in the study in spite of they have important role to play

in deciding infant feeding options. Third, the study did not assess the qualitative aspect of exclusive breastfeeding. Fourth, social desirability and recall bias could be introduced.

5. Conclusion

A significant proportion of first-time mothers had a low level of exclusive breastfeeding practice that was lower than the national and international recommended level. Mothers not being married, supported by their husbands, with no breast problems, and who had four or more antenatal care visits were more likely to practice exclusive breastfeeding. Health care workers should involve husbands in breastfeeding promotion and counseling programs, and give attention to mothers with breast problems. Health care program planners must work towards increasing antenatal care coverage. Finally, further interventional and longitudinal studies are needed to improve EBF among first-time mothers' population.

Declarations

Author contribution statement

T. Ayalew: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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