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

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ARTICLE INFO

Keywords:
Quality of life
Epidemiology
Obstetrics
Pregnancy
Public health
Reproductive system
PEDIATRICS
Exclusive breastfeeding
First time mothers
Prevalence
Bahir Dar
Ethiopia

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 on 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

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https://doi.org/10.1016/j.heliyon.2020.e04732
Received 1 February 2020; Received in revised form 24 May 2020; Accepted 12 August 2020
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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 breast-feeding 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. 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, Hildar11, Paslo, Ginog20, Gish Abay, Shumabo, Shimb, and Sefereselam 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 (Table 2).

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 breastfed, (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 (Table 2).

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 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;
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. This 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].

### 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.
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 revealed that husbands’ support could improve the success of exclusive breastfeeding. This work was supported by Addis Ababa University.

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.

Funding statement

This work was supported by Addis Ababa University.

Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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) |
| Yes                       | 235 (67.9%)             | 111 (32.1%) | 1           |
| No # of ANC follow up     |                         |             |             |
| <4 visits                 | 176 (76.5%)             | 54 (23.5%)  | 2.228 (1.405,3.533) |
| <3 visits                 | 79 (59.4%)              | 54 (40.6%)  | 1           |
| Husband support           |                         |             |             |
| Yes                       | 264 (73.9%)             | 93 (26.1%)  | 4.613 (2.370,8.980) |
| No                        | 16 (38.1%)              | 26 (61.9%)  | 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 (2.082,5.525) |
| Yes                       | 121 (58.7%)             | 85 (41.3%)  | 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.
Acknowledgements

The author would like to thank librarian staffs, study participants, data collectors and supervisors for their cooperation during the entire work.

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