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

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Abstract

Objectives: The objectives of this study were to assess early initiation of breastfeeding and associated factors among mothers of aged less than 12 months children in the rural eastern zone, Tigray, Ethiopia.

Results: Totally 803 mother–child pairs were participated in this study with a response rate of 99.25%. Out of this, 787 mothers had ever breastfed their children. Four hundred eighty-seven (61.9%) mothers initiated breastfeeding within 1 h after they gave birth. Mothers having an educational status of primary education were about 2 times more likely to initiate breastfeeding within 1 h of birth [AOR: 1.99, 95% CI 1.36–2.92] and those mothers having secondary education and above were 3.23 times more likely to start breastfeeding [AOR = 3.23, 95% CI 1.99–5.26]. Mothers who had mistimed pregnancy were 58% less likely to initiate breastfeeding within 1 h of birth [AOR: 0.42, 95% CI 0.27–0.65]. On the other hand, mothers who had delivered their child vaginally were 4.6 times more likely to start early initiation of breast feeding [AOR: 4.59, 95% CI 1.99–10.56].

Keywords: Early initiation, Breastfeeding, Infants, Mothers, Rural eastern zone, Tigray

Introduction

Early initiation of breastfeeding (EIBF) is putting the newborns to feed breast milk within 1 h of birth. Early suckling of the breast milk stimulates milk production and facilitates release of oxytocin. United Nations international children’s emergency fund endorses colostrum as newborns’ perfect food and should be introduced within the first hour after birth [1, 2].

Worldwide, approximately three million babies die every year in their first month of life and 22.3% of neonatal deaths could be prevented by EIBF [3]. Inappropriate feeding practices causes at least 35% of under five children deaths and over two-thirds of these deaths occur during infancy period [4]. Therefore, an estimated 11.6% infant prevented by breastfeeding promotion programs [5]. As a result of this, EIBF is mandatory for the child health.

EIBF practice in low and middle-income countries is low [6]. Even with the known health benefits of EIBF, many countries failed to start EIBF for their newborns [7]. Five million deaths of under five children were reported globally in 2015 and 46% occurred during neonatal period [8]. A systematic review conducted in South America, Asia and Africa found; prevalence of EIBF in Ethiopia ranged from 41.6 to 62.6% [9]. Therefore, counseling during pregnancy is important in order to minimize under-five mortalities attributed to failure and delay to initiate breast feeding early.

Ethiopian government implemented Baby-friendly hospital initiative and community integrated management of
Main text

Methods

Community based cross sectional study design was employed among 809 mothers of children aged less than 12 months in rural eastern zone, Tigray from April to May, 2018. Eastern zone share boundaries with Afar in the East, Southern East Tigray in the south, Central Tigray in the west and Eritrea in the north and have seven woreda/district and two town administration Wukro and Adigrat. Mothers who were critically ill and having serious mental problem were excluded from the study.

The sample size was determined using single population proportion formula by taking prevalence of a study done in Ethiopia (39.6%) [12] and assumptions of 95% confidence interval (CI), 5% margin of error, 10% non-response rate and 2 for design effect.

Of the seven rural woredas of rural eastern zone, Seasi Tsaeda Emba and Ganta Afeshum woredas were selected using lottery method. Of them, 4 tabias from each woreda were selected and sample size was allocated to each tabia proportionally. The data collection tool was adapted from different literatures. A structured questionnaire and face to face interview was conducted and pre-test was also done. Based on the pre-test, questions were revised, and edited. Finally, Tigigna version questionnaire was used for data collection.

Definition of terms

EIBF is initiation of breast feeding within 1 h of birth [11, 20].

Prelacteal feeding defined as a practice of giving fluid or semisolid food other than breast milk to a child during the first 3 days before the mother’s milk give [21].

Colostrum avoidance is squeeze out and throwing of the first breast milk, thick and yellowish milk that is produced in the first 3 days after birth without giving the child [22]. Data was coded, entered and cleaned using Statistical Package for Social Sciences (SPSS) version 22.0. Variables with P value ≤ 0.2 in bivariate analysis were entered to multivariate logistic regression. The model of fitness was checked by Hosmer and Lemeshow test. Finally Adjusted Odds Ratio (AOR) with 95% CI and P-value < 0.05 were considered as significantly associated.

Results

Socio-demographic characteristics of participants

A total of 803 mothers were participated in this study which give a response rate of 99.25%. Majority of the mothers were orthodox (99%) in their religion. One-fourth of the mothers education was secondary and above. About one-third of the child birth order found in the 4 to 6th birth order (Table 1).

Feeding practices and health service utilization of study participants

Six hundred forty-eight (80.7%) of the respondents had intended pregnancy. Of 796 mothers who had antenatal care (ANC) visit, 21.7% had 2–3 times. Total 787 (98%) mothers were ever breastfed their index child, and 487 (61.9%) of participants were initiated breastfeeding within 1 h for their child (Table 2).

Three hundred mothers were delayed to initiate breastfeeding. The most common reason mentioned for delayed initiation of breastfeeding by the mothers was ‘my child was not with me’ in 192 (64) (Additional file 1: Figure S1).

Factors associated with early initiation of breastfeeding

Variables with P-value ≤ 0.2 in bivariate analysis were exported into the multivariable logistic regression model. In multi variable logistic regression; mothers’ having primary and secondary education, having mistimed pregnancy and giving birth by vaginal delivery were statistically associated with early initiation of breastfeeding at P-value < 0.05.

Mothers having an educational status of primary education were about 2 times more likely to initiate breastfeeding within 1 h of birth [AOR: 1.99, 95% CI 1.36–2.92] and those mothers having secondary education and above were 3.23 times more likely to start breastfeeding those mothers who had no formal education [AOR = 3.23, 95% CI 1.99–5.26].

Compared to mothers who had intended pregnancy, those mothers who had mistimed pregnancy were 58% less likely to initiate breastfeeding within 1 h of birth [AOR: 0.42, 95% CI 0.27–0.65]. On the other hand, mothers who had delivered their child vaginally were 4.6 times more likely to start EIBF [AOR: 4.59, 95% CI 1.99–10.56] (Table 3).
Discussion
Breastfeeding is an essential primary health care practice for optimal care of a newborn [23]. Therefore, this study aimed to assess early initiation of breastfeeding and associated factors among mothers of age less than 12 months children in rural eastern zone, Tigray, Ethiopia.

This study indicated that, 61.9% of the participants initiated breastfeeding within one hour of child birth. This is consistent with a study conducted in Debberhan and slightly lower than the findings from Uganda (68.6%) [24], Arsi (67.3%) [25], Motta (78.8%) [26] and Southern Ethiopia (83.7%) [27] but this result is higher than studies

Table 1 Sociodemographic characteristics of mothers in rural eastern zone, Tigray, Ethiopia, 2018 (n = 803)

| Variable                              | Category                        | Frequency (n) | Percentage (%) |
|---------------------------------------|---------------------------------|---------------|----------------|
| Age of mothers (in years)             | 15–19                           | 14            | 1.7            |
|                                       | 20–24                           | 208           | 25.9           |
|                                       | 25–29                           | 180           | 22.4           |
|                                       | 30–34                           | 177           | 22             |
|                                       | ≥ 35                            | 224           | 27.9           |
| Religion                              | Orthodox                        | 798           | 99             |
|                                       | Others                          | 8             | 0.9            |
| Ethnicity                             | Tigray                          | 791           | 98.5           |
|                                       | Amhara                          | 12            | 1.5            |
| Marital status                        | Single                          | 66            | 8.2            |
|                                       | Married                         | 727           | 90.5           |
|                                       | Others                          | 10            | 1.2            |
| Educational status of mothers         | No formal education             | 318           | 39.6           |
|                                       | Primary education               | 285           | 35.5           |
|                                       | Secondary education and above   | 200           | 24.9           |
| Mothers occupation                    | Housewife                       | 735           | 91.5           |
|                                       | Daily laborer                   | 20            | 2.5            |
|                                       | Farmer                          | 26            | 3.2            |
|                                       | Others                          | 22            | 2.8            |
| Fathers education                     | No formal education             | 231           | 28.8           |
|                                       | Primary education               | 333           | 45.2           |
|                                       | Secondary education and above   | 172           | 23.4           |
| Occupation of fathers                 | Farmer                          | 490           | 61             |
|                                       | Daily laborer                   | 150           | 18.7           |
|                                       | Merchant                        | 47            | 5.9            |
|                                       | Private organization            | 26            | 3.2            |
|                                       | Others                          | 34            | 11.2           |
| Child age (in months)                 | < 1 month                       | 57            | 7.1            |
|                                       | 1–6 month                       | 476           | 59.3           |
|                                       | > 6 month                       | 270           | 33.6           |
| Sex of child                          | Male                            | 455           | 56.7           |
|                                       | Female                          | 348           | 43.3           |
| Family size                           | ≤ 3                             | 417           | 51.9           |
|                                       | ≥ 4                             | 386           | 48.1           |
| Child birth order                     | 1                               | 189           | 23.5           |
|                                       | 2–3                             | 234           | 29.1           |
|                                       | 4–6                             | 289           | 36             |
|                                       | > 6                             | 91            | 11.3           |
| Child birth interval                  | No previous child               | 189           | 23.5           |
|                                       | < 24 months                     | 89            | 11.1           |
|                                       | ≥ 24 months                     | 525           | 65.4           |
from India (38.6%) [28], Tanzania (51%) [29] and North eastern Ethiopia (39.6%) [12]. These dissimilarities could be due to difference in; sociodemographic characteristics, health service utilization, feeding styles, study area and sociocultural practices.

Mothers’ education, type of pregnancy and mode of delivery were statistically associated with EIBF. In which, mothers having secondary education and above were 3.28 times more likely to start breastfeeding than those mothers having no formal education. Similar studies were found from India, South Asia, Gurage, Amibara, and Arsi zone [11, 12, 16, 18, 28]. This justified as, mothers attending formal education might acquire necessary information on proper breastfeeding practices from school setup, read and understand easily concerning breastfeeding promotion materials.

Mothers who had mistimed pregnancy were 58 times less likely to initiate breastfeeding early in comparison
with those mothers who had intended pregnancy. No study finding which inline or opposed to this result was found. Women who experienced mistimed pregnancy might miss familial or partner support for good health care seeking behaviour of their children. This result, depression and psychological instability and this leads on higher risk of adverse health outcomes of the newborn and mother.

Mothers who had delivered their child vaginally were 4.6 times more likely to start breastfeeding than those who delivered by cesarean section. This study in line with different studies from South Asia, India, Tanzania, Uganda, Amibara, Debre berhan, Gurage and Ethiopia [11–13, 16, 18, 19, 24, 28, 29]. This might be explained because mothers who deliver their child vaginally are close with their children due to different tasks for the children like immediate new-born care and skin to skin contact.

**Conclusion**

Based on the findings of this study, about two-third of the mothers timely initiated to breast fed their child. Mothers’ primary and secondary education, Mistimed pregnancy and mothers who had delivered their child vaginally were statistically associated with EIBF.

**Limitation**

There is a potential recall bias among respondents and the nature of study design could not show seasonal variation and temporal relationship of cause and effect.

### Table 3  Factors associated with early initiation of breastfeeding in rural eastern Tigray, Ethiopia, 2018

| Variables                        | Category                  | Early initiation of breastfeeding | COR (95% CI) | AOR (95% CI) | P-value |
|----------------------------------|---------------------------|-----------------------------------|--------------|--------------|---------|
| Educational status of mothers    | No formal education       | 162                               | 1            |              |         |
|                                  | Primary education         | 184                               | 1.84 (1.32–2.67) | 1.99 (1.36–2.92)* | 0.000   |
|                                  | Secondary education and above | 141 | 2.35 (1.60–3.43) | 3.23 (1.99–5.26)* | 0.000   |
| Child birth order                 | 1                         | 118                               | 1.80 (1.08–3.00) | 0.87 (0.47–1.61) | 0.66    |
|                                  | 2–3                       | 142                               | 1.69 (1.03–2.77) | 0.95 (0.55–1.67) | 0.87    |
|                                  | 4–6                       | 183                               | 1.84 (1.13–2.97) | 1.45 (0.87–2.41) | 0.15    |
|                                  | > 6                       | 44                                | 1             |              |         |
| Pregnancy                        | Intended                  | 413                               | 1            |              |         |
|                                  | Unintended                | 11                                | 2.49 (1.66–3.75) | 1.52 (0.71–3.22) | 0.278   |
|                                  | Mistimed                  | 65                                | 3.20 (1.44–7.11) | 0.42 (0.27–0.65)* | 0.000   |
| Mode of delivery                 | C/S                       | 10                                | 1            |              |         |
|                                  | Vaginal delivery          | 477                               | 3.05 (1.39–6.69) | 4.59 (1.99–10.56)* | 0.000   |
| Counseling during ANC            | Yes                       | 259                               | 1.25 (0.94–1.67) | 1.15 (0.84–1.58) | 0.385   |
|                                  | No                        | 154                               | 226          | 1            |         |

* Statistical significance (P < 0.05), 1 = reference, COR crude odds ratio

**Supplementary information**

**Supplementary information** accompanies this paper at https://doi.org/10.1186/s13104-019-4718-x.

**Additional file 1: Figure S1.** Reasons for late initiation of breastfeeding among mothers of aged less than 12 months children in rural eastern zone, Tigray, Ethiopia, 2018.

**Abbreviations**

ANC: ante natal care; AOR: adjusted odds ratio; CI: confidence interval; EIBF: early initiation of breastfeeding; PNC: post natal care; SPSS: Statistical Package for Social Science.

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**Authors’ contributions**

SGG carried out the conception and designing the study, performed statistical analysis and wrote the manuscript. TTG participated in the conception and designing the study, performed statistical analysis and wrote the manuscript. BGG, HNM, BBT, participated in designing the study, analysis, reviewing and editing the final draft and manuscript. GWG, FTW, MBM and DAW participated in the conception and designing the study, performed statistical analysis and wrote the manuscript. All authors read and approved the final manuscript.

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**Availability of data and materials**

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

**Ethics approval and consent to participate**

Ethical approval was obtained from a research and ethical approval committee of college of Health Sciences of Adigrat University with a registration number of AGUi/CMHS/036/10. Official cooperation letter was written from Tigray Regional Health Bureau to Eastern zone woreda health office and respective
selected tabias before field activities were started. Informed written consent was obtained from all study participants.

Consent for publication
Not applicable for this section.

Competing interests
The authors declared that they have no competing interests.

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