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Early Initiation of Breastfeeding and Associated Factors Among Mothers in Dire Dawa Hospitals, Eastern Ethiopia: Institutional Based Comparative Study

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Abstract

Background: Early initiation of breastfeeding is putting the newborn to the breast within one hour after birth. There is still a discrepancy in early initiation and no noticeable difference between vaginal and cesarean delivery mothers on early initiation of breastfeeding, despite there being bits of evidence on the proportion and associated factors of early initiation of breastfeeding in different parts of the country. So, the purpose of this study was to examine the extent of early breastfeeding initiation and its contributing factors between women who gave birth vaginally and by cesarean section.

Methods: An institutional-based comparative cross-sectional study was employed in Dire Dawa health facilities from December 2022 to January 2023. A total of 646 (323 vaginal and 323 cesareans delivered) mothers were selected using the systematic random sampling method. Data were collected using a pretested interviewer-administered questionnaire and entered into Epi Data version 3.1, and then exported to SPSS v. 23.0. Bi-variable and multivariable logistic regression analyses with a 95% confidence interval were employed. Variables with $p<0.05$ were identified as significant factors to the outcome variable.

Results: Early initiation of breastfeeding was higher among mothers who underwent vaginal delivery (83.5%, 95%CI: 79.0%-88.0%) than cesarean section (40.1%, 95%CI: 35.0%-46.0%) and it was positively associated with mothers from urban areas (AOR=2.50, 95%CI: 1.55-4.02), who had professional guidance to early initiation of breastfeeding (AOR=3.12, 95%CI: 1.79-3.51), had good knowledge (AOR=2.30, 95%CI:1.39-3.82), had husband support (AOR=5.19, 95%CI:3.06, 8.80), had labor pain less than 12 hours (AOR=3.21, 95%CI:1.80-5.39), and who did not fear COVID 19 (AOR=3.13, 95%CI:1.54, 6.37).

Conclusion: Early initiation of breastfeeding was more common among vaginally delivered mothers as compared to cesarean delivered mothers. Residence, professional guidance, knowledge, husband support, labor pain, and fear of COVID-19 were significantly associated with EIBF among vaginally and cesarean-delivered mothers. Community-based breastfeeding education and counseling to pregnant mothers and encouraging partner involvement in breastfeeding are recommended.

Keywords: Early initiation of breastfeeding, vaginal delivery, cesarean delivery, Ethiopia, regression

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1. Introduction

Early initiation of breastfeeding (EIBF) is defined as putting the newborn to the breast within one hour of birth and it is the easiest, most cost-effective, and most successful intervention. It is one of the ten steps of successful Breast Feeding (BF) practice and one of the core indicators of assessing appropriate infant and young child feeding practice [1]. It is also related with early contact is important for mother-to-infant relationships and has positive effects on the duration of BF [2]. EIBF is essential to ensure the baby is immunized with this 'live fluid' to sustain life. Twenty-two percent of neonatal deaths could be prevented if all infants are put to the breast within the first hour of birth 2). EIBF is also crucial because it ensures that the baby receives colostrum's, a mother's first milk which provides crucial nutrients and antibodies to newborns [3]. Delivery by cesarean section is an operative approach replacing the natural process of delivery. Its rate has a tendency towards increases during the last few decades and research showed that delivery by cesarean section is associated with non-initiation or delayed initiation of breastfeeding as well as with discontinuation of exclusive breastfeeding [4].

Globally, 2.4 million children died in the first month of life in 2021, most of which occurred in the first week, with about 2.3 million dying on the first day and close to 1 million dying within the next six days. Neonatal mortality was also highest in sub-Saharan Africa and South Asia, with each estimated at 67 deaths per 1,000 live births in 2017. A child born in sub-Saharan Africa or South Asia is nine times more likely to die in the first month than a child born in a high-income country from preventable causes of child mortality [5]. About 472,000 children die each year before their fifth birthday, making Ethiopia 6th among the countries of the world in terms of the absolute number of child deaths. The age distribution of under-5 deaths was 29% in the first 30 days of life, 29% from the first month to the 11th month of life, and 42% from the first year to the fourth year. Neonatal mortality is very high in Ethiopia, making Ethiopia 5th in the world in neonatal mortality, and children in Ethiopia are still dying in large numbers from preventable and treatable causes, including delayed initiation of breastfeeding (DIBF) [6].

According to the UNICEF report in 2018, 78 million babies or 60% of babies were not breastfed within the first hour after birth, putting them at risk of sickness and even death [7]. The risk of neonatal death because of infection increased with increasing DIBF from one hour to day seven [8]. Meta-analysis in Ghana, India, and Tanzania has shown that the risk of neonatal death among children who stared BF between 2 and 23 hours after birth was 41% higher and 79% higher among those who initiated BF at 24–96 hours of birth as compared to

infants who initiated BF within the first hour of life [9]. Several factors influence EIBF as like mothers' socio-demographics, obstetric characteristics, and exposure to health care support services [10, 11]. Cesarean Delivery (CD) is also one of the factors that may influence the initiation and maintenance of breastfeeding, and studies found CD had a negative effect on the mother's ability to start and sustain breastfeeding [12, 13].

Despite the fact that there is evidence of the magnitude and associated factors of EIBF in different parts of the country, there has been an information gap regarding the proportion and associated factors of early initiation of breastfeeding among vaginally and cesarean-delivered mothers until now. Therefore, this study aimed to compare the magnitude of EIBF among Vaginal Delivery (VD) and CD mothers and identify factors that influence EIBF in Dire Dawa hospitals, in Eastern Ethiopia, 2020. The findings of this study will also provide relevant information for the Dire Dawa City Health Bureau for future planning and designing strategies to promote and maintain early initiation of breastfeeding practices in the community. Health professionals could understand the gap that exists in the early initiation of breastfeeding. The community as a whole may also benefit from interventions and professional guidance in appropriate infant feeding. The findings from this study may also be supportive for further research.

2. Methods

2.1. Study Design and Population

An institutional-based comparative cross-sectional study was conducted in Dire Dawa City Administration from December 2022 to February 2023. The source population was all mothers who delivered in Dire Dawa hospitals where as the study population was all selected mothers who delivered in Dire Dawa hospitals during the study period. All mothers who gave birth and registered in the delivery registration book in Dire Dawa hospitals were included in the study while mothers delivered with the cesarean section under general anesthesia, mothers with postnatal complications (third-degree tear, Post Partum Hemorrhage (PPH), postpartum eclampsia, postpartum depression), and baby has any health problem which requires separation from the mother {asphyxia (which needs admission to Neonatal Intensive Care Unit (NICU), preterm birth or low birth weight (which needs admission to NICU)} were excluded from this study.

2.2. Sample Size Determination and Sampling Procedure

The sample size was determined using a double population formula considering the following assumptions: confidence interval (CI) of 95%, power of 80%, a ratio of 1:1, and a non-response rate of 10%. The factors were taken from previous studies conducted in southern Gondar, Dembecha and Tiyo Woreda [14, 15, 16]. Advised on EIBF during Ante Natal Care (ANC) was the factor that was taken to get the largest sample size for this study and it was 648 by assuming a 10% non-response rate, the sample size was 648 mothers (323 for VD and 323 for CD) **(Table 1).**

Table 1: Sample size determination for EIBF and its associated factors among VD and CD mothers in Dire Dawa hospitals, Eastern Ethiopia, 2021.

No	Factors	Assumptions			
		Proportion of EIBF among exposed	Proportion of EIBF among unexposed	AOR	Sample size with 10% non-response rate
1	Advised on EIBF during ANC	25.5	57	1.640	646
2	Parity	55.7	42.1	1.80	433
3	Place of residence	54.7	25.1	2.10	316
4	Sex of child	41.0	26.3	1.850	451
5	Number of ANC visit	79.9	20.1	3.10	150

All hospitals that provide both VD and CD services were taken to get a sufficient sample. Then, a sample from each health facility was determined using proportional allocation to size (PAS). Finally, systematic sampling was used to select all VD and CD mothers. The total number of cases in the last two months of 2019/2020 before the data collection period was 1585 VD and 742 CD in Dilchora Referral Hospital (DCRH), Delt general hospital (DGH), Art general hospital (AGH), Bilal general hospital (BGH).

2.3. Measurement and Definition

Early initiation of breastfeeding: Mothers who had initiated breastfeeding within one hour after birth [17].

Knowledge on EIBF: Mothers were asked eight knowledge-related questions regarding EIBF and each correct answer was given a value of 1 and an incorrect answer a value of 0. After computing the sum for each respondent and mean, it was dichotomized into good knowledge ≥ mean, and poor knowledge < mean [18].

Professional guidance to initiate BF: Professionals, counsel and assist the mother by showing how to hold the baby, and how to practice positioning and attachment to initiate breastfeeding within one hour.

Husband support to EIBF: Husband who encourages, assists the mother, and shares experience for the mother to initiate breastfeeding within one hour.

2.4. Data Collection Tools and Procedures

An interviewer-administered questionnaire, after reviewing different kinds of literature [14, 16, 19], and a chart review were used to collect data from mothers in the postnatal ward. First, the English versions of the questionnaire was prepared. Then it was translated into Amharic, Afaan Oromo, and Afaan Somali version of the language and then translated back to English to check its consistency. Based on mothers' order of registration on delivery registration book by using systematic sampling technique mothers were selected for interview. For vaginally delivered mothers, each mother was selected every four intervals since k=1580/323= 4 and for cesarean-delivered mothers, each mother was selected every two intervals since k= 742/323= 2. By reviewing their chart sex of their infant, duration of their labor pain, mode of delivery, residence, and age were taken from their chart. Then, in the postnatal ward just before their discharge mothers were interviewed.

2.5. Data Quality Control

Ten diploma midwives and six-degree midwives were recruited for data collection and supervisory roles respectively. Training focusing on understanding the research question, sampling technique, data handling, ethical conduct, and quality of data collection was given for two days. The questionnaire was pretested on 5% of the calculated sample size. Each questionnaire was reviewed daily by the supervisors and the principal investigator to check for its completeness.

2.6. Statistical Analysis

The collected data were entered and cleaned using Epi data version 3.1, then exported to SPSS version 23 for analysis. A descriptive analysis was conducted to summarize the data and the final result of the study was interpreted in the form of text, figures, and tables. Binary logistic regression analysis was executed to see the association between independent and dependent variables. All explanatory variables with $p<0.25$ in bivariable logistic regression were entered into multivariable logistic regression analysis and significant associations were identified based on $p<0.05$ and odds ratio with 95% CI in multivariable logistic regression. The final model fitness was checked using Hosmer-

Lemeshow Goodness of Fit and multicollinearity was checked by using the variance inflation factor (VIF<10) [20].

3. Results

3.1. Socio-Demographic Characteristics of Mothers and Their Husbands

Among the total of 646 mothers, 627 mothers participated in the study, making a response rate of 97.1%. Regarding mode of delivery, 315 (49.9%) were VD and 312 (50.1%) were CD mothers. The highest proportion, 103(32.7%) VD mothers and 129(41.3%) CD mothers were in the age group of 25-29 years. The mean age of the mother was 27.35(SD ±5.8) among VD mothers and 26.77 (SD ±4.87) among CD mothers. Nearly three-fourth 245(77.8%) of VD mothers, and more than sixty percent 197(63.1%) CD mothers were urban residents **(Table 2).**

Table 2: Socio-demographic characteristics of mothers and their husbands versus EIBF among VD and CD mothers in Dire Dawa hospitals, Eastern, Ethiopia, 2021 (n =627)

Variable	Category	VD (n= 315)	CD (n= 312)
Maternal age	15-19 20-24 25-29 30-34 35 and above	21 (6.7%) 87 (27.6%) 103 (32.7%) 59 (18.7%) 45 (14.3%)	21 (6.7%) 83 (26.6%) 129 (41.3%) 56 (18.0%) 23 (7.4%)
Residence	Urban Rural	245 (77.7%) 40 (22.3)	197 (63.2%) 115 (36.8%)
Marital status	Married un married#	276 (87.6%) 39 (12.4%)	280 (89.7%) 32 (10.2%)
Maternal educational status	Not attending formal education Primary school Secondary school Collage and above	27 (8.5%) 151 (47.9%) 99 (31.5%) 38 (12.1%)	56 (18.0%) 92 (29.5%) 95 (30.5%) 69 (22%)
Husband educational status	Not attending formal education Primary school Secondary school Collage and above	15 (5.4%) 50 (18.1%) 99 (35.8%) 113 (40.8%)	40 (14.5%) 64 (23.0%) 56 (20.3%) 116 (42.0%)
Maternal occupation	Gov't employed Self employed Daily laborer Housewife Farmer	48 (15.1%) 93 (29.5%) 17 (5.4%) 122 (38.8%) 35 (10.5%)	55 (17.7%) 66 (25.5%) 10 (3.2%) 104 (33.4%) 77 (13.4%)

3.2. Maternal knowledge of EIBF and BF experience

Two hundred thirty-nine (76.6%) VD mothers and 241(76.5%) CD mothers heard about EIBF. Regarding the source of information about EIBF, 156 (49.5%) VD mothers and 170 (54.5%) CD mothers reported that the main source of information about EIBF was health professionals. Almost all mothers, 308 (98.7%) VD mothers and 305 (96.8%) CD mothers reported that breast milk must be given first to the baby after delivery. Two hundred twenty-one (70.1%) VD

mothers and 209(67%) CD mothers knew about the recommended time of initiating BF. Concerning maternal knowledge of EIBF, two hundred thirteen (67.6%) VD and 227(72.8%) CD mothers had good knowledge about EIBF.

3.3. Obstetric & Health Service-Related Characteristics

Regarding the type of pregnancy, 266 (84.4%) VD and 276 (88.2%) CD mothers reported that their pregnancies were intended. Three hundred fifteen (100%) VD and 312 (100%) CD mothers had a history of at least one ANC visit during their pregnancy. Concerning professional guidance to EIBF, two hundred fifty-five (81.7%) VD and 239 (75.9%) CD mothers had professional guidance to EIBF. Regarding the duration of labor pain, 287 (91.1%) VD mother's and 227(72.8%) CD mother's labor pain was less than 12 hours **(Table 3).**

Table 3: Obstetric and health service-related characteristics of mothers versus EIBF among VD and CD mothers in Dire Dawa hospitals, Eastern Ethiopia, 2021. (n= 627)

Variable	Category	VD (n=315	CD (n=312)
Type of pregnancy	Intended Unintended	266(84.5%) 49 (15.5%)	276(88.4%) 36(11.6%)
Number of ANC visits	Less than four visit Four and above visit	95 (17.9%) 220 (69.8%)	88 (28.2%) 224(71.8.%)
Place of ANC follow up	Public institution Private clinic	220 (69.8%) 95(30.2%)	206 (66.0%) 106 (34.0%)
EIBF counseling during ANC visit	Yes No	144 (45.7%) 171(54.3%)	152(48.7%) 160 (51.3%)
Duration of labor	Less than 12 hours Greater than 12 hours	287(91.1%) 28 (8.9%)	227 (72.8%) 85(27.2%)
Received professional Guidance to EIBF	Yes No	239(75.9%) 76(24.1%)	258(81.8%) 57(18.2%)
Parity	Primi Multi	130 (41.2%) 185 (58.8%)	128 (41.0%) 184(59.0%)
Place of Delivery	Public institution Private hospital	293(93.0%) 22(7.0%)	233 (74.7%) 79 (25.3%)

3.4. COVID-19 and Early Initiation of Breastfeeding

One hundred twenty-seven (40.3%) of VD mothers and 86 (27.6%) CD mothers received counseling about COVID and EIBF after delivery by health professionals. Sixty-one (19.4%) VD mothers and 50 (16%) CD mothers reported that COVID-19 could be transmitted through breast milk to the newborn. Fifty-eight (18.4%) VD mothers and 49 (15.7%) CD mothers reported that they fear COVID-19 to start breastfeeding within one hour. Regarding preventive measures for COVID 19 101 (57.2%) VD mothers and 84 (54.5%) CD mothers were using hand washing before starting BF **(Table 4).**

Table 4: COVID-19 and EIBF among VD and CD mothers in Dire Dawa hospitals, Eastern Ethiopia, 2021. (n= 627)

Variables	VD (n= 315)	CD (n =312)
Counseling is given about COVID-19 and EIBF during ANC		
Yes	73 (22.3)	41 (13.1%)
No	242 (76.8)	271 (86.9%)
Counseling is given about COVID-19 and EIBF after delivery		
Yes	127 (40.3)	86 (27.6%)
No	188 (59.7)	226 (72.4%)
Newborns can infect with COVID 19		
Yes	65 (20.6%)	149 (47.7%)
No	110 (34.9%)	45 (14.5%)
Not sure	140 (44.5%)	118 (37.8%)
COVID-19 can transmit through breast milk		
Yes	61 (19.4%	50 (16.0%)
No	119 (37.8%)	105 (33.7%)
Not sure	135 (42.8%	157 (50.3%)
Fear of COVID-19 to start BF within one hour		
Yes	58 (18.4%)	49 (15.7%)
No	257 (81.6%)	263 (84.3%)
Use a preventive measure for COVID-19 during EIBF		
Yes	176 (55.9%)	154 (49.4%)
No	139 (44.1%)	158 (50.6%)
Type of preventive measure of COVID-19 during EIBF		
Hand washing	101 (57.2%)	84 (54.5%)
Sanitizer	18 (10.2%)	16 (10.4%)
Mask	57 (32.6.%)	54 (35.0%)

3.5. The Magnitude of EIBF Among Vaginal and Cesarean-Delivered Mothers

The overall magnitude of EIBF among vaginal and cesarean-delivered mothers in Dire Dawa hospitals was 61.9% with (95%CI (58%, 66%)) and the magnitude of EIBF among vaginal and cesarean-delivered mothers was 83.5% with (95% CI (79%, 88%)) and 40.1% with (95% CI (35%, 46%)) with $p<0.001$ respectively. The main reasons for DIBF were pain and discomfort and delayed milk secretion for both VD and CD mothers**.**

3.6. Factors associated with Early Initiation of Breast-Feeding practice

There was significant difference between VD and CD mothers on EIBF and variables such as residence, husband education, BF experience, knowledge of EIBF, professional guidance to EIBF, mode of delivery and type of pregnancy, number of ANC visits, duration of labor pain, parity, husband support, and fear of COVID-19 were eligible for multivariable logistic regression that is p value < 0.25. Then, variables like residence, knowledge of EIBF, mode of delivery, duration of labor pain, husband support, and fear of COVID-19 were significantly associated with EIBF among VD and CD mothers. Those mothers from urban areas were 2.5 times (AOR=2.50, 95%CI=1.55, 4.03) more likely to initiate breastfeeding as compared to

rural mothers. Mothers with EIBF good knowledge were 2.3 times (AOR=2.30, 95%CI=1.39, 3.82) more likely to initiate BF as compared to mothers with poor knowledge of EIBF.

Mothers who had received guidance from professionals regarding EIBF were 3 times (AOR=3.14, 95%CI=1.79, 5.51) more likely to initiate BF early as compared to those mothers who had not received professional assistance. Those mothers who had husband support for EIBF were 5 times (AOR=5.19, 95%CI=3.06, 8.81) as compared to their counterparts. Mothers with vaginal delivery were 13.7 times (AOR=13.7, 95%CI=8.08, 23.24) more likely to initiate BF early as compared to those mothers delivered via cesarean delivery. Those mothers whose labor pain duration was less than 12 hours were 3 times (AOR= 3.21, 95%CI = 1.80, 5.69) more likely to initiate breast within one hour as compared to those mothers whose labor pain duration was greater than 12 hours. Those mothers who did not fear COVID-19 infection in their infant were 3 times (AOR=3.13, 95%CI=1.54, 6.37) more likely to initiate BF within one hour as compared to those mothers who fears COVID-19 infection in their infants **(Table 5).**

Table 5: Multivariable logistic regression of EIBF for VD and CD mothers in Dire Dawa hospitals, Eastern Ethiopia, 2020. (n=627)

Variable	EIBF		COR, 95%CI	AOR, 95%CI	P- value
	< 1 hr	>1hr			
Residence					
Urban	315 (50.2)	128 (20.4)	3.74 (2.61, 5.36)	2.50 (1.55, 4.03)	<0.001
Rural	73 (11.6)	111 (17.7)	1	1	
Husband/partner education					
Not attending formal education	27 (4.9)	27 (4.9)	1	1	
Primary education	68 (12.3)	46 (8.3)	1.47 (0.71, 2.83	1.2 (0.51, 2.82)	0.65
Secondary education	104 (18.8)	51 (9.2)	2.04 (1.08, 3.83)	0.59 (0.26, 1.37)	0.22
College and above	140 (25.4)	89 (16.1)	1.57 (0.86, 2.85)	0.61 (0.28, 1.35)	0.22
Knowledge on EIBF					
Good	292 (46.6)	148(23.6)	1.87 (1.32, 2.65)	2.3 (1.39, 3.82)	0.001*
Poor	96 (15.3)	91(14.5)	1	1	
BF experience					
Yes	240 (38.3)	126 (20.1)	1.45 (1.05, 2.01)	0.99 (0.46, 2.13)	0.99
No	148(23.6)	113 (18.0)	1	1	
Parity					
Multi	246 (39.2)	123 (19.6)	1.63 (1.17, 2.26)	0.98 (0.47, 2.05)	0.96
Primi	142 (22.6)	116 (18.2)	1		
Type of pregnancy					
Intended	341 (54.4)	201 (32.1)	1.37(0.86, 2.17)	1.1 (0.55, 2.24)	0.15
Unintended	47 (7.5)	38(6.1)	1	1	
Duration of labor					
Less than 12 hours	351(56)	163 (26)	4.42(2.86, 6.83)	3.21 (1.80, 5.69)	<0.001
Greater than 12 hours	37(5.9)	76 (12.1)	1	1	
No ANC visit					
Four and above	291(46.4)	153(24.4)	1.67 (1.19, 2.39)	1.4 (0.86, 2.37)	0.16
Less than four	42 (12)	97 (15.5)	1	1	
	194 (30.9)	102 (16.3)	1.34 (0.97, 1.86)	0.90 (0.56, 1.48)	0.73

EIBF counseling during ANC Yes No	194 (30.9	137 (21.9)	1	1	
Mode of delivery VD CD	307 (44) 181 (26)	41 (5.9) 168 (24.1)	6.13 (4.23, 8.01) 1	13.7 (8.08,23.24) 1	<0.001***
Received professional guidance to EIBF Yes No	322 (51.4) 66 (10.5)	172 (27.4) 67(10.7)	2.17(1.47, 3.21) 1	3.14 (1.79, 5.51) 1	<0.001
partner support Yes No	165 (26.3) 223 (35.6	43 (6.9) 196 (31.3)	3.37 (2.29, 4.96) 1	5.19 (3.06, 8.81) 1	<0.001***
Fear of COVID 19 Yes No	87 (13.9) 301 (48...)	20 (3.2) 219 (34.9)	3.16 (1.88, 5.34) 1	3.13 (1.54, 6.37)	0.002

*p- value<0.05, **p-value <0.01, *** p-value<0.001

4. Discussion

This study aimed to determine the proportion of EIBF and associated factors among vaginally and cesarean-delivered mothers. There was significant difference between VD and CD mothers on EIBF and variables such as knowledge on EIBF, mode of delivery, professional guidance, duration of labor and fear of COVID 19 are significantly associated with EIBF. The overall magnitude of early initiation of breastfeeding among vaginal and cesarean-delivered mothers was 61.9% (95%CI (58%, 66%)) which was lower than the study conducted in Dembecha (73.1%) [15] and the national prevalence of EIBF in 2016 which was 73% [21]. This finding was lower than the study conducted in Motta (78.8%) (18). The variation might be due to differences in the study setting, study population, and time of the study. Since the study conducted in the Motta district was a community-based cross-sectional study in mothers who had an infant less than six months, this will be exposed to recall bias.

This study also revealed that the proportion of EIBF was 83.5% and 40.1% among vaginal and cesarean-delivered mothers, respectively. EIBF among cesarean-delivered mothers in this study was higher as compared to a study conducted in Kenya, which was 25% [22]. Cesarean-delivered mothers in this study were also higher in EIBF as compared to the study conducted in Egypt, which was 28.1% [23]. The proportion of EIBF among vaginal and cesarean-delivered mothers in this study was higher than the study conducted in Bangladesh, which found 57% among vaginally delivered mothers and 21.7% among cesarean-delivered mothers [24]. Vaginal delivery in this study was also higher in EIBF as compared to another study conducted in Bangladesh, which was 67% [25]. This discrepancy might be due to the difference in study design since studies conducted in Egypt and Bangladesh were an observational study

but this study was a cross-sectional study. The other variation for this might be that most of the participants were urban residents and literate; this might be a contributing factor to the high EIBF in this study. This finding was also higher in EIBF for both vaginal and cesarean-delivered mothers as compared to a study conducted in India that found 65.2% of vaginally-delivered mothers and 14% among cesarean-delivered mothers-initiated breastfeeding within one hour [26]. This difference might be due to differences in the study period, study design, maternal socio-demographic characteristics like access to information, educational status, cross-cultural differences in breastfeeding practice, and health service utilization characteristics.

This result revealed that the mode of delivery was significantly associated with the EIBF. Vaginally-delivered mothers were **13.7** times more likely to initiate breastfeeding as compared to mothers who delivered via cesarean section. This finding was supported by the study conducted in Motta [18], Dembecha [15], South Gondar [14], and Debre Birhan [27]. This might be because cesarean procedures, C/S-related pain and discomfort, and reduced maternal alertness may prevent mothers from practicing early initiation of breastfeeding [28]. The possible reasons might also explain that the repair of surgical incisions, delayed skin-to-skin contact, discomfort in holding and positioning the baby and late transfer from the recovery room following a cesarean section might contribute to late breastfeeding initiation.

This finding was also similar to a study conducted in Turkey [29], Brazil [30], and Nepal [31] which indicated that cesarean delivery was the major risk factor for DIBF. The reason for this might also due to the effects of analgesia, limited mobility, a delay in the production of breast milk, and the need for extra help with breastfeeding, which could account for delayed initiation of breastfeeding. This study was inconsistent with studies conducted in Axum [32], Western Ethiopia [33], Canada [34], and Nicaragua [35] which found that there was no significant association between mode of delivery and early initiation of breastfeeding. This could be explained by the fact that suitable guidance and appropriate support for early initiation of breastfeeding is possible among mothers who have undergone a cesarean section as those VD mothers [36]. This deviation might be also due to the policy's efforts, or the proper implementation of BFHI to increase early initiation of breastfeeding irrespective of the mode of delivery that might contribute to this difference.

Maternal knowledge of EIBF and breastfeeding experience were significantly associated with EIBF. This study identified that mothers with good knowledge of EIBF were 2.3 times more

likely to initiate breastfeeding early as compared to those who had poor knowledge of EIBF. This result was supported by a study conducted Benishangul Gumuz [37]. This finding was also consistent with the study conducted in India [38] which showed that knowledge of EIBF increases the practice of EIBF. This might be because mothers knowing the importance of EIBF for both the mother and baby and the recommended time for starting breastfeeding encourage mothers to initiate breastfeeding within an hour. But this finding was inconsistent with a study conducted in Egypt [39] which showed that maternal knowledge was not significantly associated with EIBF.

The current study revealed that professional guidance for EIBF was significantly associated with EIBF among VD and CD mothers. This finding was supported by a study conducted in Uganda [40], Bangladesh [24], Indonesia (Tegar) [41], and Brazil [29] which showed that professional assistance or guidance after delivery increases EIBF by mothers. This might be due to skilled and properly trained health care providers who can motivate mothers to initiate early breastfeeding and explain its advantages; counsel on the dangers of pre-lacteal feeding and its long-term risk, and explain the benefits of EIBF and the continuation of breastfeeding. Furthermore, encouragement and motivation from health workers help mothers to take a stand in EIBF practice. A skilled and properly trained health care provider can motivate mothers to initiate early breast feeding and explain its advantages, counsel on the dangers of pre-lacteal feeding and its long-term risk, and explain the benefits of EIBF and the continuation of breast feeding [42].

Those mothers whose labor pain duration was less than 12 hours were three times more likely to initiate BF within one hour as compared to those whose labor pain duration was greater than 12 hours. This might be since women with obstetric complications may require additional intrapartum management restricting neonates from being early breastfed. Neonates born to mothers with an intrapartum complication may be at high risk of developing sepsis, hypothermia, and hypoglycemia, and this can influence neonates to receive their mother's breast milk early [35]. Those mothers from urban areas were 2.5 times more likely to initiate breastfeeding as compared to rural mothers. This could be because urban mothers have greater access to breastfeeding information, and urban mothers may have primary or higher education status, which may enhance the likelihood of starting nursing early.

Mothers who had partner support for EIBF were 5 times as compared to their counterparts. Fathers and partners have been identified as being influential in mothers' feeding decisions and

the continuation of breastfeeding. If the mother feels that the father's attitude towards breastfeeding is positive and supportive there is a greater likelihood that she will initiate and continue breastfeeding. In addition, timing of support is important in the initiation and maintenance of breastfeeding but also in the development of maternal confidence. Learning the skills of latching and positioning the baby early in the postpartum period is critical to establishing breastfeeding patterns and breast milk supply. Previous research has shown that family members (i.e., husband, partner, or grandmother) do not only influence a mother's decision to initiate and continue breastfeeding, but also play a significant role in the premature cessation of appropriate breastfeeding in the early postnatal period [43].

Those mothers who did not fear COVID-19 infection in their infants were 3 times more likely to initiate BF within one hour as compared to those mothers who feared COVID-19 infection in their infants. The reason for this might be due to pregnant mothers' anxiety, confusion over recommendations, and concern for their baby's safety which had significant negative effects on prenatal self-efficacy for successful breastfeeding after birth during COVID-19.

The cross-sectional nature of this study limits the setting a causal-effect relationship between dependent and independent variables. Since it is based on the mother's establishment of the exact time report is the first hour after birth might be difficult to measure. Vaginal-delivered mothers delivered in health centers in Dire Dawa were not included.

5. Conclusion

This study reveals that there was a significant difference between vaginal and cesarean-delivered mothers in the early initiation of breastfeeding practice. Residence, professional guidance to EIBF, duration of labor pain, mode of delivery, husband support, and fear of COVID-19 were significantly associated with early initiation of breastfeeding among VD and CD mothers.

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Acronyms and Abbreviations

AOR: Adjusted Odds Ratio, ANC: Antenatal Care, BF: Breast Feeding, BFHI: Baby Friendly Hospital Initiative, CD: Cesarean Delivery, COR: Crude Odds Ratio, DIBF: Delayed Initiation of Breast Feeding, EDHS: Ethiopian Demographic Health Survey, EIBF: Early Initiation of Breast Feeding, PNC: Postnatal Care, PPH: Post Partum Hemorrhage, SPSS: Statistical Package for Social Science, UNICEF: United Nations Children's Emergency Fund, VD: Vaginal Delivery, WHO: World Health Organization

Author Contributions

The authors equally contributed and participated in the preparation, conceptualization, searching and selection, data extraction and data analysis, writing the manuscript and approving the final manuscript.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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Data Availability

All related data has been presented within the manuscript. The data set supporting the conclusions of this article is available from the corresponding author upon reasonable request.

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