

Determinants of Early Initiation of Breastfeeding Among Mothers: The Case of Raya Kobo District, Northeast Ethiopia: A Cross-Sectional Study

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Abstract: *Background:* Breastfeeding is recommended as proper infant and young child feeding practice that should be initiated within the first hour after birth. Early initiation of breastfeeding protects newborns from early neonatal mortality, hence it is important to meet the millennium development goal. *Methods:* Quantitative community based cross-sectional study was employed on systematically selected 633 mothers of children aged less than 24 months. Descriptive statistics, binary and multivariable logistic regression analyses were employed to identify the factors associated with early initiation of breastfeeding practices. The strength of the association was measured by odds ratio, and p-value <0.05 was considered as statistically significant. *Results:* The prevalence of early initiation of breastfeeding in Raya Kobo district was 71.7% (95% CI: 68.10, 75.30). Mothers who had formal education were two times (AOR: 1.8; 95% CI (1.10, 2.95)) more likely to initiate breastfeeding early compared to those who had no formal education. Compared to mothers whose husbands lack formal education, mothers with husbands having formal education were (AOR: 1.9; 95% CI (1.04, 3.51)) more likely to introduce breastfeeding early. Compared to mothers who fed prelacteal, those who did not practice prelacteal feeding were 2.4 times (AOR: 2.4; 95% CI (1.61, 3.53)) more likely to initiate breastfeeding early. Mothers who fed their children with colostrum (AOR: 2.1; 95% CI (1.23, 3.53)) were more likely to initiate breastfeeding early compared to those who discarded colostrum. *Conclusion:* In Raya Kobo district five in seven children benefited from early initiation of breastfeeding. Giving colostrum, avoiding prelacteal feeding, maternal and paternal attendances of formal education were positively associated with early initiation of breastfeeding. Considering health education on the importance of early initiation of breastfeeding and building women empowerment on proper newborn feeding practices are important in the promotion of early initiation of breastfeeding.

Keywords: Early Initiation of Breastfeeding, Raya Kobo, Northeast Ethiopia

1. Background

The World Health Organization and United Nations Children's Emergency Fund recommend the initiation of breastfeeding within the first hour after birth. This is termed as early initiation of breastfeeding [1]. It is about the length of time after birth when the mother attempts to initiate breastfeeding regardless of the breast milk arrival. A mother putting her infant directly to her breast and trying to get the infant's mouth to handle the nipple is an attempt to initiate breastfeeding. Similarly, having the infant placed on mother's chest with skin-to-skin contact could also be regarded as attempting to initiate breastfeeding; because infants would naturally make movements towards the breast and are likely

to initiate breastfeeding [2].

Early initiation of breastfeeding facilitates emotional bonding of the mother and the newborn, and has a positive impact on the duration of exclusive breastfeeding. Early initiation of breastfeeding reduces child morbidity and mortality in the first two years of life [1,3]. If all infants started breastfeeding within the first hour of birth, 22% of neonatal deaths could be saved [4]. This is because early human milk is rich in a variety of immune and non-immune components that may accelerate intestinal maturation, resistance to infection, and epithelial recovery from infection [1,5]. Therefore to meet the millennium development goal in

reduction of child mortality, early initiation of breastfeeding is essential. This is particularly relevant for Africa where neonatal and infant mortality rates are high [4].

The recent Demographic and Health Survey of Ethiopia estimated that only 51.5% of newborns benefited from early initiation of breastfeeding in Ethiopia [3]. This percentage is far from the Ethiopian Health Sector Development Program IV (HSPD IV) target of 92% of children breastfed within one hour of birth [6]. Therefore, this study was conducted in Raya Kobo district to assess early initiation of breastfeeding and associated factors among mothers of children aged less than 24 months.

2. Methods

2.1. Study Setting and Participants

This study was conducted in Raya kobo district from December, 2013 to January, 2014. Raya Kobo district is one of the thirteen districts of North Wello Zone, which is located 570 Kms North-East of Addis Ababa. The district is bounded by Tigray National Regional State in the North, Afar National Regional State in the East, Gidan district in the West, Habru and Gubalafto districts in the South. There are forty two kebeles (the smallest administrative units next to district in Ethiopia) under Raya Kobo district: five urban kebeles and thirty seven rural kebeles. The total population of the district is 230,881 (116,110 males and 114,771 females) and 19,595 are estimated to be children under two years of age. Eighty six percent of the district population lives in rural kebeles. The average family size of the households is estimated to be 4.5. There are forty two health posts and seven health centers in the district. Each health posts have two health extension workers [7].

A quantitative community based cross sectional study was employed on mothers of children aged less than 24 months living in Raya Kobo district. A total of 633 mothers of children aged less than 24 months were calculated using a single population proportion formula;

$$n = D \left[\frac{\left(\frac{z_{\alpha}}{2} \right)^2 p(1-p)}{d^2} \right]$$

Where n = required sample size, $z_{\frac{\alpha}{2}}$ = critical value for normal distribution at 95% confidence level which equals to 1.96 (Z value at alpha 0.05), $D=1.5$ (design effect), P = prevalence of early initiation of breastfeeding (52.4%) in Goba district of Ethiopia [8], d = an absolute precision ($d=0.05$).

2.2. Sampling Procedure

The sampling procedure was started from the stratification (assuming that the rural kebeles are relatively homogenous) of the thirty seven kebeles as rural and the five kebeles as urban (assuming that the urban kebeles are relatively homogenous). Out of the forty two kebeles, one urban kebele and seven rural kebeles were randomly selected using lottery

method. Fourteen percent of the under-two population lives in urban areas and the remaining lives in rural residences [7]. Therefore, based on population proportion, 544 mothers of children aged less than 24 months were taken from rural areas and 89 from urban areas. Presurvey was done before the actual day of data collection to know which households have the targeted mother-child pairs.

At the time of survey, from each household unit one eligible mother who had a biological child aged less than 24 months was systematically selected. If there were more than one mothers with biological children aged less than 24 months in one household unit, one mother with the youngest child was selected. From mothers who had more than one child aged less than 24 months, the youngest child was selected. If mothers had twin children aged less than 24 months, one child was selected by lottery method. Mothers who are unable to communicate were excluded from the study.

2.3. Study Variables

In this study, the dependent variable was early initiation of breastfeeding practice among mothers of children aged less than 24 months. Early breastfeeding initiation is the initiation of breastfeeding within one hour of birth [1]. The independent variables were maternal characteristics (age, educational status, religion, and ethnicity), household characteristics (area of residence, household head, and family size), husband educational status, child's sex, birth order, site of delivery, mode of delivery, antenatal and postnatal care utilization. Antenatal care utilization is defined as having at least one visit of health institution for checkup purpose during the pregnancy of the index child [9]. Postnatal care utilization is receiving the care provided to the woman and the index child at least once during the six weeks period following delivery [10].

2.4. Data Collection Instrument, Methods and Process

Data were collected using a pre-tested, structured and interviewer administered questionnaire adopted from the Ethiopian Demographic and Health Survey [3] and the national nutrition survey questionnaire [11]. In this study early initiation of breastfeeding was assessed by this question "How long after birth did you first put [NAME] to the breast even if your breast milk did not arrive yet?"[2]. The questionnaire was prepared first in English, translated into Amharic, and then back into English by fluent speakers of both languages to check its consistency. The final Amharic (local language) version of the questionnaire was used to collect the data. The data were collected by eight high school graduates. The data collectors and the supervisors (two nurses having Bachelor of Science (BSc)) were trained for three days by the investigator on the study instrument, consent form, how to interview and data collection procedures.

2.5. Data Quality Control

High school graduate students who can speak the local language were recruited as data collectors. The questionnaire was pretested on two kebeles which were not included in the research. Then the pretest amendments on the questionnaire were made accordingly. The supervisors had checked the day to day activity of data collectors regarding the completion of questionnaires, clarity of responses and proper coding of the responses. After that the investigator had checked the supervisors' work each day.

2.6. Data Processing and Analysis

The data were checked for completeness and inconsistencies. Data were also cleaned, coded and entered on to EpiData version 3.02, then exported to SPSS 20 statistical package for analysis.

Binary and multivariable logistic regression analyses were computed. In the binary logistic regression analysis the crude odds ratio (COR) with 95% confidence interval was estimated to assess the association between each independent variables and the outcome variable. Variables with p-value <0.25 in the binary analysis were considered in the multivariable model [12].

The Hosmer-Lemeshow goodness-of-fit with enter procedure was used to test for model fitness. Adjusted Odds Ratio (AOR) with 95% confidence interval was estimated to assess the strength of the association, and a p-value <0.05 was used to declare the statistical significance in the multivariable analysis. Variables with p-value <0.05 in the multivariate logistic regression analysis were considered as significant and independent predictors of early initiation of breastfeeding.

2.7. Ethical Consideration

The study was approved by the Institutional Health Research Ethics review Committee (IHRERC) of Haramaya University, College of Health and Medical Sciences. The participants enrolled in the study were informed about the study objectives, expected outcomes, benefits and the risks associated with it. A written consent was taken from the participants before the interview. Illiterate mothers were consented by their thumb print after verbal consent. Confidentiality of responses was maintained throughout the study.

3. Results

3.1. Characteristics of Participants

A total of 623 mothers of children aged less than 24 months were included in the study with response rate of 98.4%. Majority of the respondents were in the age group of 20-34 years of age. Only 55 (8.8%) of mothers were household heads. Three hundred and four (48.8%) of the index children were males. About 82% of husbands did not have any formal education (Table 1).

Table 1. Socio-demographic characteristics of mothers of children aged less than 24 months in Raya kobo district, North Eastern Ethiopia, January 2014.

Variable	Frequency	Percent
Residence		
Urban	88	14.1
Rural	535	85.9
Maternal age		
<20	46	7.4
20-34	444	71.3
>34	133	21.3
Mother's religion		
Orthodox	421	67.6
Muslim	202	32.4
Mother's educational status		
No formal education	482	77.4
Formal education	141	22.6
Mother's occupation		
House wife	418	67.1
Farmer	169	27.1
Business woman*	27	4.3
Other **	9	1.5
Maternal marital status		
Married	576	92.5
Divorced	30	4.8
Single	17	2.7
Paternal educational status		
No formal education	509	81.7
Formal education	97	15.6
Family size		
2	22	3.5
3-4	227	36.4
≥5	374	60.0
Household head		
Respondent	55	8.8
Others [§]	568	91.2
Index children's sex		
Male	304	48.8
Female	319	51.2
Index children's age (month)		
<6	129	20.7
6-11	160	25.7
12-17	156	25.0
18-23	178	28.6
Index children's birth order		
1	133	21.3
2-3	242	38.8
≥4	248	39.8

*A woman who is involved in trade, weaving. ** Daily laborer, servant, traditional healer. [§] Respondent's husband, father, mother.

3.2. Maternal and Child Health Service Utilization

Three hundred ninety (62.6%) of mothers had attended antenatal care (ANC) visit, 473(75.9%) gave birth at home and 283(45.4%) attended post natal care (PNC) visit to their index children (Table 2).

Table 2. Distribution of mothers based on maternal and child health service utilization in Raya kobo district, North Eastern Ethiopia, January 2014.

Variable	Frequency	Percent
Ante natal care visit*		
Yes	390	62.6
No	233	37.4
Number of ANC		
1	38	9.7
2-3	269	69.0
≥4	83	21.3
Mother received advice on breastfeeding at ANC		
Yes	143	36.7
No	247	63.3
Delivery place		
Home	473	75.9
Health institution	150	24.1
Mode of delivery		
Cesarean section	11	1.8
Vaginal delivery	612	98.2
Post natal care visit*		
Yes	283	45.4
No	340	54.6
Mother received advice on breastfeeding at PNC		
Yes	118	41.7
No	165	58.3

*at least one visit

3.3. Factors associated with Early Initiation of Breastfeeding Practices

All study participants (100%) had ever breastfed their index children. Of those who had ever breastfed, 447 (71.7%; 95% CI: 68.10, 75.30) mothers initiated breast feeding within one hour after birth. Five hundred forty four (87.3%) mothers of children aged less than 24 months fed their children with colostrum. Two hundred forty two mothers (38.8%)

administered prelacteal feeding to their index children before breastfeeding initiation.

Binary logistic regression analysis showed that maternal educational status, paternal educational status, avoiding prelacteal feeding, feeding colostrum and giving birth at health institution were statistically associated with early breastfeeding initiation practices at p-value <0.05 (Table 3). However, in the binary model, maternal age, residence, religion, marital status, family size, birth order, mode of delivery and postnatal care attendance were not found significantly associated with early breastfeeding initiation at p-value <0.25. Thus, these variables were not included in multivariable regression analysis model.

In the multivariable logistic regression analysis colostrum feeding, avoiding prelacteal feeding, maternal and paternal attendances of formal education remained positive predictors of early initiation of breastfeeding at p-value <0.05. Mothers who had formal education were nearly two times (AOR: 1.8; 95% CI (1.10, 2.95)) more likely to initiate breastfeeding early compared to mothers without formal education. Compared to mothers whose husbands lack formal education, mothers whose husbands had formal education were (AOR: 1.9; 95% CI (1.04, 3.51)) more likely to practice early initiation of breastfeeding. Compared to mothers who fed prelacteal to their children, those who deprived prelacteal feeds were 2.4 times (AOR: 2.4; 95% CI (1.61, 3.53)) more likely to initiate breastfeeding early. Mothers who fed their children with colostrum (AOR: 2.1; 95% CI (1.23, 3.53)) were more likely to practice early initiation of breastfeeding compared to those who discarded colostrum (Table 3).

Table 3. Binary and multivariable logistic regression analysis showing factors associated with early initiation of breastfeeding practices among mothers of children aged less than 24 months in Raya kobo district, January 2014.

Variable	Early initiation n (%)	COR (95%CI)	AOR (95%CI)
Maternal educational status			
No formal education	333(69.1)	1	1
Primary and above	114(80.9)	1.9(1.19,2.99)*	1.80(1.10, 2.95)*
Paternal educational status			
No formal education	355(69.7)	1	1
Primary and above	81(83.5)	2.2(1.24,3.88)*	1.9(1.04, 3.51)*
Delivery place			
Home	325(68.7)	1	1
Health institution	122(81.3)	2.0(1.26,3.13)*	1.3(0.75, 2.19)
Prelacteal feeding			
Yes	142(58.7)	1	1
No	305(80.1)	2.8(1.97,4.05)*	2.4(1.61,3.53)*
Colostrum feeding			
Yes	406(74.6)	2.7 (1.68,4.41)*	2.1(1.23, 3.53)*
No	41(51.9)	1	1
Household headship			
Mothers of index children	35(63.6)	1	1
Other person	412(72.5)	1.5(0.85,2.69)	1.5(0.78, 2.98)
Sex of the index children			
Male	227(74.7)	1.3(0.93,1.884)	1.4(0.97, 2.05)
Female	220(69.0)	1	
Antenatal care visit			
Yes	286(73.3)	1.2(0.86,1.76)	1.0(0.69, 1.50)
No	161(69.1)	1	1

*Statistically significant variables at P<0.05. CI=Confidence Interval. Hosmer-Lemeshow goodness-of-fit= 0.282.

4. Discussion

In this study, early initiation of breastfeeding was practiced by 71.7% of mothers of children aged less than 24 months. This study also tried to assess the factors associated with early initiation of breastfeeding. Accordingly, feeding colostrum, avoiding prelacteal feeding, maternal and paternal attendances of formal education were identified as independent predictors of early initiation of breastfeeding.

Early initiation of breastfeeding was higher in Raya Kobo district than the report from Amhara Regional state (37.5%) [3], Axum town (41.6%) [12], Goba district (52.4%) [8], Arba Minch Zuria (57.2%) [14] and the overall national prevalence in Ethiopia (52.5%) [3]. However, this finding was less than the prevalence of early initiation of breastfeeding (87%) in the city of Bahir Dar [15], and 92% target of the health sector development program of Ethiopia [6].

Mothers who had formal education were more likely to initiate breastfeeding early compared to those without formal education in Raya Kobo. Similar findings were reported from Goba district of Ethiopia [8]. This might be explained in such a way that mothers who had formal education are more able to receive and understand breastfeeding promotion messages. Alternatively, mothers who had no formal education might not appreciate information regarding early initiation of breastfeeding.

In the study area paternal educational status was associated with early initiation of breastfeeding. Compared to mothers whose husbands had no formal education, mothers with husbands having formal education were more likely to practice early breastfeeding initiation. A study in Arba Minch Zuria of Ethiopia showed that paternal education level is significantly associated with maternal knowledge of optimal breastfeeding practices. Women whose husbands did not attend any formal education had less knowledge about optimal breastfeeding practices compared to whose husbands attended formal education [14]. This might be husbands possibly may provide information on the importance of early initiation of breastfeeding for newborns.

Compared to mothers who fed prelacteal, those who deprived of prelacteal feeding to their children were more likely to initiate breastfeeding early in Raya Kobo district. Findings from Goba district revealed that mothers gave fresh butter to newborns in the first three days without breastfeeding initiation [8]. There were also similar findings from Saudi Arabia [16]. Alternatively, early initiation of breastfeeding might also be the reason not to practice prelacteal feeding. Findings from Raya Kobo showed that mothers who initiated breastfeeding early were less likely to practice prelacteal feeding compared to those who initiated breastfeeding lately [17]. This was similar with the findings from Uganda [18].

Mothers who gave colostrum to their children in Raya Kobo were more likely to initiate breastfeeding early

compared to those who discarded colostrum. Similarly in Axum town of Northern Ethiopia, mothers who gave colostrums to their infants were more likely to initiate breastfeeding early compared to those who discarded colostrum [13]. Similar findings were also reported from Ghana [19] and Nigeria [20]. This might be more mothers might fed colostrum within one hour of birth. On the other hand mothers who initiated breastfeeding early might feed their children with colostrum.

This study may have important implications in the achievement of Infant and Young Child Feeding (IYCF) guideline and the Health Sector Development Program of Ethiopia. The use of standardized questionnaire was the strength of this study. The limitation of this study was that information obtained from mothers having children aged less than 24 months is subject to recall bias. The study also shares the limitations of the cross-sectional study design.

5. Conclusion

This study indicated that, in Raya Kobo district early initiation of breastfeeding was practiced by 71.7% mothers of children aged less than 24 months. Giving colostrum, avoiding prelacteal feeding, maternal and paternal attendances of formal education were positively associated with early initiation of breastfeeding. These factors are important in designing intervention strategies targeting the promotion of early initiation of breastfeeding. Considering health education and information on the importance of early initiation of breastfeeding, and building women empowerment on proper newborn feeding practices are essential in the promotion of early initiation of breastfeeding in the study area.

Competing interests

The author declares that he have no competing of interests.

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