Sub-Optimal Breastfeeding Practices Among women Having 24-59 Months Age Children in Dessie Zuria Woreda, Northwest Ethiopia

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Abstract

Background
Insufficient breastfeeding practices play a significant role in the high rates of mortality among newborns and young children in developing countries like Ethiopia. Premature cessation of breastfeeding and the subsequent introduction of unclean and inadequate formula feeding, which lacks essential nutrients, are commonly observed in low- and middle-income countries (LMICs), leading to the death of thousands of infants. This study aimed to evaluate suboptimal breastfeeding practices and identify the factors influencing them among women with children aged 24-59 months in the Dessie Zuria woreda of Northwest Ethiopia.

Methods
A community based cross-sectional study design was carried out from October 21 to November 25, 2019 in Dessie Zuria Woreda Data collected from a sample of 346 respondents using simple random sampling technique to select participants of the study. The AOR with P-value 0.05 and at 95% CI was utilized to identify predictors of inadequate breast feeding practices in a binary and multivariable logistic regression model.

Result
Three hundred forty six participants completed the questionnaire making the response rate 98%. The overall suboptimal breastfeeding was found 46.3% at 95% CI (42.3%-50.7%). Maternal illiteracy level, number of ANC visit, use of radio and counseling during ANC visit were found preventive factors for sub-optimal breast feeding practice in the study area

Conclusion
It was revealed that suboptimal breastfeeding was very common. Four factors that could prevent suboptimal breastfeeding practice which demands an intervention by the policy makers, health care managers and health workers at each level of the health system.

1. Introduction

Suboptimal breastfeeding practices refer to any behaviors or habits that may interfere with a mother's ability to provide her baby with the best possible nutrition. These practices include not breastfeeding exclusively, using a bottle too soon, not latching on correctly, not breastfeeding on demand, or not breastfeeding for a long enough duration. All of these practices can lead to decreased nutrient intake for the baby, leading to poor growth and development and as a result it is responsible for 45 % of neonatal infectious deaths in the world, 30% of diarrheal based mortality

and 18 % of ARIs deaths [1-5].

According to WHO guidelines, infants should begin breast feeding within an hour of birth, be breastfed exclusively for the first six months of life, and then transition to supplementary foods at the appropriate time, continuing breastfeeding for up to two years or longer [6,7].

Non optimal BF practice is identified from the predominant reason child malnutrition in Ethiopia that indicated in studies is only around half (52 %) of the infants less than six months old were exclusively breastfed [8-10]. This practice is associated with higher rates of acquisition of infections like GIT, ARI diseases, and conditions. Despite the clear advantages of EBF, many nations, including Ethiopia, do not exclusively breastfeed infants during the first six months of life, particularly in urban areas [11,12].

BF provides numerous health benefits through promoting and protecting maternal and child health from several infections. Optimal breastfeeding is one of the very crucial components of child health but ineffectively practiced leading to exposure of diarrheal and respiratory diseases which may kill the child [1,2,13]. Globally, sixty percent of the infants and young child mortality happened because of child feeding problems and where 2/3 of these deaths are attributed to sub-optimal breastfeeding actions [2]. These action have a detrimental effect on the child health and development, specifically in LMICs the accessibility and availability of essencial health service is not properly established [3-5]. In Ethiopia, 57% of under-five children death is associated with malnutrition primarily as a result of hunger, poor family and low health care access [4,6]. Malnourished child that can survive are more frequently get sick and attacked the life-long effects of developmental problems [5]. Child feeding is a complex issue that has implications on nutritional, health, psychological, and developmental issues [2,7,8].

EBF, as defined by the WHO, is the practice of exclusively feeding infants breast milk (including expressed breast milk) and no other liquids or solids, with the exception of drops or syrups containing vitamins, minerals, or medications [2,4]. Globally, several complex interactions of socio-cultural outlooks targeting on the standards of child feeding startegies are observed [2,3,9]. The problem between infant BF views and the WHO recommendations is widening in LMICs where socio-cultural, economic, and traditional norms have significant effects on BF and infant caring practices [3,10,11]. Early and fast stopping of breastfeeding, and then replacing by the start of untidy, unsound formula feeding of children with very light milk content is common in LMICs. This is why; under-five children are highly susceptible to infections for the variety of agents since their body nutrient store is not well developed [3,8,14]. Evidences showed that traditional and cultural ways of life related to child feeding have bad effects on the practice of breastfeeding recommended in LMICs [9,12,13]. In some societies, water, butter & other food contents are given for neonates, while colostrum is avoided as dirty milk, assuming to start BF when the milk becomes clearer after a few days of fore coming milk removal hoping this practice as a preventive measure of neonates against diseases [9,11,12]. Globally, less than 35% of mothers give EBF to their child during the first months of life, and the problem is widely rising in SSC [2,15]. The Ethiopian Demographic and Health Surveys (EDHS 2005, 2016) data showed that 96% of <5 children (urban & rural), have ever been breastfed in their lives; however, it was found not optimal [4]. Although, in Ethiopia, 69.1% of neonates are given breast milk within one hour of birth, and less than 80% of two months old infants are put on EBF, this proportion rapidly falls to 38% at the age of six months [4,16].

Even though optimal breastfeeding is one of the targets of Primary Health Care (PHC) initiatives of Ethiopia, a wide range of cultural infant feeding practices are seen and documented even after the implementations of IYCF recommendations.

Actions to protect, promote, and support EBF are demanded at the national, health facility and community levels. In this study, women with infants between the ages of 24 and 59 months in Dessie Zuria woreda were asked to assess the extent of their suboptimal breastfeeding practices and any potential contributing variables.

2. Methods and Materials
2.1 Study Setting and Period
Ethiopia's South Wollo zone is where the study was carried out. The district is roughly 480 kilometers (km) northeast of Addis Ababa, Ethiopia's capital city, and 401 kilometers (km) from Bahirdar, the Amhara region's administrative center.

The district is established with 26 Kebeles. There are 6 health centers and 27 health posts intended to provide health services to the population in this district. Total population of the district was 62,230 where 29,440 were females, and from the females 13,419 women were in the reproductive age group. There are 1,972 under five children, where 1,221 children were from 24-59 months' age who was the target population of this study with their mothers/ caregivers. The dates of this study's execution were October 21 through November 25, 2019.

3. Study Design and Population
In this study community based Cross-sectional study design. All mothers who had children of age between 24-59 were considered as a source population, but those children whose age 24-59 months in those randomly selected six kebeles of Dessie zuria district were used as a study population for this study duration.

4. Inclusion and Exclusion Criteria
For the purposes of data collection, all mothers with children between the ages of 24 and 59 months during the study period were included; however, mothers on exclusive complementary feeding, mothers with HIV, and mothers who fed their child in a mixed or complementary manner were excluded.

5. Sample Size Determination and Sampling Technique

Utilizing a single population proportion formula, the sample size for the descriptive objective was determined while taking into account the following premises: proportion of suboptimal breast feeding (p=29.8%) (1), expected margin of error (d) of 0.05, at 95% confidence level ($Z_{\alpha/2}$) and 10% contingency for non-response rate.

Thus $n = \dfrac{(Z_{\alpha/2})^2 \times P\,(1-P)}{d^2}$ $\qquad n = \dfrac{(1.96)2 \times (0.298) \times (0.702)}{(0.05)^2} = 321$

So, by adding 10% for non-respondents the calculated sample size was = 353

The sample size for factors influencing suboptimal breastfeeding was calculated using the double population proportion formula and three major predictors (2, 3) based on the aforementioned assumptions and calculated using Epi-info version 7 software (Table 1).

S.no	Factors	Assumptions	Final sample size
1	Educational status	Odds Ratio =2.86, ratio 1:1, power =80%, at 95% confidence level and 10% for non-response rate	323
2	Antenatal care	Odds Ratio =1.75, ratio 1:1, power =80%, at 95% confidence level and 10% for non-response rate	293
3	Income	Odds Ratio =2.589 , ratio 1:1, power =80%, at 95% confidence level and 10% for non-response rate	178

Table 1: Determination of sample size for the factors of suboptimal breast feeding practice among women having 24-59 months age children using Epi-Info software v.7 in Dessie Zuria Woreda, South Wollo, Northeast Ethiopia, 2019

Finally, the minimum adequate sample size for this specific study was 353 participants taken from the sample size determined in the first objective.

A simple random sampling technique was applied after taking all registered mothers from health posts that have children age 24-59 months from local health extension workers, for each kebele as shown below (Fig.1.).
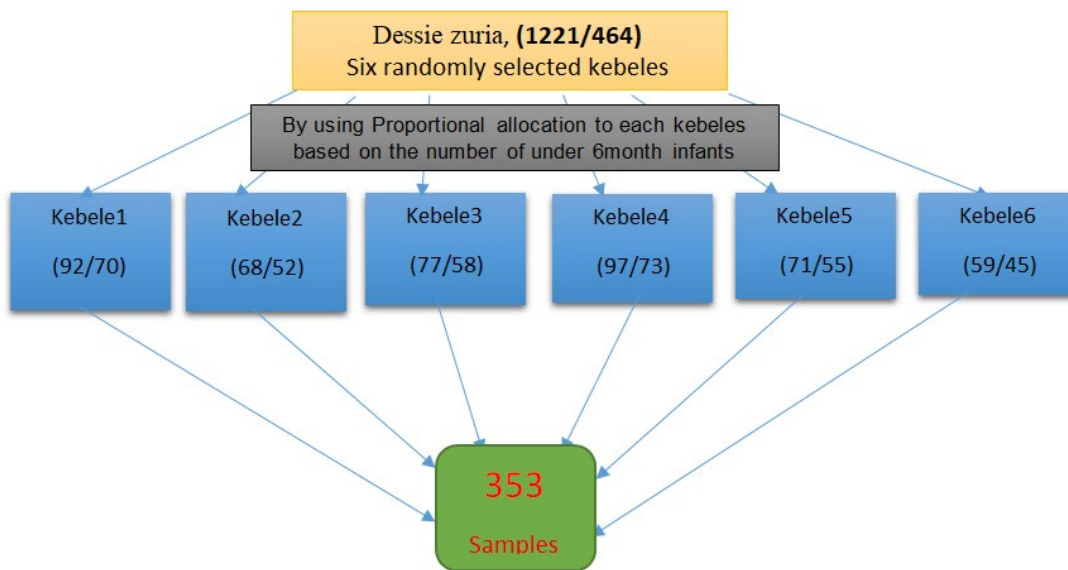

Figure 1: Schematic presentation of sampling procedures (all the study population had equal chance of being randomly selected)

6. Study Variables

The outcome variable for this study was Sub-optimal breastfeeding practice (Suboptimal/Optimal) while the independent variables used were thematized in the following as Socio-demographic factors, Maternal related factors, Breastfeeding practices and maternal knowledge and attitude related factors

7. Operational Definitions

7.1 Early Initiation of Breastfeeding: The proportion of children 24-59 months of age who were put to the breast within one hour of birth.

7.2 Exclusive Breastfeeding: The proportion of children 24-59

months of age who received breast milk as the only source of nourishment (but allows oral rehydration solution, drops or syrups of vitamins and medicines) during their infancy upon six months of age.

7.3 Suboptimal Breast Feeding: is the practice of breastfeeding of infants/children below the WHO recommendation level per day. It was measured using the WHO tools on those concepts: Early initiation of breastfeeding, EBF, continuity of BF upon 24 months of child age. Finally, this was dichotomized to suboptimal breastfeeding practices and not.

8. Data Collection Tools, Quality Control and Analysis
Participant-administered structured questionnaires were developed from different literatures to collect data on suboptimal breast feeding practices and determinat factors (1) (4, 5).

To assure the quality of data, questionnaires were first prepared in English language then translated to Amharic and, back to English to keep its consistency among data collectors and respondents. Three data collectors (qualified diploma nurses) and two supervisors (BSc Nurses) were assigned for data collection and supervision respectively. The lead investigator provided a one-day orientation to data collectors and supervisors about the goals and procedures of data gathering. Pre-testing was done on 10% (36 samples) of the total sample size in the Kalu district, which was excluded from the main investigation. The lead investigator also gathered and reviewed every completed questionnaire on a daily basis.

Data were cheeked and cleaned for completeness, organized and entered into Epi-info version 7 and then exported to SPSS version 25 software for cleaning, cross-checking, and analysis. Tables and graphs were used to present the results. Descriptive statistical analysis such as frequencies and percentages were used to describe the sample characteristics and the responses to the questioner items. To pinpoint the variables that lead to suboptimal breast-feeding practices, binary and multivariable logistic regression models were also applied. For the purpose of reducing the impact of potential confounders, binary logistic regression variables with p-values less than 0.25 were fitted to a multivariable logistic regression model. Finally, the variables that were statistically significant with suboptimal breast feeding practice were identified on the basis of odds ratio (AOR), with 95% CI and at $p < 0.05$.

9. Ethical Considerations
The actual data collection was carried out after getting ethical approval from the Ethical review committee of Wollo University, College of Medicine and Health Sciences with the date and reference number of the approval letter was: CMHS 715/02/11 on 08/02/2011. Each respondent's informed written agreement was obtained prior to enrollment, and the formal letter of cooperation was also provided to the relevant local authorities. Each participant received information about the study's objectives, and those who did not want to participate were free to decline or even withdraw. They were also told that the information would only be used for the study and that all data collected from them would be kept anonymous by utilizing codes instead of names and other personal identifiers.

10. Result
10.1 Socio-Demographic Characteristics of the Study Participants
The survey was completed by 346 mothers of children between 24 and 59 months old, yielding a 98% response rate. The mean age of the mothers was 26.6 years (SD: 5.8), with a range of 18 to 45 years. Children's ages varied from 24 to 59 months, with a mean of 34 months (SD: 4.3). The mothers were mostly between the ages of 24 and 50.5% (Table 1).

s.no	Variable	Category	Frequency (n)	Percentage (%)
1	Age (in years)	<24	175	50.5
		>25	171	49.5
2	Age child (in-months)	24-35	94	27
		36-47	154	44.5
		48-59	98	28.5
3	Child sex	Male	152	43.9
		Female	194	56.1
4	Number of U5 children	1	64	18.5
		>=2	282	81.5
5	Parity	1-2	36	10.4
		3-4	147	42.5
		>4	163	47.1
6	Birth order	First	45	13
		2-3	185	53.4

		>=4	116	33.6
7	Postnatal care	Yes	98	28.3
		No	248	71.7
8	Types of delivery	Vaginal	205	59.2
		Cesarean	141	40.8
9	Place of delivery	Home	211	61
		Health facility	135	39
10	Counseling on BF at ANC visit	Yes	302	87.3
		No	44	12.7
11	ANC Visit	Yes	245	70.8
		No	101	29.2
12	Number of ANC Visit	None	101	29.2
		1-3	201	58.1
		>=4	44	12.7

Table 2: Socio-demographic characteristics of respondents in Dessie Zuria, South Wollo, Ethiopia, 2020 (n=346)

11. Characteristics of Mothers with Children Aged 24-59 Months

In this study, between one and three prenatal care visits were made by at least 60% (58.1%) of the mothers. 12.7% of the mothers in this research went to four or more ANC visits. 87.3% of those who attended ANC visits received advice on best techniques for breastfeeding. Sixty one percent of the mothers, or more than half, gave birth at home. Two hundreds two (81.5%) of the women had more than two children under the age of five (Table 1).

12. Maternal Knowledge about Breast Feeding Practices
The majority of study participants 231 (66.7%) knew that breastfeeding should begin as soon as possible after delivery and 254 (73.4%) knew when to begin supplemental feeding (Table 2).

Variable	Category	Frequency (n)	Percent (%)
Economic status of household (ETB)	<1000	112	32.3
	1000-2000	95	27.4
	>2000	139	40.3
Ownership of Radio	Yes	78	22.5
	No	268	77.5
Breast feeding imitation	Within 1 hour	231	66.7
	After 1 hour	115	33.3
Given colostrum	Yes	312	90.2
	No	34	9.8
Pre-lacteal feeding	Yes	257	74.3
	No	89	25.7
Exclusively BF	Yes	132	38
	No	214	62
Timely complementary feeding	Yes	254	73.4
	No	92	26.6
BF frequency	<8 times	302	87.3
	>= 8times	44	12.7
Aware about importance of early initiation of breast feeding	Yes	241	69.6
	No	105	30.4
Aware about importance of feeding colostrum.	Yes	195	56.4
	No	151	43.6

Aware about importance of exclusive breast feeding	Yes	201	58
	No	145	42
Aware about continuity of breast feeding for 2 years and above	Yes	218	63
	No	128	37
Know when to start complementary feeding	Yes	251	72.5
	No	95	27.5

Table 3: Suboptimal breastfeeding factors description of respondents in Dessie Zuria, South Wollo, Ethiopia, 2020 (n=346)

Keys:- BF: Breast feeding, ETH: Ethiopian Birr

13. Factors Associated with Delayed Initiation of Breast Feeding

Age of the mother, educational level, family size, number of children under the age of five, number of antenatal care visits, breastfeeding counseling during antenatal care visits, and radio listening were found to have statistically significant associations with inadequate breastfeeding, according to binary logistic regression.

However, after taking into account potential confounders in a multivariable logistic regression analysis, it was discovered that women's educational status, the number of antenatal care visits, breastfeeding counseling given during those visits, and radio listening were significant predictors of suboptimal breastfeeding practice. It was revealed that mothers with radios were 69% less likely than mothers without radios to suboptimal breast feeding [AOR=0.31; 95% CI (0.04, 0.96)]. On the other hand, mothers who lacked a formal education (illiterate) were almost twice as likely to provide their child with suboptimal breastfeeding as mothers who were literate [AOR: 1.74; 95% CI (1.17, 2.59)]; and those mothers who had no ANC visit were 1.3 times more likely to delay initiation of breastfeeding than those with two and more children [AOR=1.3; 95% CI (1.19, 2.90)].

Variable	Category	Suboptimal BF		COR:95% CI	AOR: 95% CI
		Yes n (%)	No n (%)		
Age mother	18-24	28 (9.1)	15 (5.3)	0.62(0.38, 1.01)	0.52(0.27, 1.00)
	25-34	64 (23.5)	34 (16)	0.55(0.34, 0.88)	0.61(0.35, 1.05)
	>= 35	111 (41.8)	67 (31)	1	1
Maternal education	Illiterate	67 (23.7)	54 (18)	1.28(1.10, 2.08)	1.74(1.17, 2.59)*
	literate	151 (52.3)	76 (29)	1	1
Having radio	Yes	78 (32)	38 (15)	0.76 (0.13, 0.96)	0.31(0.04, 0.96) *
	No	142 (47)	67 (28)	1	1
Number of ANC visit	None	140 (43.5)	35 (12)	1.72(0.82, 3.61)	1.30(1.19, 2.90)*
	1-3	37 (16)	65 (25)	3.01 (2.15, 4.22)	2.40(1.68, 3.43)
	>= 4	54 (18)	71 (28)	1	1
Breastfeeding counseling at ANC visit	Yes	184 (61)	91 (30)	2.15(1.56, 2.95)	1.69(1.19, 2.4)*
	No	38 (16)	26 (9)	1	1

Table 4: Factors associated with suboptimal breastfeeding among 24-59 months old child in Dessie Zuria, South Wollo, Ethiopia, 2020 (n=346).

Keys: AOR: Adjusted Odds Ratio, COR: Crude Odds Ratio, CI: Confidence Interval

14. Discussion

This study evaluated the prevalence of suboptimal breastfeeding practices and associated predictive variables among women in Dessie Zuria who had infants between the ages of 24-59 months. In this study, the prevalence of suboptimal breastfeeding was seen in 46.3% (CI: 39.4-57.2).

Among those who breastfed their child sub-optimally, 33.3% had delayed initiation of breast feeding, 62% fed breast none exclusively, and 9.8% discarded colostrum. This result is less than that of the Jimma, Arjo District research (75.4%) (17). The execution of the mother and child health initiatives and the socio-cultural differences in the milieu may be to blame for this.

Because of cultural norms, suboptimal breastfeeding is still high in this study location. The prevalence of delayed breastfeeding beginning (after the first hour of birth) was also revealed to be 49.4% (95% CI: 46.8 - 52.3). The 2011 Ethiopian Demographic and Health Survey (EDHS) report (48%) (9); studies done in Jimma, Arjo District (37%) (17), Goba Woreda (47.6%) (13), Enagu, Nigeria (47%) (18), and in Africa (50%) (31) are all in agreement with this finding.

However, this result is higher than those of the studies carried out in rural areas of Ethiopia (31.1%) (14), Debre Berhan (17.5%) (18), Bishoftu (28.2%) (19), and Arbaminch Zuria (42.8%) (20). However, it is lower than the findings of the studies conducted in Nigeria (62%), (53.9%) (11, 21), and Pakistan (72.7%) (22). The rate of delayed breastfeeding beginning increased from (31%) to (48%) between 2005 and 2011, according to EDHS estimates (9, 23). This suggests that despite efforts to promote infant health, early breastfeeding initiation did not demonstrate a substantial improvement. Different socio-demographic traits of the respondents and the location of the study's execution could be the causes of this discrepancy.

This study found that illiterate women were more likely to have less-than-ideal breastfeeding than literate mothers. This result is consistent with those of research carried out in Jimma, the Arjo District (17), and Nigeria (11). Additionally, a different study found that mothers with formal education were more likely to initiate breastfeeding within the first hour of birth in the Goba District of Southeast Ethiopia (13). This could be because mothers who attended formal schooling had more knowledge about when to start breastfeeding.

In addition, mothers who had no radio were more likely to breastfeed sub-optimally than mothers who had radio at home. This finding is consistent with the study done in Nigeria (11). The possible explanation for this finding is that mothers with radio had more chance of listening and learning experience of breast feeding practice.

In addition, mothers who did not have an ANC visit were 1.3 times more likely to breastfeed their children sub optimally than mothers who had four or more ANC visits. This result was consistent with a study done in Nigeria, where frequent ANC visits were linked to an earlier start to breastfeeding (11). This finding, however, conflicts with that of a study done in a rural area of Ethiopia, which found that the quantity of ANC visits had no impact on sub-optimal breastfeeding (14). The variation in sample size and study design may be the cause of this inconsistency.

Mothers who did not receive breastfeeding counsel at their ANC visits were more likely to breastfeed their babies inadequately. This finding is consistent with research from rural Ethiopia (14) and a study on the variables affecting breastfeeding (24). This could happen as a result of mothers not receiving breastfeeding education at the proper time and not knowing when to start breastfeeding. Non-exclusive breast feeding practice was found to be 13.4% (95% CI: 11.6-15.4) among mothers having infants aged 24-59 months. The results of studies carried out in East Ethiopia (28.3%) (25), Enderta Woreda (29.8%) (16), Debre Markos (39.2%) (26), Gondar Town (47.5%) (10), EDHS 2011 (48%) (9), Debre Berhan (49.8%) (18), Arbaminch Zuria (44.4%) (27), Bishoftu (65.9%) (25), Ethiopia (51%) (28), Nigeria (86%) (11), Mecha District (52.9%) (7), Enagu, Nigeria (65.5%) (22), Pakistan (62.9%) (29) and developing countries (61%) (30) are all higher than those of this study.

15. Limitations of the Study
This study was cross-sectional; hence it did not examine the cause-and-effect relationships between various variables and suboptimal breastfeeding. The practiced maternal breastfeeding abilities (positioning and attachment) were not assessed.

It would have been beneficial if qualitative data collection methods in addition to quantitative ones had been taken into consideration to elicit more information from the study participants. Recall bias was additional difficulty in this investigation.

16. Conclusions and Recommendations
In general, this study showed a significantly high prevalence of sub-optimal breastfeeding, which suggests that, is one of the causes of the high magnitude of under-five mortality. The introduction of pre-lacteal foods and discarded colostrum is a rare practice among moms. Lack of breast feeding counseling, fewer or no ANC visits, lack of a radio, and not attending formal education were all determined to be exacerbating variables of sub-optimal breast feeding practice.

Health extension workers need to address cultural and traditional beliefs about not using colostrum, starting breastfeeding later, and not exclusively, as well as raise awareness about the advantages of the best breastfeeding practices. During ANC visits, deliveries, and postnatal care services, healthcare professionals should advise women about the best breast-feeding practices. The district government needs to prioritize getting more women enrolled in formal education. The variables that lead to less than ideal breast feeding practices should be the attention of the Federal Ministry of Health and nongovernmental groups working on baby and young child feeding initiatives.

17. Acronyms/Abbreviations
ANC - Antenatal care, BF/EBF – Breastfeeding/Exclusive breastfeeding, GO - Governmental organization, HE - Health education, NGO - Non-governmental organization, WHO - World health organization.

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