

# HIV Exposed Infants Feeding Practices and Associated Factors Among Mothers Attending PMTCT Clinics at Ambo Town Public Health Facilities

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**Abstracts:** About thirty seven million people worldwide were living with human immunodeficiency virus in the year 2017, of these, 1.8 million were children (<15 years old). Most of these children live in sub-Saharan Africa and were infected by their human immunodeficiency virus from positive mothers during pregnancy, childbirth or breastfeeding. The study aimed to assess human immune deficiency virus exposed infants feeding practices and associated factors among mothers on prevention of mother to child transmission clinics at Ambo town public health institution. Facility based cross-sectional study was conducted from May to August 2019, at Ambo town public health institution. Systematic random sampling method was utilized to select study respondents. Data were collected through an exit interview by using pre-tested structured questionnaire. The returned questionnaires were checked for completeness, cleaned manually and entered to epidata version 3.1 and then exported SPSS version 20.0 for further analysis. Univariate and multivariate logistic regression analyses were carried out and finally descriptive finding was presented using frequency distribution tables and graphs. From total of 106 respondents 44 (42%) were greater than or equal to 30 years old and majority (75.5%) were from urban and more than half (56.8%) had good knowledge towards infant feeding practice. About 53.8% of the children were exclusively breast fed, whereas 28.3% and 17.9% had practiced mixed feeding and exclusive replacement feeding respectively. This study result identified that the main reason reported for Exclusive Breast Feeding were advised by health professionals, easily availability of breast milk and nutritional importance among the study population. Thus Health professionals working at prevention of mother to child transmission clinic should work on infant feeding practice options by using mass media, community mobilization and health education in more comprehensive.

**Keywords:** Ambo Ethiopia, HIV-positive Mothers, Infant Feeding Practice

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## 1. Introduction

Worldwide about 36.9 million people were living with HIV/AIDS by the year 2017. Out of this about 1.8 million people were children aged less than fifteen years and living in sub-Saharan Africa. Most of the children were infected with the virus during pregnancy, delivery and breast feeding [1, 2, 3]. Similarly Ethiopia, one of the poorest country in the Horn of Africa, carries the highest burden of HIV/AIDS with prevalence of 1.1% among Adults aged 15-45 years and 3.4% among children aged less than five years, where child to mother transmission was the main route of acquisition of the virus [4, 5].

Literatures show that HIV transmission rate is

approximated to be 5-10% during antenatal, 10-15% during labor and child birth, and 5-20% after birth during breast feeding. Meanwhile the risk of HIV transmission increases as duration of breast feeding increases [2, 6]. However breast milk provides sufficient nutrient requirements of the infant. Thus prioritization of risk benefit analysis is very crucial to prevent HIV transmission while breast feeding [7].

To prevent Non-HIV related morbidity and mortality of infants WHO recommends exclusively breast feeding for the first six months and continue to breastfeed for at least 12 months while introducing complementary foods. World Health Organization recommends Exclusive breast feeding, in areas where exclusive replacement feeding was not

feasible, acceptable and safe [6]. The current WHO update recommends mothers living with HIV must breastfeed for at least twelve months and could continue breastfeeding for up to 24 months or beyond given they are receiving ART [11]. In the first six months of age exclusive replacement feeding should not be used unless safe and sufficient formula feeds are accessible [8-11].

Infants those who born from HIV positive mothers were more likely to be infected, unless preventative measures are strictly taken [13]. In Ethiopia breast feeding is custom. Nevertheless, only 58% children are exclusively breast fed and 76% continue breast feeding for two years and above. Where 74% of women know that HIV can be transmitted through breastfeeding of whom, only 48 percent of women know that the risk of mother to child transmission can be reduced by taking special drugs [12]. This indicates the gaps on mother to child transmission prevention strategies. Thus this study assess the level of knowledge of HIV positive mothers towards feeding options, their current feeding option and associated factors at the study area.

## 2. Methods and Material

### 2.1. Study Area and Design

The study was conducted at Ambo Town, West Shoa Zone, Oromia regional state, Ethiopia. Ambo town is found at 110Km to the West direction of Addis Ababa Capital city of Ethiopia. There are four public health facilities which provide PMTCT service in the town, namely Awaro Health Center, Ambo Health Center, Ambo General Hospital, and Ambo University Referral Hospital. During the study period of this work, there were a total of 180 mothers attending PMTCT in the town. The study was conducted from April, 10 – July 20/2019. Institution based cross-sectional study design was utilized in this study.

### 2.2. Study Populations and Sample Size

All mothers who have children aged 6-24 months attending PMTCT clinics at public health facilities of Ambo town were source population. All randomly selected mothers attending PMTCT clinics were included in this study. The following assumptions were considered while calculating the sample size. Ninety five percent confidence level (CI= 95%), 90.40% proportion (P) of exclusive breastfeeding under six months of age among HIV positive mothers [19], 10% on response rate. Finally the sample size is calculated using single population formula.

$$n = \frac{(Z\alpha/2)^2(P)(1-p)}{d^2} = \frac{(1.96)^2(0.904)(1-0.904)}{0.05^2} = 134$$

Therefore a total of 134 mothers were studied.

### 2.3. Sampling Technique and Data Collection

First study subjects are allocated to each institution

proportion to the patient load. Then systematic random sampling technique was applied using registration card as a frame to select the eligible study subjects. A structured questionnaire which included socio-demographic and health related factors were prepared based on objectives of the study after reviewing different literatures. Pre-test of the questionnaires were done on 5% of the study subjects at Guder health center (Other than study area) to check reliability, acceptability and time required for the interview and then corrections were made accordingly.

### 2.4. Data Processing and Analysis

Data was coded and entered to Epi-data version 3.1 and exported to SPSS version 21 for analyses. Frequency, mean and standard deviations from descriptive statistics and analytic statistics such as bivariate and multivariable logistic regression analysis were computed to determine the effect of various factors on the outcome variable. Variables having P-value less than or equal to 0.05 on bivariate logistic regression were the candidate for multivariable logistic regressions. Statistical significance was declared at  $P < 0.05$ . The strength of association between independent and dependent variables was assessed using the adjusted odds ratio with 95% confidence interval.

## 3. Results

A total of 106 HIV positive mothers, who have children 6-24 months, were participated in the study making a response rate of 80.5%.

### 3.1. Socio-demographic Characteristics of the Study Population

The mean age of the respondents were 29.54,  $\pm 5.58$  standard deviation in years which ranges from 19 to 42 years old. Out of total study participants about 75.5%, 65.1%, and 62% were from urban residence, Oromo and Orthodox in religion respectively. Out of total respondents 23.6, 28.3% and 48.1% were uneducated, attended primary school and attended secondary & above respectively. Out of total respondents the mean family monthly income was 3659.4 Ethiopian birr (Table 1).

### 3.2. Maternal Health Related Characteristics

This study revealed that the primary sources of information regarding infant feeding practice obtained from health care providers 94 (88.7%), followed by mass media 7 (6.6%) and friends 5 (4.7%). More than 80% of study subjects were on WHO stage one and about 99 (93.4%) discloses their status to their partner. Regarding their ANC follow up 98 (92.5%) of them had antenatal follow up, of whom 82 (77.3%) attended ANC three and above and about 93 (87.7%) delivered at health institution (Table 2).

**Table 1.** Socio demographic characteristics of the study participants attending PMTCT clinic at Ambo town public health institutions, Ambo Ethiopia, 2019 (n=106).

Variables	Characteristics	Frequency (n)	Percent (%)
Age	<25 yrs	28	26.4
	25-30 yrs	34	32
	>= 30 yrs	44	42
Ethnicity	Oromo	72	68
	Amhara	26	24.5
	Tigre	2	1.8
Religion	Others* <sup>1</sup>	6	5.6
	Orthodox	62	58.5
	Protestant	23	21.7
Duration of stay with partner	Muslim	4	3.8
	Others* <sup>2</sup>	17	16
	<5 yrs	24	22.6
Educational status of wife	>=5 yrs	82	77.4
	Illiterate	25	23.6
	Read and write	8	7.5
Occupational status of wife	1-8 Grade	22	20.8
	secondary	37	34.9
	Diploma and above	14	13.2
Family monthly income	Farmer	26	24.5
	Government employee	22	20.8
	Merchant	20	18.9
Residence	Private work	32	30.2
	Others* <sup>3</sup>	6	5.7
	<1500	5	4.7
	1501-3000	40	37.7
	>3001	61	57.5
	Urban	80	75.5
	Rural	26	24.5

Others \*<sup>1, 2, 3</sup> indicates Gurage, Wakefata and daily laborer respectively.

**Table 2.** Health and health related characteristics of mothers attending PMTCT at Ambo town public health institution, Ambo, Ethiopia, 2019 (n=106).

Variable	Categories	Frequency (n)	Percent (%)
Maternal breast condition	Normal	104	98.1
	Diseased	2	1.9
Duration of time since diagnosis	<=2 yrs	54	51
	>2 yrs	52	49
Did you start HAART	Yes	106	100
	No	0	0
Did your partner start HAART	Yes	98	92.5
	No	8	7.5
Initial CD4 count	<350	5	4.7
	350-500	28	26.4
	>=500	73	68.8
WHO clinical stage	1	82	77.3
	2	21	19.8
	3/4	3	2.8
Maternal PMTCT intervention	Yes	106	100
	No	0	0
Type of maternal PMTCT regiment	TDF+3TC+EVF	105	99.1
	AZT+3TC+NVP	1	0.9
Maternal ART adherence	Good	96	90.5
	poor	10	9.5
	<22cm	35	33
Mid-Upper arm Circumference of mother	22-24.5cm	64	60.3
	25-30cm	7	6.6
	Home	13	12.3
Place of delivery	Government hospital	54	50.9
	Governmental health centre	39	36.8
	subtotal	106	100
Birth attendants	Health professionals	89	84
	Health extension workers	4	3.7
	TBA	10	9.4
	Relatives	3	2.8

Variable	Categories	Frequency (n)	Percent (%)
Counseled on infant feeding Option	Yes	93	87.7
	No	13	12.3

### 3.3. Infant Feeding Practice

This study determine that the proportion of HIV exposed feeding practice which showed that the majority 57 (53.8%) were Exclusively Breast fed (EBF) whereas 19 (17.9%) were practiced Exclusive Replacement Feeding (ERF) and the rest 30 (28.3%) practiced Mixed Feeding (MF). Generally 76

(71.7%) and 30 (28.3%) mothers were practiced appropriate and in appropriate breast feeding practice. Study result identified that the main reason reported for Exclusive Breast Feeding due to advice by health workers (89.7%), nutritional importance (4.3%), easily availability of breast milk (4%) and 3% wide community acceptability.

**Table 3.** Factors affecting HIVexposed infant feeding practice among mothers attending PMTCT clinic at Ambo town public health institution, Ambo, Ethiopia, 2019 (n=106).

Variables		Feeding practice		COR	AOR 95%CI	P -value
		inappropriate	appropriate			
Educational status of the wife	uneducated	17	8	0.078	0.81 (0.010-0629)	0.004
	Read & write	4	4	0.167	0.160 (0.019-1.345)	0.085
	Primary and Secondary	3	19	1.056	1.063 (0.149-7.590)	0.956
	Diploma & above	2	12	1.375	1	0.732
Residence	urban	16	64	4.667	0.481 (0.097-2.394)	0.001
	rural	14	12	0.857	1	
Monthly income	Above mean	10	40	2.222	1.845 (0.580-5.870)	0.076
	Below mean	20	36	0.810	1	
WHO clinical stage	Stage 1	19	66	3.821	2.295 (0.604-8.720)	0.008
	Stage 2 & above	11	10	0.909	1	

### 3.4. Factors Associated with HIV Exposed Infant Feeding Practice

Multivariate analysis of this study revealed that educational status, place of residence and WHO clinical stage of the mother were found to be significantly associated with feeding practice. According to this study finding educated mothers were less likely to practice appropriate breast feeding as compared to educated mothers (those who have Diploma and above) AOR= 0.81 (95% CI, 0.010-0629). Additionally residence were found to be significantly associated with feeding practice AOR= 0.481 (95% CI 0.097-2.394). Finally WHO clinical stage was also significantly associated with feeding practice. Those mothers who were in WHO clinical stage I was 2.3 times more likely to practice appropriate breast feeding as compared to those who were in WHO clinical stage II and above, AOR= 2.295 (95% CI 0.604-8.720).

## 4. Discussion

The final analysis of this study revealed that 53.8% of HIV positive mothers had practiced exclusive breastfeeding. This finding is lower than other pocket studies conducted at Nigeria (91.7%), Tigray Ethiopia (90.4%) and Gondar Ethiopia (83.8%) [7, 19, 20, 21]. This may be due to the socio demographic characteristics difference of the study subjects at different study area. On the other hand 17.9% of the subjects have practiced exclusive replacement feeding for the first six month. This proportion is higher than study conducted at Kenya (8.2%), Nigeria (0.7%), Tigray Ethiopia (3.7%), Gondar Ethiopia (5.7%), but lower than study conducted at South Africa (50%) [2, 5, 19, 20, 21]. This may

be due to the mothers were government employee (20.8%), private worker (30.2%) by occupation and educational status of the study subject which can affect exclusive breast feeding.

Furthermore, this study assesses mixed feeding practice of the study participants. Accordingly 28.3% of HIV positive mothers practiced mixed feeding option. This is lower than report from Kenya (29.3%) but higher than South Africa (12.4%), Nigeria (7.6%), Tigray (5.9%) and Gondar (10.5%) [2, 6, 20, 21]. This may be due to absence of advice regarding feeding option as 12.3% of this study participant didn't receive advice; in addition there was also 12.3% home delivery in this study which in turn affects choice regarding feeding options.

Regarding duration of breast feeding, majorities (45%), of infants had discontinued breast feeding at six months. This in contrast to WHO recommendation which recommends mothers living with HIV should breastfeed for at least 12 months and may continue up to 24 months or beyond while they are receiving ART [9]. This might be due to lack of advice regarding duration of breast feeding, occupational status and educational status of the study subjects.

As to factors associated with feeding practice, educational status was significantly associated with feeding practice among HIV positive mothers at the study area. It was found that educated mothers were less likely to practice appropriate feeding option as compared to educated mothers (those who have Diploma and above) AOR= 0.81 (95% CI, 0.010-0629). This may be due to the fact that as education is the key determinants of health and it was also included in UNICEF conceptual framework of malnutrition as underlying cause of malnutrition. Additionally residence were found to be significantly associated with feeding practice AOR= 0.481 (95% CI 0.097-2.394). Those mothers who were urban

residents were 52% less likely to practice appropriate feeding options as compared to rural residents. This may be due to easy accessibility of foods like infant formula and occupational status of mothers in urban as government employee. Finally WHO clinical stage was also significantly associated with feeding practice. Those mothers who were in WHO clinical stage-I was 2.3 times more likely to practice appropriate breast feeding as compared to those who were in WHO clinical stage II and above, AOR= 2.295 (95% CI 0.604-8.720). This may be due to fear of HIV transmission as viral load increase, WHO stage also increase and then risk of transmission to infant also increases. Thus it is better to give more emphases to all infant feeding options like Wet nursing, Heat treated breast feeding and exclusive replacement feeding where Exclusive breast feeding is not practical.

## 5. Limitation of Study

Cause and effect relation was not assured because of cross-section study design.

## 6. Conclusion

This study revealed that, majorities (71.7%) of the study participants have practiced appropriate feeding option (Either exclusive replacement feeding or exclusive breast feeding). Whereas 28.3% of the study subjects practice inappropriate feeding option (mixed feeding). Factors like Maternal educational status, residence and WHO clinical stage were significantly associated with feeding practice.

## Declarations

### Ethical Consideration

Ethical clearance was received from Ethical Review Committee of College of Medicine and Health sciences of Ambo University. Verbal consent was obtained from the study subjects after they had been informed about the objectives and procedures of the study.

### Funding Statement

There was no funding source for this study.

## Authors' Contributions

KT conceptualized the paper, searched literature, trained field researchers for data collection and wrote the results and discussion sections. In addition KT also has critically reviewed the result and prepared the manuscript for publication.

## Competing Interests

The author declares no competing interests.

## Acronyms and Abbreviations

ART: Anti Retro viral Therapy,  
EBF: Exclusive breast feeding,  
ERF: Exclusive replacement feeding,  
HAART: Highly active antiretroviral therapy,  
HIV: Human Immunodeficiency Virus, MF: mixed feeding,  
MOH: Ministry of health,  
PLWHA: People living with HIV/AIDS,  
SPSS: Statistical Package for Social Sciences.

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