
Attitude and Practice Towards Exclusive Breast Feeding and Its Associated Factors Among HIV Positive Mothers in Southern Ethiopia

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Abstract: Introduction: The controversy between the risk of HIV transmission through breast milk and the life saving benefits of breastfeeding remains to be a dilemma faced by HIV positive mothers. Cognizant of this, World Health Organization recommends avoidance of all breastfeeding by HIV positive mothers when replacement feeding is acceptable, feasible, affordable, sustainable and safe. Otherwise, exclusive breast feeding is recommended during the first 6 months of life. Despite this effort, exclusive breast feeding is uncommon practice among HIV infected women. The aim of this study was to assess attitude and practice towards exclusive breast feeding and its associated factors among HIV positive mothers attending public hospitals of southern Ethiopia, 2013. Methods: Institution based cross-sectional study was conducted from August 1 to September 15, 2013. A total of 436 HIV positive mothers were recruited in the study. Pretested and structured interviewer administered questionnaires were used for data collection. Data were entered to EpiInfo and exported to SPSS for further analysis. Logistic regression analyses were used to see the association of different variables. Odds ratios and 95% confidence interval were computed to determine the presence and strength of association. Results: More than half (56.7%) of mothers had favorable attitude towards exclusive breast feeding and nearly half (48.2%) mothers exclusively breast feed their infants. Mother's education, occupation, house hold income, antenatal care attendance, counseling and HIV disclosure to spouse/family members were found to be associated with attitude and practice towards exclusive breast feeding. Conclusion: The attitude and prevalence of exclusive breast feeding practice were found to be very low. Therefore, HIV positive women opting to breastfeed should be encouraged to exclusively breast feed their infants and need to be promoted by policy makers and implementers.

Keywords: Exclusive Breast Feeding, Ethiopia, HIV Positive Mothers

1. Introduction

Exclusive breast-feeding (EBF) is defined as the consumption of only breast milk with no supplementation of any type since birth except drops and syrups like; vitamins, minerals or medicines. Breastfeeding is a major health promoting factor for infants and children in developing countries but the risk of mother-to-child transmission (MTCT) of human immune virus (HIV) by this route is challenging traditional practices [1, 2].

Globally, an estimated 2.1 million of children under 15 years of age are living with human immune virus or Acquired Immune Deficiency Syndrome (HIV/AIDS). Of these children 90% are living in sub-Saharan Africa, while about

64,813 are living in Ethiopia. In the absence of intervention, 30-45% of infants born to HIV-positive mothers in developing countries become infected during pregnancy, child birth and breastfeeding [3-5]. World Health Organization (WHO) and United Nations Children's Emergency Fund (UNICEF) recognized that breast feeding contributed for about 300,000 HIV infections per year worldwide, while at the same time 1.5 million children die each year if the women do not to breastfeed. The vast majority of these infections and deaths occur in Sub-Saharan Africa [6]. The health and survival benefits of breastfeeding exceed the risks of HIV transmission. However, the controversy between the risk of HIV transmission through breast milk and the life saving benefits of breastfeeding

creates an impossible dilemma among HIV positive mothers in developing countries. WHO recommends avoidance of all breast feeding by HIV infected mothers when replacement feeding is acceptable, feasible, affordable, sustainable, and safe (AFASS). Otherwise, EBF is recommended during the first 6 months of life [7]. The EBF practice is special for many reasons, including: bonding between mothers and baby, cost saving, perfect nutrition and health benefits for baby [8]. In spite of this fact, providing lifelong antiretroviral drugs to all pregnant women is the most effective way to prevent mother-to-child transmission (test and treat protocol) [7].

EBF is the single most effective intervention to save the lives of infants and children in developing countries. Approximately, 13-15% of deaths of children aged less than 5 years could be prevented if universal coverage of EBF were increased to 90% among infants aged less than 6 months [9]. Despite strong evidence that supports EBF, its prevalence has still remained very low worldwide (39%), and it is estimated to be 47% in Africa. Its success in practice has also been very low in Ethiopia [10-13]. Although data on attitude of EBF is limited, many studies have been employed on EBF practice in Africa, while only little information is available in Ethiopia. Therefore, this study was attempted to assess attitude and practice towards exclusive breast feeding and its associated factors among HIV positive mothers attending public hospitals of southern Ethiopia.

2. Methods

2.1. Study Design and Set Up

Institution based cross-sectional study design was conducted from August 1, 2013 to September 14, 2013 among HIV positive mothers attending prevention of mothers to child transmission (PMTCT) and anti-retroviral therapy (ART) clinics in selected public hospitals of Southern Nation, Nationalities and People's Regional State (SNNPRS), southern Ethiopia. SNNPRS is the third largest administrative region of Ethiopia. Hawassa is the capital of the region, which is 275 kms away from Addis Ababa. Administratively the state is divided into 15 Zones and 4 special woredas. It represents about 20% of the country's population with a projected population size of 17,857,192. Of these, 9,107,168 are females. Women of child bearing age (15-49) are estimated to be 2,121,970. Of which 3.9% are pregnant. It has 22 (18 governmental and 4 nongovernmental) hospitals, 563 health centers and 3,535 health posts during the study. According to the 2007 report of Antenatal care Sentinel HIV Surveillance in Ethiopia, HIV prevalence of pregnant women in this region is 2.1% [14].

2.2. Sample Size and Sampling Procedure

The sample size was calculated using single population proportion formula: $n_0 = (Z\alpha/2)^2 * p(1-p)/w^2$, by considering the following assumptions: the proportion (p) =16.2%, awareness about feeding options among HIV positive mothers in Guraghe Zone [15], 95% confidence level of

$Z\alpha/2 = 1.96$, 5% of absolute precision and 5% non-response rate. Design effect 2 was applied. Hence, the total sample size was 439. All HIV positive mothers who had infants/last child aged ≤ 2 years attending PMTCT and ART clinics in public hospitals of SNNPRS were considered as the source population.

Multi-stage sampling technique was applied: Among 18 governmental hospitals in the state, nine of them were taken by simple random sampling techniques using lottery method. The sample size was distributed to each PMTCT/ART clinics of each selected hospitals using probability proportional to size (PPS) and the numbers of HIV positive mothers required for the study in each PMTCT/ART clinics were determined. Sample size for each PMTCT/ART sites was computed as follows using the formula: $n_i = Nixno/N$, Where, n_i = number of HIV positive mothers that are needed for the study in each PMTCT/ART clinic/hospital. N_i = total number of HIV positive mothers who are attending the service at each PMTCT/ART clinic/hospital, n_0 = calculated sample size and "N" is total population of all selected hospitals in the region.

Therefore, each study subject was sampled from respective hospitals by systematic random sampling techniques and a total of 436 study subjects attending PMTCT and ART clinics were included in the study. The study population was listed and arranged in order. Sampling intervals were determined by dividing N/n ($1,565/439=4$), i.e. every 4th intervals and the starting point was chosen randomly.

2.3. Data Collection Tools and Procedure

Pretested and structured questionnaires using face-to-face interviewing with HIV positive mothers were used for data collection. Different relevant literatures were reviewed to develop the tool that addresses the objective of the study [1,4,6,10-11,15-16]. Pre-testing of the questionnaire was undertaken on 30 HIV positive mothers at non sampled hospitals. Findings from the pretest were used to modify the instrument. The questionnaire was designed to obtain information on the sociodemographic and obstetric characteristics of mothers, knowledge about EBF, and their attitude towards EBF practice. Data were collected by 13 diploma nurses and 5 diploma midwives (supervised by 3 B.Sc nurses and 3 health officers). A two days comprehensive training was given to data collectors and supervisors. The questionnaire was first prepared in English and then translated into Amharic (the local language), and back into English to ensure consistency.

2.4. Measurements

Attitude towards EBF was measured using 5 points Likert scale. The order of scoring for negative statements was reversed (strongly disagree=5, disagree=4, undecided=3, agree=2, agree=1) and the reverse was true for positive statements. The total score was obtained and computed for mean in order to categorize in to favorable and unfavorable attitudes. Score \geq mean was taken as favorable attitude, while that score $<$ mean was taken as unfavorable attitude.

Exclusive breast feeding practice is a current use, whether the respondents reported current child feeding practices.

Knowledge about EBF was measured by using ten knowledge questions. If respondents answered correctly for six or more questions, it was taken as *good knowledge* otherwise, *poor knowledge* for those who answered correctly for less than six questions.

3. Data Processing and Analysis

The collected questionnaire was checked manually for its completeness, coded and entered into EpiInfo version 3.5.1 statistical package, then exported to SPSS version 20.0 for further analysis. Descriptive and summary statistics were done. Both bivariate and multivariate logistic regression analysis was used to determine the association of each independent variable with the dependent variable. Variables significant in bi-variate analysis were entered into a multivariate logistic regression model to adjust the effects of cofounders on the outcome variable. Odds ratio with their 95% confidence intervals were computed to identify the presence and strength of association, and statistical significance was declared if $p < 0.05$.

4. Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of the University of Gondar and submitted to SNNPRS Health Bureau. Permission letter was granted from SNNPRS Health Bureau to respective health institutions. Verbal consent was obtained from each study subject prior to data collection process preceded. Those respondents who were not willing to participate in the study were not forced to involve. Their privacy was maintained. To keep their confidentiality personal identifiers were not utilized.

5. Results

5.1. Socio-Demographic Characteristics

A total of 436 mothers were included in the study. The overall response rate was 99.3%. Of these mothers 324(74.3%) were aged between 25-34 years. Sixty one (14.0%) mothers were aged ≥ 35 years, while 51(11.7%) of them were aged between 15-24 years old. The mean age of the respondents was 29(SD 4.4) years old. Among infants/children of these mothers, 257(58.9%) were aged between 12-24 months. The mean age of infants/children was 12.5 (SD 5.6) months old. Of these infants/children, 234(53.7%) were male. The majority, 349(80.0%) mothers were married, 31(7.1%) mothers were widowed, while 26(6.0%), 23(5.3%) and 7(1.6%) of them were divorced, single and separated respectively. By religious affiliation, 194(44.5%) mothers were Orthodox Christians, and 178(40.8%) mothers were Muslim, while Protestant accounts for, 59(13.5%). By ethnic composition, 107(24.5%) mothers were Wolayita, 62(14.2%) mothers were Sidama, 95 (21.7%)

mothers were Amhara, 51(11.7%) mothers were Oromo, 43(9.9%) were Guraghe and similar proportions were Gedeo and 11(2.5%) mothers were Hadiya, while the rest were categorized in others (Kaffa and Siltie) (Table 1).

Table 1. Socio-demographic characteristics, SNNPR Hospitals, August, 2013.

Variables [n=436]	Frequency	Percent
Educational status of mother		
Cannot read and write	124	28.4
Only read and write	96	22.0
Primary education	121	27.8
Secondary education	67	15.4
Higher education	28	6.4
Educational status of spouse		
Cannot read & write	33	8.0
Only read and write	87	21.0
Primary education	91	21.9
Secondary education	108	26.0
Higher education	96	23.1
Occupation of the mother		
Housewife	164	37.6
Gov't employee	85	19.5
Merchant	111	25.5
Farmer	27	6.2
Others*	49	11.2
Monthly income		
≤ 500 ETB	100	22.9
501-1500 ETB	202	46.2
1501-2500 ETB	64	14.6
>2500 ETB	70	16.3
Residence		
Urban	369	84.6
Rural	67	15.4
Number of children		
One	95	21.8
Two	194	44.5
Three to five	128	29.4
More than five	19	4.3
Gender of infants/last child		
Male	234	53.7
Female	202	46.3
Age of infants/last child in group		
≤ 6 months	72	16.5
7-11months	107	24.5
12-24months	257	59.0

Others* = daily laborers & unemployed
ETB=Ethiopian Birr

5.2. Attitude Towards Exclusive Breastfeeding

In this study, more than half (56.7%) of mothers had favorable attitude towards EBF. A much lower percentage (22.0%) of mothers agreed that EBF transmits HIV. Significant proportion, (82.6%) of mothers agreed that breast feeding is nutritionally complete. In contrast, nearly half (46.8%) of mothers agreed that formula feeding is

nutritionally complete (Table 2).

Table 2. Attitude towards EBF, SNNPR Hospitals, August, 2013.

Variables [n=436]	Frequency	Percent
Overall attitude		
Favorable	247	56.7
Unfavorable	189	43.3
EBF for 6 months is the best choice for infant		
Disagree	88	20.2
Undecided	9	2.0
Agree	339	77.8
EBF is not good since it transmits HIV		
Disagree	298	68.4
Undecided	42	9.6
Agree	96	22.0
EBF for 6 months is nutritionally complete		
Disagree	65	14.9
Undecided	11	2.5
Agree	360	82.6
Formula feeding is nutritionally complete		
Disagree	189	43.3
Undecided	43	9.9
Agree	204	46.8
ERF for 6 months is best choice for infants/last child		
Disagree	237	54.4
Undecided	39	8.9
Agree	160	36.7
I do not accept ERF for fear of stigma due to HIV		
Disagree	308	70.6
Undecided	42	9.7
Agree	86	19.7
Mixed feeding has risk of HIV infection to infant/last child		
Disagree	129	29.6
Undecided	40	9.2
Agree	267	61.2
Mixed feeding is always necessary to infants/last child		
Disagree	214	49.5
Undecided	63	14.4
Agree	157	36.1
Heat treated milk is very important to my infant		
Disagree	119	27.3
Undecided	77	17.7
Agree	240	55.0
Wet-nurse is good infant feeding option		
Disagree	269	61.7
Undecided	80	18.3
Agree	87	20.0
Bottle feeding is good infant feeding option		
Disagree	140	32.1
Undecided	28	6.4
Agree	268	61.5
Bottle feeding is not good infant feeding option		
Disagree	259	59.4
Undecided	26	6.0
Agree	151	34.6
Complementary foods after 6 months is best choice		
Disagree	38	8.7
Undecided	13	3.0
Agree	385	88.3

5.3. Exclusive Breast Feeding Practice

The majority, 361(82.8%) of mothers were fully breastfed their infant/last child. One hundred eighty six (51.5%) mothers were initiated breast feeding immediately after birth. Comparatively few, 38(8.7%) mothers were offered fluids and solid foods (pre-lacteal feeding) to their infant/last child immediately after birth. Among reasons cited by respondents for providing pre-lacteal feeding were milk did not come in yet accounted for (63.2%) (Table 3).

Table 3. EBF Practice, SNNPR Hospitals, August, 2013.

Variables	Frequency	Percent
Ever breast feeding practice		
Yes	361	82.8
No	75	17.2
Initiation of breast feeding		
Immediately after delivery	186	51.5
Within 30 minutes after delivery	62	17.2
Within 1hour after delivery	103	28.5
Others*	10	2.8
Pre-lacteal feeding		
Yes	38	8.7
No	398	91.3
Reasons for pre-lacteal feeding		
Milk did not come in yet	24	63.2
I was ill	7	18.4
Baby was ill	3	7.9
Others*	4	10.5
Still breast feeding		
Yes	171	47.4
No	190	52.6
Duration of Breast feeding		
0-6 months	189	52.4
12 months	99	27.4
18-24 months	73	20.2
Frequency of breast feeding		
2-5 times	47	13.0
8-10 times	245	67.9
Frequent and on demand	69	19.1
Exclusive breast feeding practice		
Yes	210	48.2
No	226	51.8
Duration of Exclusive Breastfeeding		
1-2 months	3	1.4
3 months	4	1.9
4-5 months	8	3.8
6 months	195	92.9
Complementary feeding		
Yes	246	56.4
No	190	43.6
Starting age of complementary feeding		
At 6 months	190	77.2
After 5 months	22	8.9
After 4 months	20	8.1
Since birth	14	5.8

Others* = I do not know

Most of the respondents, 226(51.8%) preferred other infant feeding options to EBF. Of these, exclusive replacement

feeding (ERF) option accounts for 56(12.8%) (Figure1).

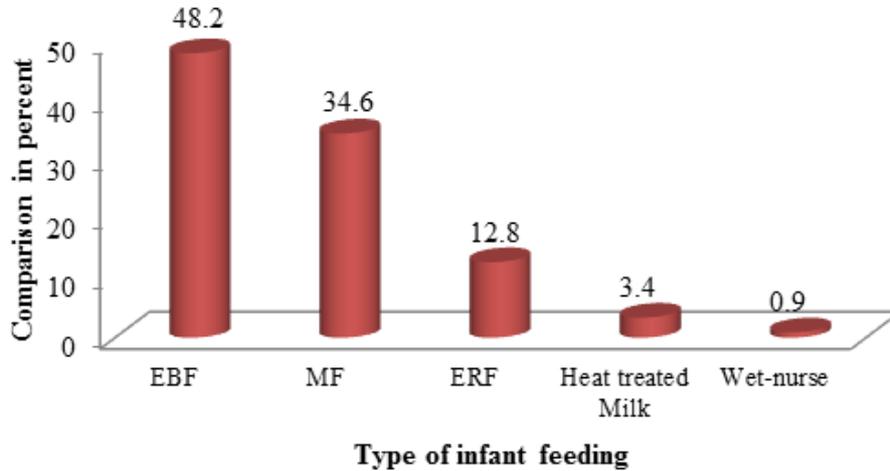


Figure 1. Prevalence of infant feeding options, SNNPR Hospitals, August, 2013.

More than half (54.9%) of the respondents choose other infant feeding options because their breast milk is not

sufficient (Figure 2).

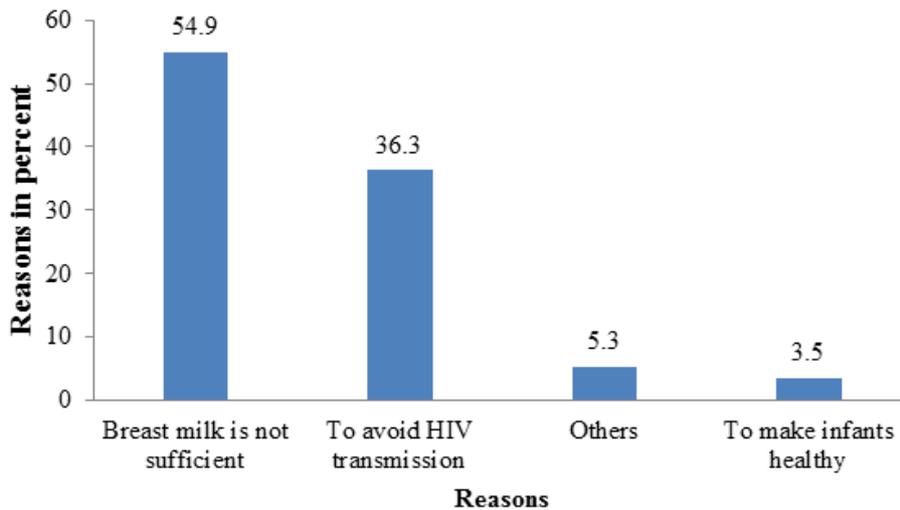


Figure 2. Reasons for choosing other infant feeding options, SNNPR Hospitals, August, 2013

5.4. Factors Associated with Attitude and Practice of Exclusive Breast Feeding

Among the respondents, 407(93.3%) attended ante natal care (ANC) service during pregnancy of last child. Among the respondents who did not attend ANC services, 13(44.8%) mothers were due to partner imposition 6(20.8%), 5(17.2%) and 5(17.2%) due to too far health facility, mothers had no information about ANC and time scarcity to visit health facility respectively. The finding of this study found out that majority, 383(87.8%) of the respondents had received counseling on EBF practice. The result of this study also showed, 230(52.8%) of the respondents had support from their partner on the way of EBF their infant/last child.

Regarding knowledge of mothers on EBF practice, majority 345(79.1%) had good knowledge about EBF. Of 436 participants, 370(84.9%) knew the definition of EBF.

Most of the respondents, 383(87.8%) had knowledge on recommended duration of EBF. Four hundred seven (93.3%) mothers had heard information on mechanisms of MTCT.

5.5. Factors Associated with the Attitude of Mothers Towards Exclusive Breast Feeding

In bivariate and multivariable analysis, some socio-demographic characteristics and selected variables had shown significant association with attitude of mothers towards EBF. Mother’s occupation: those mothers who were farmer by occupation were 64% less likely to have favorable attitude compared to mothers who were housewife (AOR=0.36, 95%CI=0.14, 0.92). In addition, mothers who resided in urban settings of the region were 2 times more likely to have favorable attitude than their counterparts (AOR=2.12, 95% CI=1.09, 4.20).

The finding of this study also showed that, those mother’s

who had good knowledge on EBF practice were almost 3 times more likely to have favorable attitude than their referent group (AOR=2.8, 95%CI= 1.66, 4.67) and those who were attended ANC service during pregnancy of their last child were 4 times more likely to have favorable attitude than those who did not attend (AOR=4.0, 95%CI=1.02, 16.01). Moreover, mothers who received counseling on EBF practice during ANC visit were 2.6 times more likely to have favorable attitude than those who were not counseled

(AOR=2.6, 95%CI=1.41, 4.89).

Multivariable analysis result also indicated that, mothers who disclosed their HIV status to their family were almost 2 times more likely to have favorable attitude towards EBF than the referent group (AOR=1.7, 95%CI=1.03, 2.85). In addition, HIV positive mothers who had support from their spouse while EBF their infants were 2 times more likely to have favorable attitude than their counterparts (AOR=2.2, 95%CI=1.43, 3.45) (Table 4).

Table 4. Logistic Regression Result for Factors associated with Attitude towards EBF Practice, SNNPR Hospitals, August, 2013.

Variables	Attitude of mothers		OR(95% CI)	
	Favorable	Unfavorable	Crude	Adjusted
Occupation of mother				
Housewife	100(61.0%)	64 (39.0%)	1.00	1.00
Government employee	54(63.5%)	31(36.5%)	1.12(.65, 1.92)	0.82(.45, 1.49)
Merchant	61(55.0%)	50(45.0%)	0.78(.48, 1.27)	0.62(.37, 1.05)
Farmers	8(29.6%)	19(70.4%)	0.27(0.11,0.65)	0.36(0.14,0.92)*
Others*	24(49.0%)	25(51.0%)	0.61(.32,1.17)	0.65(.32, 1.34)
Residence				
Rural	20(29.9%)	47(70.1%)	1.0	1.0
Urban	227(61.5%)	142(38.5%)	3.7(2.09,6.47)	2.12(1.09,4.20)*
Mother's knowledge				
Poor	29(31.9%)	62(68.1%)	1.00	1.00
Good	218(63.2%)	127(36.8%)	3.7(2.24, 6.0)	2.8(1.66, 4.67)*
ANC attendance				
No	4(13.8%)	25(86.2%)	1.00	1.00
Yes	243(59.7%)	164(40.3%)	9.3(3.16,27.1)	4.0(1.02,16.01)*
Counselling service				
No	18(34.6%)	34(65.4%)	1.00	1.00
Yes	228(59.5%)	155(40.5%)	2.8(1.52, 5.1)	2.6(1.41, 4.89)*
HIV disclosure to family				
No	47(39.2%)	73(60.8%)	1.00	1.00
Yes	199(63.2%)	116(36.8%)	2.7(1.73, 4.11)	1.7(1.03, 2.85)*
Support from Spouse				
No	89(43.2%)	117(56.8%)	1.00	1.00
Yes	158(68.7%)	72(31.3%)	2.9(1.95, 4.27)	2.2(1.43, 3.45)*

* = P-Value < 0.05

5.6. Factors Associated with Exclusive Breast Feeding Practice

Socio-demographic characteristics, such as; mother's education had strong association with EBF practice. This is explained as: mother's who completed higher education were 4 times more likely to EBF their infants/last child than those mothers who could not read and write (AOR=4.3, 95% CI=1.29, 14.17). Father's educational status was also found to be strong independent predictor affecting EBF practice. Those mothers whose spouses were completed higher education were almost 3 times more likely to EBF their infants as compared to those whose spouses could not read & write (AOR=2.87, 95%CI =1.00, 8.21). Mother's whose occupation was daily laborer and unemployed were 63% less likely to practice EBF than those who were housewife (AOR=0.37, 95%CI=0.18, 0.75).

HIV positive mothers who attended ANC services during

pregnancy of last child, were 3.2 times more likely to EBF their infants/last child than those who did not attend (AOR=3.2, 95%CI=1.25, 8.24). Similarly, those mother's who were counseled on EBF while attending ANC were 2.6 times more likely to practice EBF than the referent group (AOR=2.57, 95%CI=1.22, 5.41). Furthermore, mother's who had good knowledge on EBF were 2 times more likely to EBF their infants than those who had poor knowledge (AOR=1.91, 95%CI=1.06, 3.45). Place of delivery had also shown significance association with EBF practice: Mothers who gave birth at health posts were 84% less likely to practice EBF than their counter parts (AOR=0.16, 95%CI=0.05, 0.56).

On the other hand, mother's who experienced different types of breast illness while EBF their infants were 58% less likely to EBF their infants than those who did not contract any type of illness (AOR=0.42, 95% CI=0.24, 0.73) and those mothers who disclosed their HIV status to their spouse

were almost 3 times more likely to EBF their infants/last child (AOR=2.97, 95%CI=1.38, 6.41) (Table 5).

Table 5. Logistic Regression Result for Factors Affecting EBF Practice, SNNPR Hospitals, August, 2013.

Predictor variables	EBF Practice		OR, 95% CI	
	Yes	No	Crude	Adjusted
Mother's education				
Cannot read and write	35(28.2%)	89(71.8%)	1.00	1.00
Only read and write	41(42.7%)	55(57.3%)	1.9(1.08, 3.33)	1.70(0.87, 3.23)
Primary education	68(56.2%)	53(43.8%)	3.26(1.92, 5.55)	2.75(1.43, 5.27)*
Second. Education	43(64.2%)	24(35.8%)	4.6(2.42, 8.59)	2.50(1.19, 5.28)*
Higher education	23(82.1%)	5(17.9%)	11.7(4.12, 33.20)	4.27(1.29, 14.17)*
Father's education				
Cannot read and write	10(29.4%)	23(70.6%)	1.00	1.00
Only read and write	23(26.4%)	64(73.6%)	0.83 (0.34, 1.10)	0.62(0.23,1.67)
Primary education	43(47.3%)	48(52.7%)	2.1(.88, 4.82)	1.40(0.51, 3.60)
Second. Education	59(55.1%)	49(44.9%)	2.8(1.20, 6.37)	1.56(0.58, 4.18)
Higher education	67(69.8%)	29(30.2%)	5.3(2.25, 12.57)	2.87(1.02, 8.21)*
Occupation of mother				
Housewife	79(48.2%)	85 (51.8%)	1.00	1.00
Government employee	54(63.5%)	31(36.5%)	1.87(1.09, 3.21)	1.63(.93, 2.83)
Merchant	56(50.5%)	55(49.5%)	1.1(.68, 1.77)	0.97(0.59, 1.61)
Farmers	7(25.9%)	20(74.1%)	0.38(.15, .94)	0.53(0.20, 1.42))
Others*	14(28.6%)	35(71.4%)	0.43(.22, .86)	0.37(0.18, 0.75)*
ANC Service				
No	6(20.7%)	23(79.3%)	1.00	1.00
Yes	204(50.1%)	203(49.9%)	3.85(1.54, 9.66)	3.20(1.25, 8.24)*
Counselling on EBF				
No	12(23.1%)	41(76.9%)	1.00	1.00
Yes	198(51.7%)	185(48.3%)	3.57(1.82, 7.01)	2.57(1.22, 5.41)*
Place of delivery				
Hospital	147(53.6%)	127(46.4%)	1.0	1.0
Health canter	47(46.1%)	55(53.9%)	0.74(0.47, 1.17)	0.90(0.55, 1.45)
Health post	3(12.5%)	21(87.5%)	0.12(0.04, 0.42)	0.16(0.05,0.56)*
Home	13(36.1%)	23(63.9%)	0.49(0.24, 1.00)	0.88(.39, 2.01)
Knowledge				
Poor	25(27.5%)	66(72.5%)	1.00	1.00
Good	185(53.6%)	160(46.4%)	3.05(1.84, 5.07)	1.91(1.06, 3.45)*
Breast problem				
No	175(51.6%)	164(48.4%)	1.0	1.0
Yes	35(36.1%)	62(63.9%)	0.53(.33, .84)	0.42(0.24, 0.73)*
HIV disclosure to partner				
No	43(72.4%)	16(27.6%)	1.00	1.00
Yes	183(48.5%)	194(51.5%)	2.8(1.51, 5.12)	2.97(1.38, 6.41)*

Others*: daily laborers and unemployed

* P-Value < 0.05

6. Discussion

6.1. Attitude Towards Exclusive Breast Feeding

This study assessed attitude and practice towards EBF and its associated factors among HIV positive mothers attending public hospitals of southern Ethiopia. In this study, one hundred eighty nine (43.3%) HIV positive mothers had unfavorable attitude towards EBF practice. This finding is lower than the studies conducted in Ivory Cost (62%) [16], Ibadan Nigeria (96.8%) [17]. This discrepancy might be due to difference in socio-demographic characteristics of the respondents, difference in data collection procedures and sample size. For instance, in study of Ibadan Nigerian the sample size was larger than our study (513).

This study also found out that, 160 (36.7%) mothers accepted exclusive replacement feeding/breast milk substitute while only eighty seven (20.0%) mothers agreed to

breast feed their child by wet-nurse. Similar study done in Ivory Cost showed, 83% of respondents accepted breast milk substitute, while (37%) of them agreed to get their child breastfeed by a wet-nurse [16]. There is a large gap between the two studies, probably because of difference in cultural influence, attitude towards EBF, knowledge about the importance of exclusive replacement feeding and difference in economical potential to afford this type of feeding from the market.

According to the findings of this study, 339(77.8%) respondents agreed that EBF is the best choice of infant feeding and 364(83.5%) mothers became happy to EBF their infants. A study done in Tygerberg supported this finding [18]. This may highlight that, most of the mothers clearly understood as; EBF is the single most effective infant's nutrition which does not require any cost, particularly for HIV exposed infants. This study demonstrated that, (82.6%) mothers agreed that breast milk is nutritionally complete.

Whereas (46.8%) respondents agreed that formula feeding is nutritionally complete. Paradoxically, a study in Tygerberg revealed out that, (77.8%) mothers agreed, breast feeding is nutritionally complete, while (72.2%) of them agreed formula feeding is nutritionally complete. In our study, the difference between breast feeding and formula feeding was clearly depicted, unlike the finding of a study done in Tygerberg, which showed almost similar proportion in nutritional value of both breastfeeding and formula feeding [18]. This might be due to difference in accuracy of measurement tools during data collection procedure and knowledge gap in study population, about the benefit of breastfeeding.

Mother's occupation had also significant association with attitude towards EBF. This might indicate that, mothers whose occupation were outside their home like farmers may not have time to breast feed their infants and to get adequate information about EBF as compared to housewives. In addition, mothers who resided in urban settings were found to have favorable attitude towards EBF than a rural counterparts. This is possibly because; mothers who are residing in urban settings might have better information on the risks and benefits of breastfeeding in the context of HIV than those who are living in rural areas of the region.

In this study, knowledge of mothers, ANC attendance and counseling service were found to be the major determinant factors affecting attitude of mothers towards EBF. This may indicate that, those mothers who were attending ANC might be counseled and well informed on EBF practice as a routine activity which may result in good knowledge on EBF. This in turn, may positively contribute for change in mother's attitude towards EBF practice.

Most importantly, in the prevention of MTCT, partner/male involvement would play a great role. In line with this, the finding of this study revealed that, mothers who had support from their spouse while EBF their infants were 2 times more likely to have favorable attitude than their counterparts. Besides partner support, disclosing once HIV status to family members may reduce social stigma and fear imposed by HIV. This disclosure may enable them to get strength and full empowerment to have favorable attitude towards EBF practice. The finding of this study also supported this fact in a way that, those mothers who disclosed their HIV status to their family were almost 2 times more likely to have favorable attitude towards EBF than those who did not disclose their HIV status.

6.2. Exclusive Breast Feeding Practice

In this study, nearly half (48.2%) of the mothers practiced EBF. This finding is in lined with the study done in Bahir Dar town (50.2%) [19]. This finding is slightly greater and not consistent with studies conducted in China (4.2%) [20], India (30%) [21], Ibadan (28.3%) [17], South Africa (35.6%) [22], Nigeria (46%) [23], Zambia (35%) [24] and Uganda (31.5%) [25]. Nonetheless, this finding is comparatively lower than the findings of studies done in Tanzania (78.7%) [10] and Sokoto Nigeria (58%) [26]. The discrepancy of these

findings might be due to difference in culture of feeding habits, study time, difference in economic potential, different health policy and strategies of interventions.

The result of this study also revealed that, the proportion of mothers practicing EBF (48.2%) was comparatively higher than that was found in our country: Addis Ababa (30.6%) [27] and Guraghe zone (16.2%) [15]. The differences between these findings might be due to the fact that the time at which these studies conducted was different from our study. For instance; study done in Guraghe zone was in 2004 and Addis Ababa in 2008. This might indicate that as time goes on there is a change in policy, strategy and improvement in implementation of the program. However, the proportion of mothers practicing EBF was significantly lower than what was observed in the finding of study in Gondar (83.7%) [4]. This might be due to difference in characteristics of study population and the study area.

Colostrums/first milk which has high concentration of nutrients is very mandatory for optimal growth and development of newborn. On the basis of this fact, this study revealed out that, (51.5%) mothers put their baby to their breast immediately after birth, (28.5%) within 1 hour and (17.2%) within 30 minutes after birth. In this study, the proportion of mothers who initiated their breast within 1 hour after delivery was found to be higher than the study carried out in Sokoto Nigeria (8.0%) [26] and much lower than the finding of study in Ibadan (50.8%) [17]. This is probably due to the cultural habit and the chance to afford replacement feeding, so as to avoid breastfeeding. In this study, (8.7%) mothers were offered fluids and solid foods (pre-lacteal feeding) to their infants/last child immediately after birth before breast feeding. Among reasons for providing pre-lacteal feeding were: milk did not come in yet (63.2%), mothers were ill (18.4%) and babies were ill (7.9%). Similar study in eastern Uganda showed inconsistent result where (64%) mothers provided pre-lacteal feeding for their infants [28]. The possible reasons might be knowledge gap on the benefits of EBF in reducing post natal HIV transmission and difference in PMTCT program implementation among study areas.

On this finding, of 210(48.2%) EBF mothers, (86.7%) of them were EBF for 6months. Although the highest proportions of those mothers EBF for 6 months, the rest of the respondents were not properly breastfed their infants/last child as per the WHO recommendation of EBF duration. This might be due to fear of HIV transmission, social stigma, pressure from others and inconsistency in attending HIV prevention program. This finding is not similar with the study done in Tanzania (80.1%), where a higher proportion of mothers EBF for 6 months [1]. The discrepancy might be due to variation in sample size and study population. The result of this study also indicated that 48.2%, 34.6% and 12.8% mothers EBF, mixed fed and formula fed their infants respectively. This finding is differed from other studies [17, 22, 24-26]. This is probably due to improvement in program implementation and health seeking behavior of the community. As it has been recommended by WHO and

UNICEF EBF is practiced for 6 months of life followed by complementary feeding since then. This study found out that, of 246 mothers practicing complementary feeding, 77.2% mothers started at the right time/6 months of life. This finding had discrepancy with the study done in Cote d'Ivoire where 77% mothers introduced complementary foods to their infants within the seventh month of life [29]. The difference might be due to culture of feeding and socio-economical variation.

In multivariable analysis, the finding of this study demonstrated that, HIV positive mothers who were completed higher education showed strong association with EBF practice. This finding is in lined with the study done in eastern Uganda [29]. This could be explained as; mothers who are well educated may have better understanding and the ability to easily identify the risks and benefits of breastfeeding. In addition, those mothers whose occupation was daily laborer and unemployed were 63% less likely to practice EBF than those who were housewife by occupation. This might be due to the fact that those mothers may not have time to EBF their infant in search of jobs and stay outside for many hours to fulfill their subsistence life that may result in exhaustion. Whereas, those mothers who were housewife may have an ample of time to provide care and EBF their infants.

Furthermore, mothers who delivered at health post were 84% less likely to practice EBF than those mothers who delivered at hospital. This finding is highly consistent with the finding of study conducted in Tanzania [10]. This may be because of repeated exposure to qualified health workers while providing ANC services, counseling on infant feedings, regular assessment and follow up for ART medication and better health services provision available at hospital as compared to health post. In the present study, mother's knowledge on EBF, ANC attendance and counseling had significant association with EBF practice. This finding is comparable with the finding of study done in Tanzania [10] and India [30].

On the other hand, mother's breast problem was found to be strong independent predictor affecting EBF practice. The report from Tanzania also supported this finding [10]. According to this study, mothers who disclosed their HIV status to their spouses were 3 times more likely to EBF their infants, which is consistent with finding of Gondar study [4]. This is probably due to the fact that, stigma and discrimination of HIV infected mothers may hinder them to EBF their infants. Thus, if they are in a position to disclose themselves to their partner/spouse, they might have better opportunity to practice EBF without any fear and their ability to make their own decision may also increase.

7. Strength and Limitations of the Study

7.1. Strength

This study tried to address the attitude and practice towards exclusive breast feeding and its associated factors

among HIV positive mothers.

7.2. Limitation

Since the age gap of infants was 2 years; social desirability bias are the potential limitations of this study. However, numerous scientific procedures have been employed to minimize the possible effects. To reduce the response bias, for instance, the aim of the study was discussed with respondents in order to obtain genuine response. In addition, procedures such as supervision, pretest of data collection tool, and adequate training of data collectors and supervisors were utilized. This study also not supplemented with qualitative method of data collection.

8. Conclusion and Recommendation

In this study, the attitudes of mothers towards EBF and EBF practice were still very low. On the other hand, significant proportion of mothers practiced mixed feeding as first infant feeding methods for fear of HIV transmission and breast milk insufficiency. This finding also revealed out that, mothers of better educational level and housewife by occupation were found to have more opportunity to EBF their infants than their counterparts.

In addition, ANC attendance, counseling on safer infant feeding option, place of delivery and knowledge on EBF had significant association with attitude and EBF practice. Furthermore, partner support on the way of EBF infants, HIV disclosure to partner as well as family members were other factors affecting attitude and EBF practice of HIV positive mothers. Concerted efforts need to be exerted by policy makers and stake holders in designing further strategies and strengthening the system.

List of Abbreviations

ANC: Ante Natal Care, AIDS: Acquired Immune Deficiency Syndrome, ART: Anti-Retroviral Therapy, EBF: Exclusive Breast Feeding, HIV: Human Immune Virus, MTCT: Mother To Child Transmission, PMTCT: Prevention Of Mothers To Child Transmission, SNNPRS:

Southern Nation Nationalities and People's Regional State, UNICEF: United Nations Children's Emergency Fund, WHO: World Health Organization

Authors' Contributions

KEM participated in the design of the study, data collection, analyzed the data and drafted the paper. NWA participated in the analysis and revised subsequent drafts of the paper. Both authors read and approved the final manuscript.

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