

## Level of Knowledge, Attitude and Associated Factors among Women toward Breastfeeding in the Era of HIV/AIDS, Jabi Tehinan Woreda, Northwest Ethiopia, 2012

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### Abstract

**Introduction:** For infants born to HIV-positive mothers breast milk can be a source of HIV infection, although the risk of transmission greatly decreases if exclusive breast-feeding (EBF) is practiced. Without intervention to prevent mother-to-child transmission, 30-45% of infants born to HIV-positive mothers in developing countries become infected during pregnancy, delivery and breastfeeding.

**Objective:** The main aim of the study was to assess the knowledge, attitude and associated factors among women with unknown HIV status towards breast feeding in the era of HIV/AIDS.

**Method:** Institution based cross sectional study was employed on 408 women with unknown HIV status who had visit in MNCH service at Jabi Tihenan governmental health institutions during the study period. Data were collected through interview using questionnaire. Logistic regression model was used to identify factors associated with outcome variable.

**Result:** Among those 376 women only 106 (28.1%) had sufficient knowledge about recommended breastfeeding for infant born from HIV positive mothers and 36 (9.6%) had favorable attitude toward breastfeeding for infant born from HIV positive mothers. Being urban residence (AOR: 3.842, 95% CI: (1.18, 12.48)), having counseling (AOR: 3.842, 95% CI: (1.18, 12.48)) about HIV/AIDS, Age of women and women educational status were found to have positive association with women's knowledge. Women's PNC follow up (AOR: 3.10, 95% CI: (1.19, 8.06)) and having education about HIV/AIDS (AOR: 5.28, 95% CI: (1.06, 26.39)) found to have significant association with attitude of women.

**Conclusion:** Knowledge toward breastfeeding for infant born from HIV positive women for this study was low and attitude toward breastfeeding for infant born from HIV positive women was not high enough. Different factors were affecting this low level of knowledge and attitude. The relevant stakeholders should create opportunity for women to get education about HIV/AIDS and recommended breastfeeding for infant born from HIV positive mother.

**Keywords:** Positive mothers; Breastfeeding; HIV/AIDS; Knowledge; Attitude

### Introduction

Breast-feeding is unequalled in its ability to promote infant growth and development. Two crucial benefits of breast milk are its ability to provide optimal nutrition and protection against common childhood infections [1]. Yet for infants born to HIV-positive mothers, breast milk can be a source of HIV infection, although the risk of transmission greatly decreases if exclusive breast-feeding (EBF) is practiced [2].

For mothers in Sub-Saharan Africa, an appropriate choice of infant feeding is fundamental to optimizing infant survival and minimizing infant morbidity. Promotion of exclusive breastfeeding has the potential to prevent 8% of child mortality, or save 37 million

disability-adjusted life years every year. It is well documented that exclusive breastfeeding can benefit infants of HIV-negative mothers [3].

Replacement feeding can reduce HIV-transmission, but is also associated with morbidity related to diarrhea and respiratory infections [4]. For mothers without access to piped water and cooking fuel, or who have not disclosed their HIV-status, replacement feeding does not seem to increase HIV-free survival [5]. In line with the global recommendations, the Federal Ministry of Health of Ethiopia has adopted and developed a strategy of infant and young child feeding to be used in the country. According to the national strategy, informed choices that suit the circumstances of the mother is emphasized and the advice to be given for the mothers should be tailored to individual needs to balance the risk of replacement feeding with the risk via BF [6]. Other feeding options recommended are to use heat treated expressed breast milk or wet nursing of the newborn by HIV negative

when the AFASS criteria is not possible [7]. Mother-to-child transmission of HIV. Approximately 700,000 children under 15 years of age were newly infected with HIV in 2005, and more than 60% are living in sub-Saharan Africa. Without intervention to prevent mother-to-child transmission, 30-45% of infants born to HIV-positive mothers in developing countries become infected during pregnancy, delivery and breastfeeding [8].

The balance between life saving benefits and the risk of transmission through breastfeeding complicates infant feedings in communities affected by HIV. Infant feeding recommendations for HIV-positive mothers differ from recommendations to mothers of unknown HIV-status. Cognizant of the problem, WHO, UNICEF, UNAIDS and UNFPA in 2003 developed a guideline in the context of infant feeding by women whose HIV status is unknown and HIV positive women [9].

The recommended option for HIV positive women is to avoid BF when replacement feeding (RF) is Acceptable, Feasible, Affordable, Sustainable and Safe (AFASS). Nonetheless, when AFASS criteria cannot be met, mothers are advised to exclusively BF and avoid mixed feedings [10]. Cessation of breast-feeding in the absence of replacement feeds that are acceptable, feasible, affordable, sustainable and safe (AFASS) is associated with malnutrition, more frequent and severe gastrointestinal and upper respiratory infections, and increased mortality. It is for these reasons that recent international guidelines for infant feeding in the context of HIV state that infants born to HIV-positive mothers in developing countries should be exclusively breast-fed for the first 6 months unless replacement feeding meets the AFASS criteria [11].

Practical implementation of the previous infant feeding recommendations for HIV-positive mothers from the World Health Organization (WHO) has often created confusing messages resulting in disadvantageous feeding patterns, mixed feeding in particular [12]. Compared to exclusive breastfeeding, mixed feeding is associated with increased morbidity and mortality for infants of both HIV-positive and HIV-negative mothers, and with increased HIV transmission for HIV-positive mothers [13].

Studies have shown that reasons for exclusive breastfeeding vary and that customs and traditions may influence this decision. How to optimize survival and avoid morbidity among the infants and children of HIV-positive mothers is an ongoing discussion [14].

According to the baseline national Prevention of Mother to Child Transmission (PMTCT) survey of infant breast feeding, the proportion of mothers who fed their infants breast milk (BM) and water, BM and any other liquids, BM and solids and ERF are 17%, 28%, 16% and 4% respectively. A study in Jimma shows that only 38.8% had sufficient knowledge about MTCT, 41.8% had sufficient knowledge about PMTCT, 30.5% had sufficient knowledge about infant feeding options recommended to HIV positive women, 62.4% had favorable attitude towards VCT, 4.7% had favorable attitude towards the breast feeding options, 84.5% visited health institutions for antenatal care and 35.7% used VCT service during their last pregnancy [15,16]. Nonetheless, information on women's knowledge, attitude and associated factors toward infant breast feeding of HIV positive mothers has not been fully documented. Therefore, the main aim of this study was to assess knowledge, attitude and associated factors among women toward breastfeeding in the era of HIV/AIDS in Tihenan Woreda, 2012. Thus, this study will contribute to fill the information gap, and in the design of strategies to prevent mother to

child transmission of HIV and to promote appropriate infant feeding practice in the study setting and the country at large.

## Materials and Methods

### Study setting and period

The study was conducted from September to May 2012 at Jabí Tihenan which is one of the woreda in West Gojjam Zone, Amhara Region of Ethiopia. It comprises 39 kebeles with the weather of 88% wenaadega and 12% kolama. The woreda total population of 1,038,194 among which 94,435 are female. The annual rainfall of woreda is 1250 and an average temperature of 23°C. Regarding to health service institutions; it has 31 health stations/posts, 7 health centers, one hospital and 12 private health sectors (medium clinic and pharmacies). Among those health institutions only 7 health centers and one hospital provide basic Maternal, Neonatal and Child Health (MNCH) service. This study area is selected since there is large number of commercial sex worker women following military camp. In addition to this, there is no such study before on women knowledge, attitude and associated factors to word breast feeding in the era of HIV/AIDS in woreda.

### Study design and population

Institution based cross sectional study was conducted using quantitative data collection method among women with unknown HIV status in the era HIV/AIDS in Amhara Region West Gojjam Zone Jabí Tihenan Woreda. Source population were all women who came to MNCH service and served in West Gojjam, Jabí Tihenan woreda governmental health facilities during the study period and study population were women who had at least one child and had visit in MNCH service and served at West Gijjam, Jabí Tihenan woreda governmental health facilities. Those women who had at least one child and had MNCH visit at Jabí Tihenan governmental health institutions during study period were included in the study and mothers who couldn't communicate and severely ill, known HIV positive were excluded from the study.

### Sample size and sampling procedure

The required sample size was calculated using the single population proportion formula by taking 40.7% maternal knowledge of toward breastfeeding in the era of HIV/AIDS from study conducted in Harare town [17], Margin of error 5%, a 5% level of significance (two sided) i.e. 95% confidence interval (two sided). Based on the above assumptions, with an additional 10% for non-response the total sample size was 408. Stratified random sample was used to select study participants for the study. All seven public health centres in Jabí Tihenan woreda were identified and three health centers were selected from the seven by simple random sampling techniques and Fenote selam hospital was selected purposively since population of the woreda served by the hospital as referral facility. Systematic random sampling was used to select study participants based on the daily client flow of institution. The calculated sample allocated to each health institution by equal allocation. Since the minimum client flow is 15 and there were 20 working days during data collection, each health institution had a minimum of 300 clients that visited during that 20 working days. To select 102 women from each health institution 300 divided to 102 and 3 (K value) was obtained. Therefore, every third individual was selected based on their registration number.

## Measurement and variables

Independents variables includes socio-demographic such as maternal age, education, religion, ethnicity, residence marital and occupational status women, husband occupation and education level; health service related characteristics such as ANC, PNC, Place of delivery, breast feeding education, VCT, PMTCT and education level of birth attendant whereas dependent variables were women Knowledge and attitude toward breast feeding. Exclusive breast-feeding is defined as the receipt of only breast milk since birth; only oral rehydration solution (ORS), drops and syrups (vitamins, minerals or medicines) are permitted. Complementary feeding is defined as the receipt of breast milk and any other solid or semi-solid foods. Non-human milk, formula and other liquids and solids are permitted. Exclusive Replacement feeding: indicates that the infant received no breast milk, but was fed with formula or other breast milk substitutes. Favorable Attitude towards Infant breast feeding recommended to HIV positive women: When the respondent woman reported accepting attitude to all of three prepared statements of favorable attitude towards the infant feeding options (603-605) recommended to HIV positive women [16]. Knowledgeable about infant breast feeding recommended to HIV positive women: When the respondent woman identified correctly at least five true or not true statements out of six statements prepared about infant feeding options (701-707) recommended to HIV positive women [16].

## Data collection methods

Structured interviewer administered questionnaire was adapted for data collection on socio-demographic, knowledge, attitude and associated factors of women with unknown HIV status toward breast feeding in the era of HIV/AIDS. After consent from eligible mothers, a face-to-face interview by using a pre-coded structured Amharic version questionnaire was conducted by the data collectors in the health institutions for consecutive 20 working days during the study period. There were four 4<sup>th</sup> year BSc nursing student data collectors and one BSc. nurse supervisor. To ensure the quality of data one day training was given for both the data collectors and supervisors on the objective of the study and methods data collection, data recording and how to ensure confidentiality of information. The questionnaire was pre-tested on 10% of the sample size out of study area on population with similar characteristics. Necessary modifications were made prior to the actual data collection based on the finding of pre-test. The supervisors and principal investigator closely supervised day to day data collection process and ensure completeness and consistency of the collected questionnaires on a daily basis.

## Data processing and analysis

Data were entered in EPI-INFO 3.5.1 computer programs to minimize data entry error. The data entered were exported to Statistical Package for Social Sciences (SPSS) version 16 for analysis. Descriptive analysis was used to describe the percentages and number distributions of the respondents by socio-demographic characteristics and other relevant variables in the study. Logistic regression was used to fit the data to identify factors associated with identify factors affect knowledge and attitude. All explanatory variables that were associated with the outcome variable in bivariate analysis with p-value of 0.25 or less were included in the initial logistic models of multivariable analysis. The crude and adjusted odds ratio together with their corresponding 95% confidence intervals was computed. A P-value

<0.05 was considered to declare a result as statistically significant in this study. The result was presented in text, tables and graphs as based on the types of data.

## Ethical consideration

Ethical clearance was obtained from Addis Ababa University Faculty of Medicine through Nursing and Midwifery school. Then officials at different levels in the study area were communicated through letters from Nursing and Midwifery school. Letters of permission was obtained from Jabi Tihenana woreda health office. Verbal informed consent was taken from each respondent prior to the interview after the purpose of the study was explained to them. Confidentiality of the information assured and privacy of the respondents' was maintained.

## Results

### Socio-demographic characteristics of respondents

From the total of 408 women, 376 respondents were willing and able to respond the questionnaires with overall response rate of 92.2%. Majority, 256 (68.1%) of respondents were belong to age group of 20-35 years with mean age of the women was 30.94years ( $\pm$  8.41SD). The number of women from rural encompasses 208 (55.3%). Regarding marital status majority, 351 (85.4%) of women were married and 180 (47.9%) with illiterate in educational status. Majority, 368 (97.9%) of respondents were Amhara in ethnicity and 353 (93.9%) were followers orthodox Christian. Of those married women 322 (91.7%) were living with their husband during study period. Regarding to husband educational status, 85 (22.6%) husbands of respondents were illiterate, 88 (23.4%) husbands of respondents were read and write. Concerning residential area, 208 (55.3%) of respondents were residing in urban (Table 1).

Variables	Frequency	Percent
<b>Age</b>		
Less than 20 years	30	8.0
20-35 years	256	68.1
Greater than 35 years	90	23.9
<b>Marital status</b>		
Married	321	85.4
Divorced	39	10.4
Single	9	2.4
Widowed	7	1.9
<b>Educational status</b>		
Illiterate	180	47.9
Read and write only	71	18.9
Elementary	30	8.0
Secondary	35	9.3

College and above	60	16.0
<b>Religion</b>		
Orthodox	353	93.9
Muslim	16	4.3
Protestant	7	1.9
<b>Ethnicity</b>		
Amhara	368	97.9
Tigre	4	1.1
Agew	3	0.8
Oromo	1	0.3
<b>Occupational status</b>		
Governmental employee	75	19.9
NGO employee	19	5.1
Business women	89	23.7
House wife	161	42.8
Daily laborer	19	5.1
Student	9	2.4
Jobless	4	1.1
<b>Husband education</b>		
Illiterate	85	26.4
Read and write only	88	27.3
Elementary	30	9.3
Secondary	39	12.1
College and above	80	24.9
<b>Resident</b>		
Urban	208	55.3
Rural	168	44.7

**Table 1:** Socio-demographic characteristics of respondents at Jabi Tehinan woreda, Ethiopia, 2012.

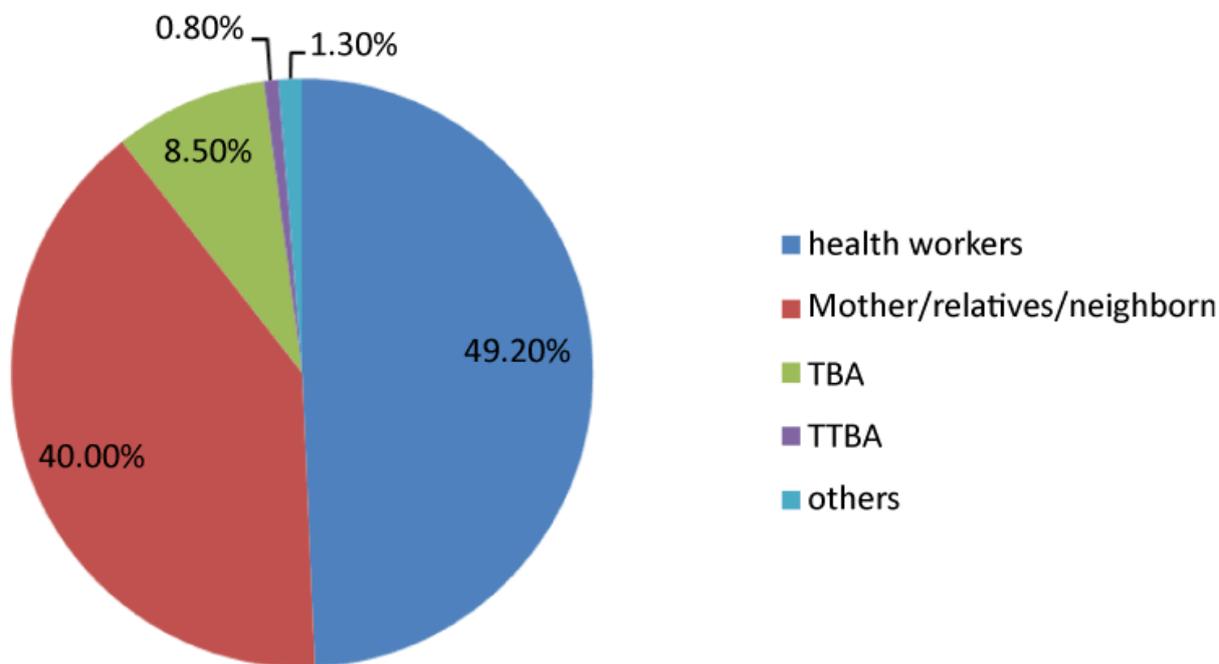
### Maternity experience of the youngest child

Concerning number of life children, 221 (58.8%) of women had 1-3 children and regarding maternity experience of youngest child 146 (38.8%) of women had children greater than 2 years old. Regarding ANC follow up, 202 (53.7%) women had followed and among those who had follow up 132 (46.2%) of women had less than 4 times visits at their last pregnancy. About last child place of delivery 188 (50.0%) women delivered at home. Concerning PNC follow up following their last child delivery 286 (76.1%) of women had PNC follow up. Two hundred thirty two (61.7%) of women got education about breast feeding during their health facilities visits (Table 2).

Variable	Frequency	Percent (%)
<b>Number of life birth</b>		
1-3 child	221	58.8
3 children	53	14.1
Greater 3 children	102	27.1
<b>Age of last child</b>		
Birth -6 months	66	17.6
6-12months	89	23.7
12-24 months	75	19.9
Greater than 24 months	146	38.8
<b>ANC follow up during last</b>		
Pregnancy		
Yes	286	76.1
No	90	23.9
<b>Number of visit</b>		
<4 times	132	46.2
4 times	115	40.2
>4 times	39	13.6
<b>Last child place of Delivery</b>		
Home	188	50.0
Gov'tal health institution	175	46.5
Private health sector	11	2.9
Others	2	0.5
<b>PNC follow up after last child delivery</b>		
Yes	202	53.7
No	174	46.3
<b>Ever been informed about breast feeding</b>		
Yes	232	61.7
No	144	38.3

**Table 2:** Frequency distribution of women maternity experience, ANC, place of delivery, PNC and breast feeding counseling Jabi Tihenan Woreda, Ethiopia, 2012.

Hundred eighty five (49.2%) of delivered women were assisted by health workers, 151 (40%) of women were assisted by mother/relatives/neighbors, 32 (8.5%) of women were assisted by TBA, 3 (0.8%) of women were assisted by TTBA and the rest 5 (1.3%) of women were assisted by others during last child delivery (Figure 1).



**Figure 1:** Show birth attendant of the youngest child of the respondent women Jabi Tihenan woreda, Ethiopia, 2012.

### Counseling and testing history of respondents

About counseling, testing and having education about MTCT and PMTCT history of women, around 284 (75.5%) were counseled about HIV/AIDS, 265 (70.5%) offered HIV test and around 257 (68.4%) got education about MTCT and PMTCT at MNCH clinic during their visit (Table 3).

Variables	Frequency	Percent (%)
<b>Counseled</b>		
Yes	284	75.5
No	92	24.5
<b>Tested</b>		
Yes	265	70.5
No	111	29.5
<b>Had education about MTCT and PMTCT</b>		
Yes	257	68.4
No	119	31.6

**Table 3:** Women's' counseling, testing and having education about MTCT and PMTCT Jabi Tihenan woreda, Ethiopia, 2012.

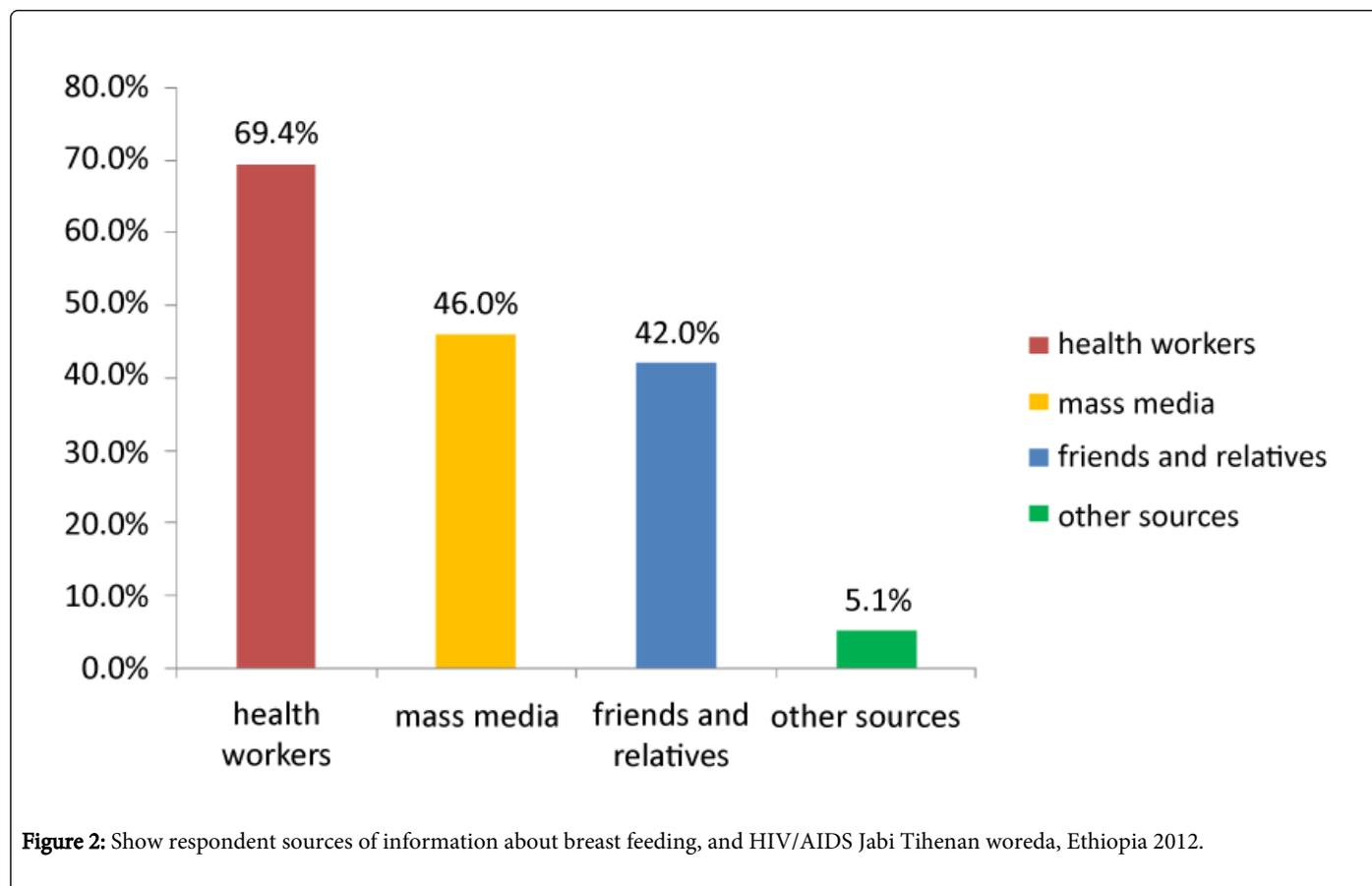
### Knowledge and attitude of women toward breastfeeding

Knowledge and attitude of women toward breastfeeding for infant born from HIV positive mothers were assessed. Women were asked

whether they have knowledge or not about breastfeeding for infant born from HIV positive mothers. To assess the knowledge such as EBF, ERF, mixed feeding complementary feeding and other related ideas (MTCT, PMTCT) were also mentioned in different ways to ascertain the level of women's knowledge. Summary score was calculated for knowledge of breastfeeding for infant born from HIV positive mothers as per operational definition. Accordingly women were labeled as having sufficient knowledge and as having insufficient knowledge for breast feeding of infant born from HIV positive mothers. Based on this assumption, of the total 376 women 106 (28.1%) of women had sufficient knowledge about recommended breastfeeding for infant born from HIV positive mothers.

Attitude of women toward breast feeding for infant born from HIV positive mothers was assessed by asking questions that prepared to assess attitude whether favorable or unfavorable attitude among women toward breast feeding for infant born from HIV positive mothers and then the women were categorized as having "favorable" or "unfavorable" attitude based on operational definitions. Accordingly, of the total 376 respondents 36 (9.6%) of women had favorable attitude toward breast feeding for infant born from HIV positive mothers.

Concerning respondent's sources of information about breast feeding and HIV/AIDS 261 (69.4%) women got information from health workers, 173 (46.0%) women got information from mass media, 158 (42.0%) women got information from friends and relatives and 19 (5.1%) women got information from other sources of information (Figure 2).



### Factors associated knowledge and attitude of respondents

As can be noted from the result bivariate and multivariable analysis was conducted to identify factors associated knowledge and attitude. Accordingly, age of women, residence, women educational status, and having counseling about HIV/AIDS were found to be positively associated with women's knowledge. Age of women found to have significant association with their knowledge. Those women whose age less than 20 years old were 0.19 times less likely to have knowledge about breastfeeding for infant born from HIV positive mothers as compared with those women whose age greater than 35 years (AOR: 0.19, 95% CI: (0.04, 0.85)). Women's residence was found to have statistical significant with their knowledge. Those women who lived in urban were 3.84 times more likely to have knowledge about breastfeeding for infant born from HIV positive mothers as compared with those women who lived in rural (AOR: 3.84, 95% CI: (1.18, 12.48)). Educational status of women found to have statistically significant association with their knowledge. Those women who were not educated (with illiterate) were 0.05 times less likely to have knowledge about breastfeeding for infant born from HIV positive mothers as compared with women whose educational status college and above classes (AOR: 0.05, 95% CI: (0.02, 0.15)), those women who could read and write only were 0.061 times less likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with women whose educational status college and above classes (AOR: 0.06, 95% CI: (0.02, 0.17)), those women who attended elementary class were 0.04 times less likely to have

knowledge about breast feeding for infant born from HIV positive mothers as compared with women whose educational status college and above classes (AOR: 0.04, 95% CI: (0.01, 0.14)) and those women who attended high school class were 0.17 times less likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with women whose educational status college and above classes (AOR: 0.17, 95% CI: (0.59,0.49)). Education they had on HIV/AIDS (counseling history) found to have statistically significant association on their knowledge. Those women who had got counseling in health facilities were 3.84 times more likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with those who hadn't got counseling (AOR: 3.84, 95% CI: (1.18, 12.46)) (Table 4).

Concerning attitude of women toward breastfeeding for infant born from HIV positive mothers women's PNC follow up and having education about HIV/AIDS (counseling history) found to have significant association with attitude of women. Those women who had PNC follow up following last child delivery were 3.10 more likely to have favorable attitude toward breast feeding for infant born from HIV positive mothers as compared with who hadn't PNC follow up (AOR: 3.10, 95% CI: (1.19, 8.06)). Those women who had education on HIV/AIDS (counseled) were 5.28 times more likely to have favorable attitude toward breast feeding for infant born from HIV positive mothers as compared with those who hadn't got counseling (AOR: 5.28, 95% CI: (1.06, 26.39)) (Table 5).

Variables	Knowledge		COR (95% CI)	AOR (95% CI)
	Sufficient	Insufficient		
<b>Age</b>				
Less than 20 years	5	25	0.66 (0.22, 1.93)	0.185 (0.04,0.85)
20-35 years	80	176	1.49 (0.86, 2.60)	0.61 (0.28,1.36)
Greater than 35 years	21	69	1	1
<b>Residence</b>				
Urban	91	117	7.93 (4.37, 14.41)	3.84 (1.18, 12.48)
Rural	15	153	1	1
<b>Educational status</b>				
Illiterate	20	160	0.02 (0.01, 0.05)	0.05 (0.02, 0.15)
Read and write only	13	58	0.04 (0.02, 0.10)	0.06 (0.02, 0.17)
Elementary	7	23	0.05 (0.02, 0.16)	0.04 (0.01, 0.14)
High school	15	20	0.13 (0.05, 0.35)	0.17 (0.59, 0.49)
College and above	51	9	1	1
<b>Education on HIV</b>				
Yes	100	184	7.79 (3.29, 18.46)	3.84 (1.18, 12.48)
No	6	86	1	1

**Table 4:** Bivariate and multivariate logistic regression Analysis Knowledge against various associated factors among women, Jabi Tehenan woreda, 2012.

Variables	Attitude		COR (95%)	AOR (95%)
	Favorable	Unfavorable		
<b>PNC follow up</b>				
Yes	29	173	4.00 (1.71, 9.38)	3.10 (1.19, 8.06)
No	7	167	1	1
<b>Education on HIV</b>				
Yes	34	250	5.70 (1.71, 18.70)	5.28 (1.06, 26.39)
No	2	90	1	1

**Table 5:** Bivariate and multivariate logistic regression Analysis attitude against various associated factors among women, Jabi Tehenan worda Ethiopia, 2012.

## Discussion

Breastfeeding for infant born from HIV positive mothers can be a source of HIV infection, although the risk of transmission greatly decreases if exclusive breast-feeding (EBF) is practiced. Having knowledge and favorable attitude toward breast feeding for infant born from HIV positive mothers is most powerful weapon to prevent mother to child transmission of the virus via breast feeding and to

balance between life saving benefits and the risk of transmission through breastfeeding in communities affected by HIV. This study tried to look the level and associated factors of knowledge and attitude of women toward breast feeding for infant born from HIV positive mothers.

The overall level of women knowledge about breastfeeding for infants born from HIV positive mothers in this study was 28.1% with slight higher knowledgeable of urban resident than rural. This finding is higher when it compare with study which was conducted in Gurage zone (24%) [18]. The possible reason for this could be time gap between the studies, the difference in composition of study participant, socio-demographic variation. In addition, recent accelerated expansion of the PMTCT package in the region. But this study prevalence was low when it compare with study which was conducted in Jimma town (30.5%) and Harare town (40.7%) [16,17]. The possible reason for this could be socio-demographic variation since Jimma and Harare study was conducted in the big urban with large town dwellers whereas this study was in small town dwellers and rural dwellers. Indeed Jimma study was conducted two years after initiation of PMTCT program in the town by the Jimma University Specialized Hospital. It is also lower when it compare with a study conducted in different states of American mothers (60%). The possible reason for this could be socio-demographic variation, accessibility of health service and income variation. This study knowledge level also low when it compared with study done in Tanzania, Uganda and Zambia that showed (53.0%) of women know about proper infant breast

feeding options. It is also low when it compared with study done in a tertiary health facility, Northeast-Nigeria shows that (58%) of women had knowledge about infant breast feeding option who born from HIV positive mothers. [12,19-21].

In this study age of women showed statistically significant association with their knowledge. Those women whose age less than 20 years old were less likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with those women whose age greater than 35 years. This finding was in line with Harare town and Gurage zone study [17,18]. This could be because of the reason that as age increase, the women parity status, chance of visiting health services and getting education about breast and related issues (PMTCT) will also increase.

Educational status of women found to have statistically significant association with their knowledge. Those women who were not educated (with illiterate) were less likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with women whose educational status college and above classes. This finding was consistent with other previous finds [15-18]. The possible reason should be educated women have more chance of getting information in many ways than those uneducated women.

Education they had on HIV/AIDS (counseling history) found to have statistically significant association on their knowledge. Those women who had got counseling in health facilities were more likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with those who hadn't got counseling. The possible reason was women who were counseled about HIV/AIDS also got counseling and education about breast feeding for infant born from HIV positive mothers. Women's residence was found to have statistical significant with their knowledge. Those women who lived in urban were more likely to have knowledge about breast feeding for infant born from HIV positive mothers as compared with those women who lived in rural. This finding was consistent with other findings which were conducted in Gurage zone [18]. This could be due the proximity of the health facilities and health institution base PMTCT service.

The overall level of women attitude about breast feeding for infant born from HIV positive mothers in this study was 9.6%. This finding was higher when it compared finding of study conducted in Jimma which was 4.7% [16]. The possible reason could be time gap between these two studies, the difference in composition of study participant and socio-demographic variation plus since the Jimma study was conducted 2 years after initiation of PMTCT program in the town by the Jimma University Specialized Hospital, there might not be change in attitude in short period as knowledge. But it is low when it compared the finding of study conducted in different states of American mothers which was 23% [22,23], had favorable attitude toward breast milk feeding. The reason for this could be socio-demographic, and accessibility of health service.

The finding of this study women's PNC follow up and having education about HIV/AIDS (counseling) found to have significant association with attitude of women. Those women who had PNC follow up following last child delivery were more likely to have favorable attitude toward breast feeding for infant born from HIV positive mothers as compared with who hadn't PNC follow up. The possible reason for this should be due to when mothers came for PNC; most probably they have a chance to had education about breast feeding and related issues such as MTCT and PMTC. Those women

who had education on HIV/AIDS (counseled) more likely to have favorable attitude toward breast feeding for infant born from HIV positive mothers as compared with those who hadn't got counseling. The finding of this study was in line with the study conducted in Jimma town study in which counseling had positive association with their attitude [24]. The reason could be women who had education about HIV/AIDS would also have education about MTCT and PMTCT.

The finding of this study showed that 75.5% of women were counseled about HIV/AIDS in their visit and among those 35.2% women were knowledgeable and 11.97% of women had favorable attitude toward breast feeding. This finding is higher when compared with study conducted in Jimma study which was 35.7% and study conducted in Addis Ababa which was 18% [15,16]. The possible reason should be time gap between the studies. In addition, recent accelerated expansion of the VCT service carried out through an increased advocacy and social mobilization in the region as well as country-wide.

Regarding to ANC the finding of this study revealed that 76.1% of women had ANC follow up and among those 53.8% of women had 4 and more visit, which was slightly higher than the finding of study conducted in Harar town which was 68.5% and the finding of EDHS which was 34% [18,24]. This might be due to time gap between the studies and due to regional aggregate results respectively. But it was low when it compared with finding of study conducted in Jimma [16].

The finding of this study was showed that 49.4% of women gave their last birth at health facilities. This study was lower when compared with the finding of study conducted at Harar town that showed 79.7% and study conducted at Jimma that showed 68.5% of women gave their recent place of birth at health institution. This could be due to study subject variation in place of resident, educational status and access to health service facilities. But when we see Ethiopia Demographic and Health Survey, 2011 Preliminary Report only 9.9% the women gave birth at health facilities [16,18,23]. This could be due to the study was institution based and in on specific woreda whereas EDHS was the aggregate of all regions including remote area and women who had MNCH visit for PNC including child vaccination were most likely to gave birth at health institution and women who had ANC have a probability to gave birth at health institutions.

The finding of this study revealed that health professional were the main source information about breast feeding and HIV/AIDS most of the women received followed by mass media 69.2%, 46.0%, respectively. This finding is consistent with study conducted at Jimma but slight different with study conducted at Harar town and Gurage zone since their finding show mass media is main sources of information about breast feeding and HIV/AIDS [16-18].

In conclusion, knowledge toward breast feeding for infant born from HIV positive women for this study was low. Attitude toward breast feeding for infant born from HIV positive women for this study was not high enough. Educational status, residence, age and got education about HIV/AIDS (counseling) were identified to be significant factors of women knowledge about breast feeding for infant born from HIV positive women. Education about HIV/AIDS (counseling), and PNC were identified to be significant factors of women attitude toward breast feeding for infant born from HIV positive women. Most of the mother had ANC and PNC follow up as well as they had VCT history specially who are educated and reside in

urban. Based on the study finding the following recommendations were forwarded.

The woreda health bureau in collaboration with NGO organization and HIV/AIDS secretary bureau should create opportunity for women to get education about HIV/AIDS and recommended breast feeding for infant born from HIV positive mothers.

Relevant stakeholders in different health institutions should be took their parts which could include training of service providers at health facility and community level and making MTCT and breast feeding counseling important part of services such as ANC, delivery, PNC and Family planning.

Further and Periodic reassessment of the KA of women about breast feeding for infants born from HIV positive mothers in the study area and other parts of the country is proposed to ascertain effective intervention in the study area and the country at large.

### Authors' Contributions

AG wrote the proposal, participated in data collection, analyzed the data and drafted the paper. BB, DJ and ZD approved the proposal with some revisions, participated in data collection and analysis, commented on the analysis and improved the first draft. All authors revised subsequent drafts of the paper.

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