Infant Feeding Practice and Associated Factors among HIV Positive Mothers in Jigjiga Town, Ethiopia

Lema Mideksa1**, and Bayisa Abdissa2
1Department of Nursing, College of Medicine and Health Sciences, Jigjiga University, Ethiopia
2Department of Public Health, College of Medicine and Health Sciences, Jigjiga University, Ethiopia

*Corresponding author: Lema Mideksa, Department of Nursing, College of Medicine and Health Sciences, Jigjiga University, Somali, Ethiopia, Tel: +251-912-65-16-00; E-mail: lemamideksa@yahoo.com

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Introduction
Breastfeeding is a pillar of child survival; it reduces morbidity and mortality in children worldwide. However, since the early 1980’s when it was discovered that HIV could be transmitted to infants through human milk, the healthfulness of breastfeeding has been questioned because of the risk of mother-to-child transmission of HIV. The rate of transmission through breast feeding of the disease is 5-20%. The two postnatal strategies to prevent MTCT are exclusive replacement feeding and exclusive replacement feeding. Nonetheless, some factors like HIV status disclosure, socio-cultural influence and knowledge of the mother about MTCT through breast feeding are known to influence feeding practices.

Objective: Infant feeding practice and associated factors among HIV positive mothers who are attending health institution in Jigjiga town, Ethiopia.

Method: A cross sectional quantitative study was conducted among HIV positive mothers in health institution with ART and PMTCT facilities in Jigjiga town from February to March, 2015. Bivariate and a multiple logistic regression were employed to see the relationship between the dependent and independent variables.

Result: The current study demonstrated that (93.6%) of the respondents were practices exclusive breast feeding while small proportion (6.4%) of HIV positive mothers had practice of mixed feeding. Concerning feeding practice after delivery, (6.4%) mothers gave their infants liquids or food before initiating breastfeeding. As to this finding revealed mothers decision on infant feeding was influenced by various predictors. Regarding to disclose HIV status, those respondents who were less disclosed their HIV status was significantly associated with mixed feeding practice.

Conclusion and Recommendations: As to this finding revealed after delivery, (6.4%) mothers gave their infants liquids or food before initiating breastfeeding. Health workers and supporters should provide continuous infant feeding options to HIV positive mothers to enhance compliance to exclusive breastfeeding and encourage and assist HIV positive mothers to disclose their HIV status to their husband/spouse. To select safer infant feeding options, mothers’ decision should be respected, and influencing mothers’ to introduce other food to the infant should be avoided.

Introduction
Breastfeeding is a pillar of child survival; it reduces morbidity and mortality in children worldwide. However, since the early 1980’s when it was discovered that HIV could be transmitted to infants through human milk, the healthfulness of breastfeeding has been questioned because of the risk of mother-to-child transmission of HIV (MTCT) [1].

Nearly 90% of the almost half a million children who yearly become infected through their mothers live in sub-Saharan Africa [2]. In 2008 430,000 children under 15 years of age were newly infected and more than 71% are living in sub-Saharan Africa [3].

The availability of Anti-Retroviral Therapy (ART) reduces transmission of HIV during pregnancy, labor and delivery from 10% to 20%, but it does not solve the problem of infant feeding which is responsible for as much as 5-20% of infections [4]. Each year an estimated 700,000 children are infected with HIV by their mothers and 40% of these transmissions occur during breastfeeding [5]. About 30-45% of infants born to HIV-positive mothers in developing countries become infected during pregnancy, delivery and breastfeeding, without intervention to prevent mother-to-child transmission [3].

In Sub-Saharan Africa, MTCT of HIV is responsible for about 90% of HIV infections in children, and about half of these pediatric infections are thought to have been acquired through breastfeeding [6]. Yet in many settings, the health, economic, and social consequences of not breastfeeding would have dire consequences for many more children [7].

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 [8]. 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 [9]. In fact, the importance of breast-feeding among this population was reinforced in the 2009 revised principles and recommendations on HIV and Infant feeding from the WHO, which recommend breast-feeding for the first 12 months, and thereafter until adequate and safe diet without breast milk is available [10]. The guidelines also highlight the need for and importance of appropriate counseling and follow-up support for HIV-infected mothers, and encourage the training of infant feeding counselors and other health staff to enable them to deliver accurate and up-to-date infant feeding messages and ongoing support to mothers. At national level the Ethiopian Ministry of Health guideline on infant feeding recommendations of HIV exposed infants recommends EBF for the first 6 months and introducing complementary feeding at 6 months and continues breastfeeding until 12-18 months [11].

When breastfeeding occurs without the addition of formula, other non-human milks, non-nutritive liquids, and solids and semi-solid foods, transmission is lower 5 than when breastfeeding is inclusive of these unnecessary supplements [12].

Few studies conducted in the country tries to looked at awareness about PMTCT and types of feeding practice by HIV positive lactating mothers. In this regard less has been documented about factors affecting feeding practice among HIV positive mothers. In this regard less has been documented about factors affecting feeding practice even though it is one among pressures on mother about decision on infant feeding. Thus, this study will add the knowledge on the observed gap in this area by assessing factors affecting feeding practice among HIV positive mothers have less 2 years. The findings of this study are expected to inform policy and decision makers to consider these factors during development of intervention. Moreover, findings are expected to inform the designer of PMTCT strategy so that they will thoroughly consider these factors to promote appropriate infant feeding practice.

Materials and Methods

Study area and period

This study was conducted from February to March 2016 in Jigjiga town which is found at eastern Ethiopia about 625 km far from the capital city, Addis Ababa, 102 km east of Harar and 60 km west of the border with Somalia, at an elevation of about 1400-1600 m above sea level. In this region health service coverage is estimated to be forty nine percent. There are several health sectors and educational institution in the city; one referral Hospital, two private hospitals, three health centers, many private clinics, different private and governmental schools and colleges and one governmental university and private university.

Study design

Institutional based cross sectional study was conducted in Jigjiga town, in 2016.

Study population

HIV positive mothers of less two year old children attending MTCT and ART clinics in Jigjiga health institutions.

Sample size determination

The sample size of the mothers was determined by Epi table calculator using the following assumptions to estimate sample size of single population proportion.

Assumption: size of the target population <10,000
Desired precision (d)=5% prevalence (p) i.e., proportion of the lactating mothers practicing in recommended feeding practice is unknown in study area=50%
Confidence level=95%, which means α set at 0.05 and Zα/2=1.96 (value of Z at a 0.05 or critical value for normal distribution at 95% C.I.).

Sample size is calculated by using

\[ n = \left( \frac{za}{d} \right)^2 \frac{p(1-p)}{d^2} \]

Where:
- \( n \) = sample size from finite population
- \( ni \) = sample size from infinite population
- \( N \) = total number of HIV positive mothers
- \( Z_{\alpha/2} \) = value of Z at α 0.05 or critical value for normal distribution at 95% C.I.
- \( p \) = proportion of the sample

Since the source population is <10,000, the finite population correction formula was employed

Where \( n \) = sample size from finite population

\[ n = \left( \frac{za}{d} \right)^2 \frac{p(1-p)}{d^2} \times \left( \frac{N-1}{N} \right) \]

Hence the calculated sample size was 240 using 5% non-response rate.

Sampling procedures

First selection of the health institution based purposely on the number of client flow for PMTCT and ART service assuming trend of flow is not fluctuated throughout the month. Study participants coming for PMTCT and ART services within study period and who are willing to participate voluntarily and also able to respond i.e., who are free from pain and discomfort was included in the study.

Data collection methods

A pre-tested structured questionnaire which has questions on socio demographic and feeding practice was asked. The data was collected and supervised by post graduated (Msc and MPH) who can speak Amharic, English and Afan Somali. The responsibility of data collectors was to fill the questionnaires after taking the verbal consent of the respondents.

Data collection procedures

Data from the study subjects was collected by using structured and interview administered questionnaire. The interview was conducted at a private place to ensure confidentiality and privacy of the respondent. Training was given for all facilitators and supervisors for two days regarding the data collection instrument, Ethical consideration and objectives of the study by the principal investigators. The supervisors were check the collected data for its completeness, clarity and consistency and if problem occur correction will be made by communicating with principal investigator.

Variables

Dependent variable: Infant feeding practice of HIV positive mothers

Independent Variables
- Age
- Marital status
- Parity
• Ethnicity
• Religion
• Level of Education
• Income
• Occupation
• Knowledge about PMTCT
• Antenatal care use
• Place of delivery
• Partner influence
• Disclosure of HIV status

Data analysis

Before entry, data was clean and coded. The data was entered into Epi data software version 3.01 and processed and analyzed using SPSS Version 15. Descriptive statistics like frequency, mean, median and mode was used and presented in the form of tables, graphs and charts. Associations between dependent and independent variables were calculated using logistic regression model in SPSS statistical program. Statistical significance will be considered at P<0.05.

Results

Socio-demographic characteristic information

A total of 240 HIV positive mothers attending ART clinics in Jigjiga town were interviewed. From the total of 240 HIV positive women with recruited, 234 participants were responded actively making the response rate of 97% (Table 1).

Infant feeding practice

Concerning feeding practice after delivery, 15(6.4%) were given their baby liquid/food to eat/drink before starting breastfeeding while 219(93.6%) were not given their baby anything to eat/drink before starting breastfeeding.

Among respondent who gave their baby water/milk to eat/drink before breast feeding 9(60%) were given by their own decision while 6(40%) were by their partner decision.

Concerning the reasons for introducing such food before starting breastfeeding 8(53.3%) were due to Illness of the mother, 5(33.3%) were due to milk was not coming out and 2(13.4%) sore nipples.

Regarding infant feeding practice their decision influenced by health worker 129(55.1%), husband/spouse 58(24.8%) my mother 22(9.4%) and my own decision 25(10.7%).

Sources of information on feeding practice

Regarding Antenatal clinic attendant during pregnancy 232(99.1%) follow antenatal clinic while 2(0.9) is not and 230(98.3) were counseled on infant feeding while 4(1.7%) were not.

Out of 234 respondents 218(93.2) were heard about breast feeding while 16 (6.8) were not and among study subjects heard about breast feeding 178(76.1%) were got the information.

Knowledge on infant feeding options

Regarding to knowledge on infant feeding options, 222(94.9%) feeding only breast milk is adequate to babies in the 1st 6 months, while 12(5.1%) were respond only breast milk is not enough. Concern HIV transmission through breast feeding, majority of the respondent 232(99.1%) know HIV transmitted during breast feeding from mother to child. In this study out of total respondents 226(96.6%) said formula feeding or other type of food to babies is expensive than breast milk, 8(3.4%) said not expensive.

Of total respondent mothers 227(97%) were know feeding only formula or other food to baby prevents transmission of HIV from infected mother to her baby while 7(3%) said prevent HIV transmitted. Concerning feeding infant's breast milk and formula or other fluids is good for all babies in the 1st 6 months, majority of respondents said it is not good 231(98.7%) while 3(1.3%) were said it is good to feed infant.

Table 1: Socio-demographic characteristic of HIV positive mother in Jigjiga town, Ethiopia in 2016.

| Variables          | Frequency | Percentage |
|--------------------|-----------|------------|
| Age (in years)     |           |            |
| ≤ 20               | 6         | 2.6        |
| 21-25              | 61        | 26.1       |
| 26-30              | 91        | 38.9       |
| ≥ 31               | 76        | 32.5       |
| Religion           |           |            |
| Orthodox           | 73        | 31.2       |
| Muslim             | 123       | 52.6       |
| Protestant         | 27        | 11.5       |
| Catholic           | 11        | 4.7        |
| Ethnicity          |           |            |
| Oromo              | 96        | 41         |
| Somale             | 74        | 31.6       |
| Amhara             | 38        | 16.2       |
| Tigray             | 10        | 4.3        |
| Others             | 16        | 6.8        |
| Marital Status     |           |            |
| Married            | 167       | 71.4       |
| Single             | 21        | 9          |
| Divorced           | 26        | 11.1       |
| Widowed            | 20        | 8.5        |
| Educational level  |           |            |
| No formal Education| 103       | 44         |
| Primary School     | 88        | 37.6       |
| Secondary School   | 43        | 18.4       |
| Occupation         |           |            |
| Housewife          | 144       | 75.6       |
| Daily Labor        | 36        | 15.4       |
| Governmental Employee| 6       | 2.6        |
| Merchant           | 15        | 6.4        |
| Household Monthly Income |     |            |
| No Income          | 45        | 19.2       |
| <500               | 117       | 50         |
| 50-100             | 59        | 25.3       |
| >1000              | 13        | 5.6        |
| Live Birth         |           |            |
| 1-4                | 184       | 78.6       |
| ≥ 5                | 50        | 21.4       |
| Sex of Child       |           |            |
| Male               | 173       | 73.9       |
| Female             | 61        | 26.1       |
Regarding HIV disclosure 214(91.5%) disclose their status to any one while 20(8.5%) were not disclose their status and 140(59.8%) disclose to their Husband/Spouse, 50(21.4%) my mother, 42 (17.9%) my in law and 2(0.9%) others respectively.

Factors associated with infant feeding practice: Multivariate

Based on the results of the binary logistic regression analysis the following variables were significant with exclusive breast feeding; level of education, monthly income, age of child, who influence your decision on infant feeding, knowledge on formula feeding.

These factors were further analyzed using multiple logistic regression using enter stepwise elimination method. The result of multivariate logistic regression analysis showed that mothers who were poor education had a higher chance of practicing exclusive breast feeding than compared with those mothers who their educational level were secondary and above with (AOR=0.140, 95% CI=0.026-0.762) and (AOR=0.062, 95% CI=0.012-0.318) respectively.

In bivariate and multivariable analysis, some variables had shown significant association with mixed feeding.

Income of the respondent was significantly associated with mixed feeding practice, those respondents who had no income, had less than 500, 500-1000 were more likely practicing mixed feeding than those mothers who their income were above one thousand.

Advice on infant feeding during ANC visit was significantly associated with mixed feeding practice those respondents who getting information on infant feeding during ANC visit were less likely to practicing mixed feeding than those respondents who failed to getting information on infant feeding during ANC visit (AOR=3.176, 95% CI=0.882-11.443).

Concerning disclose HIV status, those respondents who were less disclosed their HIV status were significantly associated with mixed feeding practice (Table 2).

The result of multivariate logistic regression analysis showed that mothers whose age between 26-30 were sufficient knowledge on infant feeding option among HIV positive mothers than those mothers whose age between 26-30 were insufficient knowledge on infant feeding option (AOR=0.881, 95% CI=0.402-1.928).

The multivariate analysis shows that the respondents’ income was significantly associated with knowledge on infant feeding option. Respondents who were no income were insufficient knowledge on infant feeding option than those who had income greater than 1000 with (AOR=0.246, 95% CI=0.061-0.989) (Tables 3 and 4).

Discussion

Infant feeding is critical in early life and a key determinant to child survival and development. Infant feeding is more challenging in the context of infants of HIV positive mothers due to vertical transmission from mother to child and formula or replacement feeding (RF) for infants is the recommended choice. However, in the developing world the debate continues regarding the benefits and risks of formula or replacement feeding versus breast-feeding.

The important finding in this study was that exclusive breast feeding practice was significantly associated with educational level, monthly income, age of child and formula feeding. The proportion of mothers practicing exclusive breast feeding (93.6%) was comparatively higher than the findings reported from, Zambia (35%), India (44%), Ghana (62%), Lusaka (70.4%), and Eastern Uganda (24%) [13-16]. But it is almost similar with study conducted in Tigray, Gondar and Adama (90.4%), 83.8% and 84.7% respectively [17-19]. This difference may be due to the socio demographic and the emphasis given to counseling process among the different countries.

In current finding those mothers who had no formal and primary education had a higher chance of practicing exclusive breast feeding than those who their educational level were secondary and above. However, these result is in contrast with evidence from study conducted in rural district of Ethiopia, Nigeria and Kenya, were uneducated mothers are less likely breast feed than educated one [20-22]. 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.

According to this study mixed feeding was significantly associated with monthly income, age of child, knowledge on formula feeding, decision on infant feeding, and counseling on infant feeding and disclose HIV status. The proportion of HIV positive mothers practicing mixed feeding in the present study (6.4%) was higher than study conduct in Tigray and Cameroon 5.9 and 4.3% [19] but it is lower than

Table 2: Factors associated with practicing exclusive Breast feeding among HIV positive mothers, Jigjiga, 2016.

| Variables                              | EBF | Crude OR (95% CI) | AOR |
|----------------------------------------|-----|------------------|-----|
| Level of Education                     |     |                  |     |
| No formal education                    | 12  | 0.998 (0.329-3.027) | 0.140(0.026-0.762)* |
| Primary School                         | 21  | 0.420 (0.146-1.204) | 0.062(0.012-0.318)* |
| Secondary School and Above             | 5   | 1.00             | 1.00 |
| Monthly Income                         |     |                  |     |
| No Income                              | 6   | 3.633(1.632-24.579) | 11.587(1.770-75.853) |
| <500                                   | 17  | 5.882(1.831-18.897) | 9.753(1.996-47.652)* |
| 500-1000                               | 8   | 6.375(1.762-23.060) | 6.161(1.130-33.587)* |
| >1000                                  | 7   | 3.633(1.632-24.579) | 11.587(1.770-75.853) |
| Age of Child                           |     |                  |     |
| <6 Months                              | 6   | 0.990(0.254-3.857) | 1.247(0.214-7.272) |
| 6-12 Months                            | 22  | 0.937(0.308-2.856) | 0.748(0.188-2.972) |
| 13-18 Months                           | 5   | 5.937(1.542-22.858) | 6.394(1.445-28.096)* |
| >18 Month                              | 5   | 3.633(1.632-24.579) | 11.587(1.770-75.853) |
| Decision on infant feeding practice    |     |                  |     |
| Husband/ Spouse                        | 17  | 0.329 (0.087-1.246) | 0.283(0.051-1.241) |
| My mother                              | 3   | 0.864(0.156-4.794) | 0.991(0.133-7.382) |
| Health Worker                          | 15  | 1.036 (0.277-3.883) | 0.679(0.136-3.387) |
| My own decision                        | 3   | 1.00             | 1.00 |
| Formula expensive than breast milk     |     |                  |     |
| Yes                                    | 34  | 5.647(1.347-23.670) | 8.999(1.330-60.878)* |
| No                                     | 4   | 1.00             | 1.00 |
studies done in India (29%), South Africa (12.6%), Ghana (40%) as well as reports from Addis Ababa, Ethiopia (15.3%), Gondar, Ethiopia (10.5%) [13,17,18,23,24]. This might be due to the effectiveness of new PMTCT program and also cultural difference on infant feeding habit.

Concerning decision on infant feeding practice the mothers decision was influenced by health worker (55.1%), husband/spouse (24.8%) her mother (9.4%) and her decision (10.7%) respectively. The report from Uganda by Engebretsen IM, et al. reveals the lack of appropriate arenas for men to engage in such debates, the PMTCT field being dominated by a ‘mother and child’ approach (inherent in the name) [25]. However, study conducted in Tanzania showed husbands influence on infant feeding had no significant association with EBF [26].

Concerning disclose HIV status, those respondents who were less disclosed their HIV status were significantly associated with mixed feeding practice. Regarding HIV disclosure (91.5%) discloses their HIV status. This finding in line with study conducted in Gonder by Muluye and his colleagues that demonstrate 87.6% of the women had free discussion about their HIV status with their spouse. This shows that mothers who disclose their HIV status to spouse were 7.7 times more likely to have the recommended way of infant feeding practice [17]. This is probably due to the fact that, stigma and discrimination of HIV infected mothers may hinder them to select safe infants feeding option.

In current study counseling on infant feeding during ANC visit was associated with mixed feeding practice, those respondents who counseled on infant feeding during ANC visit were less likely to practicing mixed feeding than those respondents who failed to getting information on infant feeding during ANC visit (AOR=3.176, 95% I=0.882 -11.443).

| Variables                        | Mixed feeding | Crude OR (95% CI) | AOR (95% CI) |
|----------------------------------|---------------|-------------------|--------------|
| Monthly income                   |               |                   |              |
| No income                        | 386           | 17                | 6.333 (1.632-24.579) | 5.71 (1.028-31.781)* |
| <500                             | 100           |                   | 5.882 (1.831-18.897) | 7.386 (1.576-34.606)* |
| 500-100                          | 518           | 7                 | 6.375 (1.762-23.060) | 5.746 (1.084-30.462)* |
| >1000                            | 7             | 7                 | 1.00          | 1.00                  |
| Age of child                     |               |                   |              |
| <6 month                         | 19            | 6                 | 0.990 (0.254-3.857) | 4.631 (0.450-47.640) |
| 6-12 month                       | 66            | 22                | 0.937 (0.308-2.856) | 0.947 (0.46-3.647) |
| 13-18 month                      | 95            | 5                 | 5.937 (1.542-22.858) | 11.881 (1.994-70.790)* |
| >18 month                        | 165           |                   | 1.00          | 1.00                  |
| Place of Delivery                |               |                   |              |
| Health institution               | 171           | 36                | 0.380 (0.086-1.677) | 0.378 (0.048-2.981) |
| Home                             | 25            | 2                 | 1.00          | 1.00                  |
| Who influence you on feeding decision |         |                   |              |
| Husband/spouse                   | 41            | 17                | 0.329 (0.087-1.246) | 0.213 (0.027-1.666) |
| My mother                        | 19            | 3                 | 0.864 (0.156-4.794) | 0.341 (0.031-3.798) |
| Health worker                    | 114           | 15                | 1.036 (0.277-3.883) | 0.389 (0.050-3.010) |
| My own decision                  | 22            | 3                 | 1.00          | 1.00                  |
| Formula feeding is expensive than BF | |                   |              |
| Yes                              | 192           | 34                | 5.647 (1.347-23.670) | 30.930 (1.832-522.289)* |
| No                               | 4             | 4                 | 1.00          | 1.00                  |
| Advice on infant feeding during ANC visit | |                   |              |
| Yes                              | 189           | 34                | 3.176 (0.882-11.443) | 10.747 (1.346-85.782)* |
| No                               | 7             | 4                 | 1.00          | 1.00                  |
| To whom disclose your HIV status |               |                   |              |
| Husband/Spouse                   | 121           | 24                | 5.042 (0.305-83.424) | 30.293 (0.561-1.636E3) |
| My mother                        | 42            | 8                 | 5.250 (0.297-92.880) | 45.746 (0.782-2.677E3) |
| My in law                        | 15            | 1                 | 15.00 (0.485-464.202) | 109.107[1.163-1.024E4]* |
| Others                           | 1             | 1                 | 1.00          | 1.00                  |

P-Value <0.05 and * indicates those with significant association
available at hospital as compared to home. However study conducted in Nepal, revealed that women who deliver at home were more likely to exclusively breast feed their infants than the others [27].

According to present finding majority of the respondent (99.1%) known HIV transmitted during breast feeding from mother to child. This finding is in line with study conducted by (23) which revealed 92.3% of women knew mother to child transmission of HIV virus can occur during pregnancy, delivery and breast milk feeding [23]. However higher than report from South Africa (70%) and EDHS 2011 (77 %) of the women knew mother to child transmission occur during breast feeding [24].

As to our finding revealed the reasons for introducing food before initiating breastfeeding (53.3%) were due to Illness of the mother, (33.3%) were due to milk was not coming out and 2(13.4%) sore nipples. These reasons were also mentioned in various literatures conducted in developing countries including Ethiopia. However finding in Addis Ababa shown the commonest reasons for mixed feeding cited were neighbor's advice in 40%; while insufficient breast milk, mother's illness and both mother and infant's illness were mentioned by 26%, 8% and 6% respectively [28]. The possible reasons might be knowledge gap on the benefits of EBF in reducing post natal HIV transmission.

**Conclusion**

This study highlights infant feeding practice and associated factors among HIV positive mothers. The current study demonstrated that (93.6%) % of the respondents were practices exclusive breast feeding while (6.4%) of HIV positive mothers had practice of mixed feeding. The important finding in this study was that exclusive breast feeding practice was significantly associated with educational level, monthly income, age of child and formula feeding. In present finding those mothers who had no formal and primary education were a higher chance of practicing exclusive breast feeding than those who their educational level were secondary and above.

According to this study determinant for mixed feeding was monthly income, age of child, knowledge on formula feeding, decision on infant feeding, and counseling on infant feeding and disclose HIV status, concerning feeding practice after delivery, (6.4%) mothers gave their infants liquids or food before initiating breast feeding. As to this finding revealed mothers decision on infant feeding was influenced by various predictors. Regarding to disclose HIV status, those respondents who were less disclosed their HIV status was significantly associated with mixed feeding practice. According to present finding majority of the respondent (99.1%) were knew HIV transmitted during breast feeding from mother to child.

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**Authors’ Contributions**

LM involved in conceived the original idea, proposal writing.

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**Table 4: Factors associated with Knowledge on Infant feeding option among HIV positive mothers, Jigjiga, 2016.**

| Variables                  | Knowledge of infant feeding | Crude OR              | AOR                |
|----------------------------|-----------------------------|-----------------------|--------------------|
| Age of mother              |                             |                       |                    |
| ≤20 years                  | 520                         | 0.462 (0.155-1.373)   | 0.541(0.160-1.834) |
| 21-25                      | 651                         | 0.217 (0.082-0.574)   | 0.293(0.099-0.099) |
| 26-30                      | 21                          | 0.680 (0.34-1.358)    | 0.881(0.402-1.928)*|
| ≥31                        | 26                          | 1.00                  | 1.00               |
| Monthly income             |                             |                       |                    |
| No income                  | 12                          | 0.281 (0.081-0.981)   | 0.246(0.061-0.989 )*|
| <500                       | 3582                        | 0.320 (0.103-0.991)   | 0.312(0.090-1.085) |
| 500-100                    | 3                           | 0.040 (0.008-0.193)   | 035(0.006-0.2)     |
| >1000                      | 8                           | 1.00                  | 1.00               |
| Live birth                 |                             |                       |                    |
| 1-4                        | 40144                       | 2.025 (1.031-3.979)   | 0.976(0.410-2.326) |
| >-5                        | 18                          | 1.00                  | 1.00               |
| Age of child               |                             |                       |                    |
| <6 month                   | 817                         | 0.765 (0.226-2.583)   | 0.407(0.093-1.783) |
| 6-12 month                 | 18                          | 0.0418 (0.150-1.161)  | 0.557(0.176-1.761) |
| 13-18 month                | 24                          | 0.513(0.190-1.385)    | 0.755(0.249-2.289) |
| >18 month                  | 813                         | 1.00                  | 1.00               |
| Counseled on infant feeding|                             |                       |                    |
| Yes                        | 34                          | 192                   | 0.105 (0.011-1.028)|
| No                         | 4                           | 4                     | 1.00               |
| Occupation                 |                             |                       |                    |
| House wife                 |                             | 0.622 (0.201-1.922)   | 0.346 (0.74-1.611) |
| Daily Labored              |                             | 0.769 (0.210-2.816)   | 0.325 (0.063-1.672)|
| Government employee        |                             | 0.400 (0.036-4.411)   | 0.513 (0.030-8.688)|
| Merchant                   |                             | 1.00                  | 1.00               |

P-Value <0.05 and * indicates those with significant association
designed the study, data collection, and participated in all implementation stages of the study. BA involved in, designed the study, engaged in data analysis and interpretation, drafting of the manuscript and participated in all stages of the study implantation. LM drafted, finalized the write up of the manuscript participated in all stages of the study implantation. All authors reviewed and approved the final manuscript.

Competing Interests

The authors declare that they have no competing of interests.

References

1. Stuebe A (2009) The risks of not breastfeeding for mothers and infants. Rev Obstet Gynecol 2: 222-231.
2. Jackson DJ, Goga AE, Doherty T, Chopra M (2009) An update on HIV and infant feeding issues in developed and developing countries. J Obstet Gynecol Neonatal Nurs 38: 219-229.
3. UNAIDS, WHO (2009) Global summary of the AIDS epidemic. AIDS epidemic update.
4. De Cock KM, Fowler MG, Mercier E, de Vincenzi I, Saba J, et al. (2000) Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. JAMA 283: 1175-1182.
5. UNAIDS, WHO (2005) AIDS Epidemic Update. Geneva, Switzerland.
6. Newell ML (2006) Current issues in the prevention of mother-to-child transmission of HIV-1 infection. Trans R Soc Trop Med Hyg 100: 1-5.
7. Young SL, Mbuya MN, Chantry CJ, Geubbels EP, Israel-Balladet K, et al. (2011) Current Knowledge and Future Research on Infant Feeding in the Context of HIV: Basic, Clinical, Behavioral, and Programmatic Perspectives1. Adv Nutr 2: 225-243.
8. Covadía HM, Bland RM (2007) Preserving breastfeeding practice through the HIV pandemic. Trop Med Int Health 12: 1116-1133.
9. WHO, UNICEF (2007) HIV and Infant Feeding: Update. Geneva, Switzerland.
10. WHO (2009) HIV and Infant Feeding: Revised Principles and Recommendations-Rapid Advice. Geneva, Switzerland.
11. Central Statistical Agency, ICF International (2012) Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA.
12. Pak-Gorstein S, Haq A, Graham EA (2009) Cultural influences on infant feeding practices. Pediatr Rev 30: e11-e21.
13. Suryavanshi N, Jonnalagadda S, Erande AS, Sastry J, Pisol H, et al. (2003) Infant feeding practices of HIV positive mothers in India. J Nutr 133: 1326-1331.
14. Fadnes LT, Engebretsen IM, Warnani H, Semiyaga NB, Tylleskår T, et al. (2009) Infant feeding among HIV-positive mothers and the general population mothers: comparison of two cross-sectional surveys in Eastern Uganda. BMC Public Health 9: 124.
15. Omari A, Luo C, Kankasa C, Bhat G, Bunn J (2003) Infant-feeding practices of mothers of known HIV status in Lusaka, Zambia. Health policy plan 18: 156-162.
16. Laar SA, Govender V (2011) Factors influencing the choices of infant feeding of HIV-positive mothers in Southern Ghana: The role of counselors, mothers, families and socio-economic status. J AIDS HIV Res 3: 129-137.
17. Muluye D, Woldeyohannes D, Gizachew M, Tiruneh M (2012) Infant feeding practice and associated factors of HIV positive mothers attending prevention of mother to child transmission and antiretroviral therapy clinics in Gondar Town health institutions, Northwest Ethiopia. BMC Public Health 12: 240.
18. Maru Y, Haidar J (2009) Infant feeding practice of HIV positive mothers and its determinants in selected health institutions of Addis Ababa, Ethiopia. Ethiop J Health Dev 23: 107-114.
19. Amdom GH, Kiday HS, Meskel Mirutse G, Desta A, Amare H (2014) Infant feeding practice of HIV positive mothers and its determinants in public health institutions in central zone, Tigray Region, Northern Ethiopia. Int J Pharm Sci Res 5: 919-926.
20. Belachew T, Jira C (2011) Awareness about feeding options for infants born to HIV positive mothers and mother to child transmission of HIV in Gurage zone, south Ethiopia. Ethiop J Health Dev 21: 41-47.
21. Adejuyigbe E, Orji E, Onayade A, Makinde N, Anyabolu H (2008) Infant feeding intentions and practices of HIV-positive mothers in Southwestern Nigeria. J Hum Lact 24: 303-310.
22. Ochuma LO, Rombo OG, Judith NW (2005) Nutritional status and feeding practices of infants born of HIV positive mothers: A case of Homa-Bay PMTCT clinic. Kenyatta University, Kenya.
23. Ladjzani R, Peltzer K, Mlambo MG, Phaweni K (2011) Infant-feeding practices and associated factors of HIV-positive mothers at Gert Sibande, South Africa. Acta Paediatr 100: 538-542.
24. Aidam BA, Pérez-Escamilla R, Lartey A, Aidam J (2005) Factors associated with exclusive breastfeeding in Accra, Ghana. Eur J Clin Nutr 59: 789-796.
25. Engebretsen IM, Moland KM, Nankunda J, Karamagi CA, Tylleskår T, et al. (2010) Gendered perceptions on infant feeding in Eastern Uganda: continued need for exclusive breastfeeding support. Int Breastfeed J 5: 13.
26. Saka FJ (2012) Factors influencing exclusive breastfeeding among HIV positive mothers at ilala municipality-Dar es Salaam. Muhimbili University of Health and Allied Sciences, Tanzania.
27. Khanal V, Sauer K, Zhao Y (2013) Exclusive breastfeeding practices in relation to social and health determinants: a comparison of the 2006 and 2011 Nepal Demographic and Health Surveys. BMC Public Health 13: 958.
28. Y Maru, J Haidar (2009) Infant feeding practice of HIV positive mothers and its determinants in selected health institutions of Addis Ababa, Ethiopia. Ethiop J Health Dev 23: 2.