



**KNOWLEDGE, ATTITUDE, PRACTICE
AND DETERMINANTS OF FEEDING OF INFANT
AMONG HIV POSITIVE MOTHERS VISITING ST PAUL'S
HOSPITAL MILLENNIUM MEDICAL COLLEGE ART CLINIC**

By- Edengenet Solomon

**A STUDENT RESEARCH PAPER SUBMITTED TO THE
DEPARTMENT OF PUBLIC HEALTH, ST PAUL'S HOSPITAL
MILLENNIUM MEDICAL COLLEGE, IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF MEDICINE**

SEP, 2017

ADDIS ABABA, ETHIOPIA



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ABSTRACT

Background: Vertical transmission is the leading source of human immunodeficiency virus (HIV) in children under the age of 15 years. Infant and young child feeding in the context of HIV poses significant challenges due to the risk of transmission via breastfeeding. Prevention of mother-to-child transmission of HIV is an important intervention in the prevention and control of HIV and AIDS to reduce child mortality and increase the rate of child survival. Thus this study was aimed at contributing 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.

Objective: To assess the knowledge, attitude, practice and determinants of feeding of Infants, of HIV positive mothers visited SPMMC ART clinic.

Methods: Institution based cross sectional study was conducted in SPMMC from January to March 2017 on 104 mothers. Pre-tested structured questionnaire was used to collect data; it was entered and analyzed using SPSS version 20 program. Simple and Multiple binary logistic regression analysis were employed to control the possible confounding effect and assess the separate effects of the variables.

Result: 104 HIV positive mothers participated in the study. 66.3% and 4.8% of the mothers had sufficient knowledge and good attitude towards the feeding options recommended to HIV positive women respectively. Most of the mothers 63.5% practiced exclusive breastfeeding; 25% mixed feeding and 11.5% exclusive replacement feeding. Educational status ; and number of live birth and knowledge of prevention of mother to child transmission was found to be independently associated (p-value of < 0.05) with mother's knowledge of recommended infant feeding options and infant feeding practice (exclusive breast feeding) respectively.

Conclusion and recommendation: More than half of the mothers had sufficient knowledge about infant feeding options and only few mothers had favorable attitude towards infant feeding options recommended to HIV positive women and it was affected by the level of education of the mothers. Thus, efforts must be done to provide with adequate information and to empower mothers using education for interventions promoting appropriate or safe infant feeding practices and prevention of mother to child transmission of HIV

Key words: Knowledge and Attitude, Infant feeding practice, HIV.

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LIST OF ACRONYMS AND ABBEREVIATIONS

AFASS	Acceptable, Feasible, Affordable, Sustainable and Safe
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
BCC	Behavioral Change Communication
EBF	Exclusive breast feeding
EPI	Expanded Program on Immunization
ERF	Exclusive replacement feeding
HEI	HIV Exposed Infant
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illness
KAP	Knowledge Attitude Practice
MCH	Maternal and Child Health
MOH	Ministry of Health
MTCT	Maternal to Child Transmission
PMTCT	Prevention of Maternal To Child Transmission
UNAIDS	Joint United Nations Program on HIV
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children’s Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

INTRODUCTION

1.1 Background

Vertical transmission is the leading source of human immunodeficiency virus (HIV) in children under the age of 15 years [1,2]. Without intervention 30-45% of infants born to HIV-positive mothers in developing countries will become infected during pregnancy, childbirth and breastfeeding [2]. In the absence antiretroviral therapy (ART) the risk of mother-to-child transmission of HIV through breastfeeding is between 20-45%. However, with the use of ART by the mother this risk can be reduced to less than 5%, even among infants who are breastfed [4,6], because ART reduces the HIV viral load in the mother's milk [7].

In sub-Saharan Africa, mother-to-child transmission (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 [14].

The transmission of HIV through breastfeeding was first identified in 1985 [7] and since then the issue of breastfeeding within the context of HIV and prevention of mother to child transmission (PMTCT) has continued to be at the centre of much debate and policy. Infant feeding in the context of HIV is complex because of the major influence that feeding practices and nutrition have on child survival [8].

While breastfeeding is associated with risk of transmission of HIV, exclusive breastfeeding for the first six months is associated with a lower risk of HIV transmission when compared to mixed feeding, even without ART [4,5].

The risk of infants acquiring HIV through breastfeeding, therefore needs to be weighed against the increased risk of death from causes other than HIV, in particular malnutrition and serious illnesses such as diarrhea, among non-breastfed infants [11].

The estimated risk transmission during breast feeding, overall without breastfeeding, overall with breastfeeding to six months and overall with breastfeeding to 18-24 months ranges from 5-20%, 15-25%, 20-35% and 30-45% respectively [16].

Mothers known to be HIV-infected (and whose infants are HIV uninfected or of unknown HIV status) should exclusively breastfeed their infants for the first 6 months of life thereafter bring together proper complementary foods and continue breastfeeding 12 months of life. Breastfeeding should then only discontinue once a nutritionally sufficient and safe intake without breast milk can be delivered [15]. However, the WHO criteria are rarely met in developing countries and mixed feeding is common [16].

1.2 Statement of the problem

HIV continues to be a major global public health issue. In 2015, an estimated 36.7 million people were living with HIV (including 1.8 million children) with a global HIV prevalence of 0.8%. The majorities of this number live in low and middle income countries. In the same year, 1.1 million people died of AIDS-related illnesses. Since the start of the epidemic, an estimated 78 million people have become infected with HIV and 35 million people have died of AIDS-related illnesses [1].

An estimated 25.5 million people living with HIV live in sub-Saharan Africa. In 2015, there were roughly 2.1 million new HIV infections, 150,000 of which were among children. Most of these children live in sub-Saharan Africa and were infected via their HIV-positive mothers during pregnancy, childbirth or breastfeeding [1,3].

Based on a single point estimate, there are nearly 1.2 million people living with HIV/AIDS in Ethiopia. The adult prevalence rate is estimated at 2.4% and the incidence rate is 0.29%. The prevalence and incidence rates significantly vary between geographical areas and gender. The urban prevalence rate is estimated at 7.7%, while the rural prevalence rate is 0.9%. The prevalence rate is 1.7% for males and 2.6% for females. With 90 000 HIV-positive pregnant women, there are an estimated 14 000 HIV-positive births and a total of 28 000 AIDS death and an estimated 800 000 AIDS orphans annually [3].

Mother-To-Child-Transmission (MTCT) of HIV, which can occur during pregnancy, labor, delivery and breastfeeding, accounts for more than 90% of pediatric HIV infections. Prolonged breastfeeding improves child survival, but accounts for 30–40% of postnatal HIV transmission (PNT). On the hand, replacement feeding (RF) prevents all PNT, but is associated with higher infant morbidity and mortality [7].

The dilemma posed between lifesaving benefit and risk of transmission through breastfeeding complicate infant feedings in a communities affected by HIV/AIDS.

National or sub-national decision making on how to counsel and support mother's feeding options must take into account the risk of PNT of HIV, child mortality and under-nutrition in the HIV-exposed infants (HEIs), among others [15].

The method of infant feeding is clearly associated with the risk of transmission through breast milk. Exclusive breastfeeding for the first six months is associated with a 3-4 fold lower risk of HIV transmission as compared to mixed feeding (mixed feeding means the infant receives both breast milk and any other food or liquid including water, non-human milk and formula before 6 months of age. But unfortunately mixed feeding is still the norm for many infants less than six months old in many countries with high HIV prevalence [15].

According to Hailu's study done at Jima Ethiopia, it is found that only 30.5% of women had sufficient knowledge of infant feeding options recommended for HIV-positive women. The study also shows that knowledge of the mothers about the infant feeding options was significantly associated with their address, age, husbands being important persons for mothers to decide on how to feed their infants, and counseling mothers on infant feeding during ANC. Mothers' attitude towards the feeding options significantly associated with their address [20].

The health worker plays a central role in building the confidence of mothers, including HIV-positive mothers, on how to feed their babies. With only a few health workers having the correct knowledge and counseling skills to do this work efficiently, addressing this competency gap remains a major challenge [15]. In addition to this there is limited information about KAP of breast feeding among HIV positive mothers in our set up. Thus this study helped to determine KAP and determinants of infant feeding among HIV positive mother, which could enable to formulate context dependent policy to reduce mother to child transmission and improve child health.

1.3 Significance of the study

Studies have shown that MTCT of HIV varies with the duration of breast-feeding and pattern of infant feeding. The MTCT rates by duration of breast feeding vary between, 25-35% if breast feeding through 6 months and 30-45% if there is breast feeding through 18-24 months.

The rate of transmission by pattern of infant feeding was found to be low in exclusively breastfed (19.4%) than mixed fed infants (26.1%) for 3 months.

Public health programs for protection, promotion and support of breastfeeding and discouraging mixed feeding in the first six months can have major benefits for HIV-positive women and their children, as well as for the population in general.

Since this study had tried to assess the level of knowledge, attitude and practice of HIV positive mothers those who visit SPMMC ART clinic about, feeding of infants born to HIV positive women, it could contribute to fill the information gap, and aid in the design of strategies to prevent mother to child transmission of HIV and to promote appropriate infant feeding practice. It may also help the government, churches and NGOs to design educational materials & programs for MTCT prevention based on the information obtained from the study.

2. LITERATURE REVIEW

2.1 Literature review

Mother to infant HIV transmission, also called perinatal transmission, is the transmission of HIV from an HIV positive woman to her baby during pregnancy, in the birth process or by breastfeeding

Knowledge and attitude of mothers about infant feeding

The feeding options recommended for infants of HIV positive women are: exclusive breast feeding and avoiding mixed feeding, expressing and heating breast milk or exclusive breast feeding by wet-nurse who is HIV negative, or exclusive replacement feeding (avoidance of all breast-feeding) [17]. It is believed that the recommendations have also been communicated to people and health workers in various ways, such as mass media, mother-to-mother, newsletters and journals, trainings, and VCT/PMTCT services provided by NGOs and government health institutions.

Knowledge of mothers on breastfeeding is very important factor for the mother to make a decision on infant feeding option. In normal circumstances, we expected that HIV+ mothers in PMTCT would be more knowledgeable than the rest. Several research studies have done been to assess the level of knowledge among mothers in the context of HIV.

In a study done by Chopra et al. (2005) in South Africa, level knowledge on infant feeding among mothers was low. This was attributed to lack of consistent access to accurate, appropriate and simple information. This hindered effective adoption and adherence to recommended optimal infant feeding practices. [33].

According to the study done in Nairobi, Kenya found that most of the mothers (86%) who planned to breast-feed were more likely to feed their infants as planned (55%) [32]. A cross-sectional study done on pregnant women in Kilimanjaro region also showed that most of the women (85%) who had previously breastfeed had initiated breastfeeding within few hours post-partum, and those having knowledge of exclusive breast feeding were the least likely to end exclusive breast feeding early [34].

From a cross-sectional survey in Gaborone, Botswana; it is observed that only about half of the HIV-infected women had knowledge of PMTCT and PMTCT practices related to breastfeeding [23]. This finding is similar to that demonstrated by Hailu, who found that only 30.5% of women in Jimma, Ethiopia had sufficient knowledge of infant feeding options recommended for HIV-positive women [20].

Based on a study done in Tigray, from the total 207 mothers, Majority 199(96.1%) of HIV positive mothers were sufficient knowledge and 8(3.9%) insufficient knowledge towards infant feeding options and also 172 (83.1%) HIV positive mother had sufficient knowledge towards MTCT (PMTCT) [18]. Results revealed that counseling on infant feeding provided as part of the PMTCT program was significantly associated with knowledge of PMTCT practices related to breastfeeding.

Practice and determinants of infant feeding practices of HIV positive mothers

Approximately 1.3 million child deaths per year (13% of deaths of children aged less than 5 years) could be prevented if universal coverage of exclusive breastfeeding were increased to 90% among infants aged less than 6 months. Compared with the use of breast-milk substitutes, breastfeeding has been consistently shown to reduce infant morbidity and mortality associated with infectious diseases in both resource-rich and resource-poor settings, particularly in the first months of life.

Major determinants of infant feeding practice were found to be favorable Attitude on infant feeding practice and education &counseling on infant feeding option during pregnancy in ANC and HIV-positive mothers faced various obstacles (socio-economic, familial and stigma) in carrying out replacement feeding. Health care workers, friends, neighbors, relatives, husbands and other community members play a leading role in infant feeding practices of HEIs [18, 25].

South African study reported that sociocultural factors (including social stigma of HIV/AIDS, maternal age and family influences on feeding practices, economic circumstances, beliefs about HIV transmission through breast milk and beliefs about the quality of breast milk compared with formula) influenced the decision to exclusively breastfeed [31].

As demonstrated in this study, counseling on infant feeding during antenatal visits was an important predictor of infant feeding choices which is also showed in Gaborone, Botswana [23].

HIV-infected pregnant women are encouraged to exclusively breastfeed their infants for at least 6 months with proper HAART in high-income and low-income countries owing to the proven benefits of breastfeeding for both the mother and the infant.[32] For example, the results of a clinical trial in Kenya indicated that giving breastfeeding women a triple-antiretroviral regimen from late pregnancy to 6 months after birth is a safe, feasible way to reduce MTCT in resource-limited settings.[33] A cohort study in India found higher rates of HIV-free survival in breastfed infants, reporting a cumulative 12-month mortality of formula-fed infants of 9.6% vs 0.68% among breastfed infants[34].

Findings of a study conducted in Nairobi to determine the relationship between feeding practices and nutritional status of infant born to HIV positive women indicate that 31% of counseled respondents practiced mixed feeding six weeks after delivery [32].

According to a study in Tanzania, lack of knowledge and confidence in the recommended feeding options made it difficult for respondents to cope. Mothers did not have accurate information on infant feeding practice and were unable to understand the disadvantages of exclusive breastfeeding compared to mixed feeding. In this dilemma, Mothers preferred mixed feeding. They believed that exclusive breastfeeding was customarily not feasible beyond three months. The belief was that breast milk was insufficient for a fast growing child. Some care givers belief that babies need water in the first month because they ‘feel thirsty’. Many reportedly gave babies water before initiating breastfeeding. Boiled water and gripe water were often used for relief of abdominal colic. Apart from water, other complementary foods were reportedly introduced to infants before three months. Interviewed mothers reported that they introduced light porridge mixed with cow milk with belief that breast milk was not adequate to make the baby grow ‘fat and shiny’, an expectation by kin and neighbors [35].

Regarding to the infant feeding practices of HIV positive mothers, a cross sectional survey conducted in 13 purposively selected health institutions with ART and PMTCT facilities in Addis Ababa found that Nearly half (46.8%) of the mothers practiced Exclusive Replacement Feeding (ERF); 30.6% used (EBF); 15.3% used (MF) and the rest 7.3% practiced breast-feeding

for 2 months followed by replacement feeding thereafter. Expressed Breast-milk feeding and wet-nursing were practiced by 4.3% and 0.3% respectively. mothers who had positive attitude towards infant feeding were 69% less likely to practice mixed feeding than those who didn't have and Disclosure of HIV status to spouse made mothers 89% less likely to practice MF than those who didn't. The predictor for EBF, was mode of delivery while for MF, disclosure of HIV status to spouse, parental infant feeding attitude and infant illnesses were the predictors. Furthermore, sticking to mothers' informed safer feeding options is challenged by some social factors [25].

Additionally, according to the study in Mekelle Town, Tigray Region, Ethiopia (90.3%) were practice Exclusive Breast Feeding (EBF) and the main reason cited by HIV positive mothers for choosing Exclusive Breast feeding were more than three fourth were availability, affordability and advised by health worker. Among mothers practiced mixed feeding the commonest reasons were, neighbor advice, insufficient breast milk, mothers illness, husbands imposition infants illness [18].

For appropriate decision about infant feeding options, mothers' knowledge of their HIV status (Utilization of VCT/ PMTCT service), the risks and benefits of the feeding options are mandatory. In 3studies conducted at Mekelle Town, Tigray Region, Addis Ababa Ethiopia and south Africa which are done to asessed Infant Feeding Practice and Associated Factors among HIV Positive Mothers showed that HEIs born to mothers who received infant feeding education and counseling during pregnancy in ANC were 5 times more likely to practice Exclusive Breast feeding as compared to HEIs born to mothers with who did not received infant feeding education and counseling during pregnancy in ANC [18,25,29].

Similarly a study in DbreMarkos Referral Hospital showed that mothers who had educational level of high school and above were 5.25 times more likely to follow recommended way of infant feeding practice than those who were unable to read and write and Mothers who had ANC follow up were 5.5 times more likely to follow RFP compared to those who had no ANC follow up also who have been on ART were 6.5 times more likely to follow RFP than those who were not on ART [30].

2.2 Conceptual framework

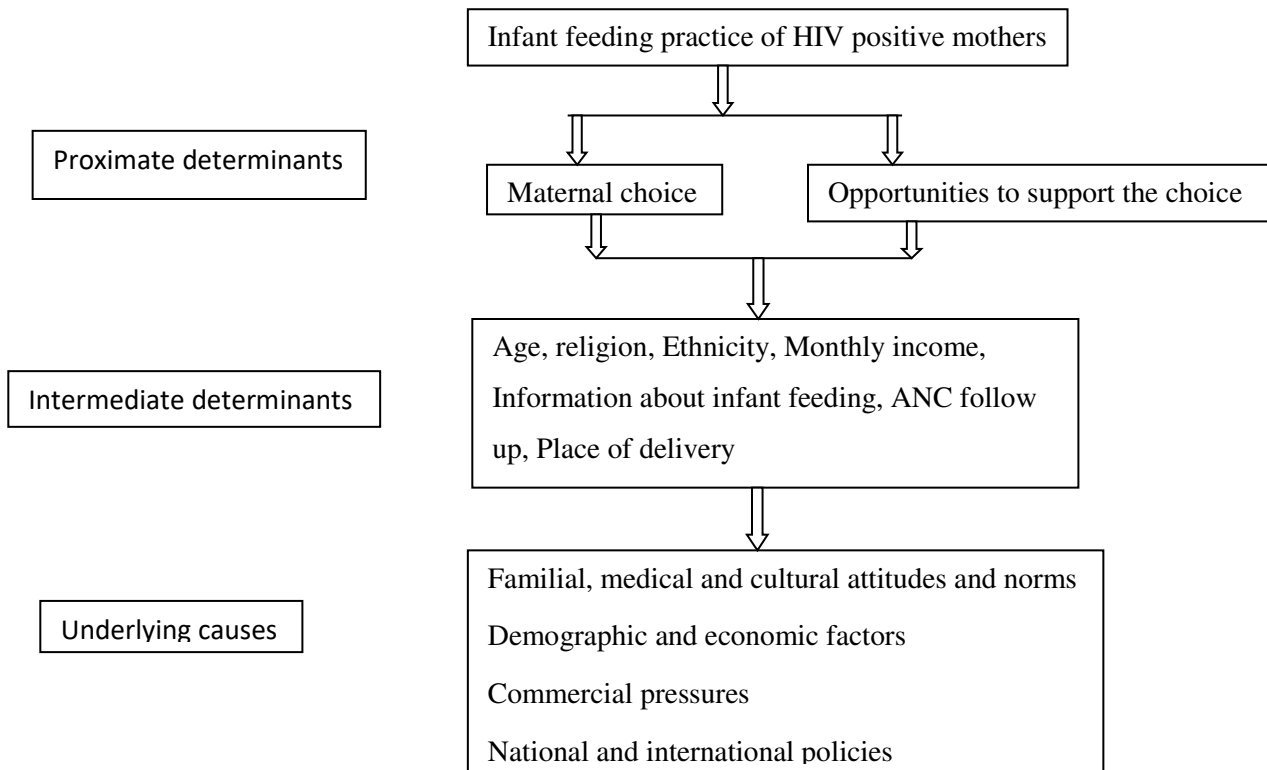


Figure 1: Conceptual frame work

3. OBJECTIVES

General Objectives

- To assess the knowledge, attitude & practice of HIV positive mothers, who visit ART clinic of SPMMC about feeding of infants born to HIV positive mothers.

Specific Objectives

- To determine level of knowledge about feeding of Infants born to HIV Positive women.
- To determine attitude of mothers towards recommended infant feeding options.
- To determine practice of mothers about feeding of Infants born to HIV Positive women.
- To identify determinates of KAP of mothers about infant feeding.

4. METHODOLOGY

4.1 Study area

This is a hospital based study which was undertaken in Saint Paul's Hospital Millennium Medical College in Addis Ababa, capital city of Ethiopia. Saint Paul's hospital is one of the tertiary referral hospitals directly under the federal ministry of health. It is also a teaching hospital for the Millennium Medical College and Addis Ababa University. The hospital gives service to 200,000 people annually who are referred from all corners of the country. It has a total bed of 360 and on average 650 patients visit the hospital as outpatient and emergency daily. It gives service under different clinical disciplines which include ART services. The ART clinic gives services on average for 50 individuals daily and of these halves of them are females.

4.2 Study period

The study period was from January 20, 2017 to March 20, 2017.

4.3 Study design

Institutional based cross sectional descriptive and analytic study was conducted.

4.4 Source population:

All HIV positive mothers who visited ART clinic at SPHMMC.

4.5 Study population:

All HIV positive mothers who visited ART clinic at SPHMMC during the study period and who had fulfilled inclusion criteria were included in the study.

4.6 Inclusion & exclusion criteria

Inclusion criteria: All HIV positive mothers who had at least one live birth in the past 24 months.

Exclusion Criteria: Women who were severely ill were excluded from the study.

4.7 Sample size determination and sampling procedure:

The sample size was determined on Using standard formula, the assumption of a prevalence rate of 50% (since the status is not known) with 95% confidence interval ($Z_{\alpha/2} = 1.96$) and with 5% marginal error (d), size of the target population (N) = 210 (on average 5 mothers who delivered in the past 24 months visit ART daily; 42 working days during the study period), the sample size will be (n_i):

$$\text{➤ } n_o = \frac{(Z_{\alpha/2})^2 P (1- P)}{d^2} = \frac{(1.96)^2 0.5 (0.5)}{(0.05)^2} = 384$$

➤ $n_o = 384$ (because the study population(N) is less than 10000 we use the formula

$$n_f = \frac{n_o}{1 + \frac{n_o - 1}{N}}$$

Therefore $n_f = 136$
Adding a 10 % non-response rate = 149

Then by using simple random sampling method (lottery method) mothers were selected.

4.8 Measurement

4.8.1 Variables

1. Dependent variables

- Knowledge about infant feeding options recommended to HIV positive women
- Attitude towards infant feeding options recommended to HIV positive women
- Infant feeding practice of HIV positive mothers

2. Independent variables

Socio-demographic variables:

- Age
- Religion
- Ethnicity
- Level of Education
- Marital status
- Occupation

- Monthly Income
- Parity
- Family size
- Important person for mothers in deciding how to feed infant

Knowledge and attitude variables:

- Source of information about infant feeding and MTCT.
- ANC visit
- Place of ANC visit
- Counseling during ANC
- Place of delivery

Practice variables:

- Knowledge about recommended infant feeding options
- KMTCT
- KPMTCT
- Attitude towards recommended infant feeding options

4.8.2 Data collection

Pre-tested structured questionnaire was used to collect data. The questionnaire was made by selecting and adapting relevant and standard questions from HIV/PMTCT Program Evaluation tools(questionnaires) of UNAIDS; and from thesis research papers submitted to Department of Community Health, Addis Ababa University (26,27,28). The questionnaire contains variables related to socio-demographic, knowledge, attitude, and practice of mothers on PMTCT and infant feeding. The questionnaire was prepared in English and was translated to Amharic language. It was administered and data was collected by Bsc nurses working at ART clinic.

4.8.3 Data quality assurances

Data collectors were trained in pre-tested check lists and principal investigator had cross checked for completeness and accuracy of the data on daily basis.

4.9 Data analysis, processing and interpretation.

SPSS for windows ver. 20 (SPSS, Inc, 2007) was used for data entry and analysis. After cleaning and editing the data, frequencies and percentages were calculated to all variables which were related to the objectives of the study.

Odds ratio with 95 % confidence interval was computed to assess the presence and degree of association between dependent and independent variables. P. value less than 0.05 was considered significant. Moreover, Variables which showed significant association in the bivariate analysis were entered into multiple binary logistic regression to control the possible confounding effect and assess the separate effects of the variables.

4.10 Ethical consideration

Ethical clearance was received from St Paul's hospital millennium medical college before commencement of the study. Informed consent was obtained from the participants. The purpose of the study and the right of the respondent not to participate and not to answer the question, for which she did not want to, was carefully explained to respondents prior to asking consent to conduct interview. Confidentiality was assured through anonymous recording and coding of questionnaire; and it was placed in safe place after being collected and was been used for the purpose of the study only.

4.11 Operational definitions

Knowledgeable about MTCT during pregnancy, delivery, and breastfeeding: A respondent who reported that HIV can be transmitted from mother to child during pregnancy, delivery, and through breast feeding. (14, 31)

Sufficient Knowledge about PMTCT: When the respondent woman identified correctly at least five correct or true statements out of six statements prepared about PMTCT of HIV.(31)

Sufficient Knowledge about infant feeding options recommended to HIV positive women: When the respondent woman identified correctly at least six true or false statements out of seven statements prepared about infant feeding options recommended to HIV positive women. (13, 25)

Good Attitude towards Infant feeding options 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 (exclusive replacement and exclusive breast feeding) recommended to HIV positive women. (13, 25)

Mother Practiced Exclusive Breastfeeding: If the mother has given or fed her infant only the milk of her breast or a wet nurse, or expressed breast milk and no other liquids, or solids with the exception of vitamins, mineral supplements or medicines in the first 6months of delivery.(13, 25)

Mother Practiced Mixed feeding: If the mother has given or fed her infant some breast milk and artificial feeds, either milk or cereal, or other food or liquids. (13, 25)

Mother Practiced Exclusive Replacement feeding: If the mother has given or fed her infant only breast milk substitute, not breast-fed at all. (13, 25)

4.12 Dissemination plan

The copies of the final result will be disseminated to hospital administration and ministry of health. Attempts will be made to publish in peer reviewed and reputable national and international journals.

5. RESULTS

Of 110 mothers who were eligible for the study, 104 mothers agreed to participate in the study, with a response rate of 94.5%. Out of 6(5.5%) mothers who refused participate, 4 mentioned they were busy and the rest had no reason stated.

5.1. Socio-demographic characteristics of the respondents:

The median and mean age of mothers and their infants were 30 and 30.72 (SD= 4.3) years; and 9 and 10.1(SD=5.02) months respectively.

Majority of the respondents were Orthodox, Oromo in ethnicity and married; 64(61.5%), 90 (86.5%) and 45 (43.5%) respectively. More than one third, 39 (37.5%) mothers completed grade 7 and above, while 28 (26.9%) completed grades 1 to 6 and 23 (20 %) of the study subjects were unable to read or write. The rest were able to enter higher education. During the study period, most of the mothers were housewives, 57 (54.8 %), or unemployed 17 (16.3%), by occupation. The median household monthly income was 3000 ETB, and ranges from nil to 10,000 ETB. Most 38 (36.5%) of the mothers gave birth to 2 live children, while 41 (39.4%) mothers have 1 alive child currently. (Table1)

Table 1: Socio-demographic characteristics of mothers (n = 104), ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Categories	Frequency	Percent
Age	20- 25	16	15.4
	26-30	40	38.4
	≥31	48	46.1
Marital status	Single	6	5.8
	Married	90	86.5
	Divorced/separated	6	5.8
	Widowed	2	1.9
Parity	1	32	30.8
	2	38	36.5
	3	22	21.2
	4	12	11.5
Religion	Orthodox	64	61.5
	Protestant	17	16.3
	Muslim	21	20.2
	Catholic	1	1.0
	Others*	1	1.0
Ethnicity	Oromo	45	43.3
	Amhara	40	38.5
	Guragie	13	12.5
	Tigre	2	1.9
	Others**	4	3.8
Educational status	Unable to read and write	23	22.1
	Primary school	28	26.9
	Secondary school	39	37.5
	Higher education	14	13.5
Occupation of the mother	unemployed	17	16.3
	Housewife	58	55.7
	Gov't employee	7	6.7
	Private org employee	8	7.7
	Merchant	6	5.8
	Daily laborer	8	7.7
	Monthly income	≤3662.34 Eth birr	48
>3662.34 Eth birr	29	27.9	
	No income	6	5.8
	Didn't know	21	20.2

*others: Adventist

**others: Welayta, Silte, kembata

5.2. Source of Information of Mothers about MTCT of HIV and Infant Feeding:

Among 104 mothers, for 100(98.2%) mothers the sources of information about MTCT of HIV were found to be health workers or health facilities, mass media 58(55.8%), and friends or relatives 25(24%). Similarly, majority of mothers 74(71.2%) got information of infant feeding from health workers or health facilities. For the remaining 25(24%) and 9(8.7%) mothers, friends or relatives and mass media were mentioned as their sources of information about infant feeding respectively

Figure 2: Distribution of mothers (n = 104) by their source of information about MTCT, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

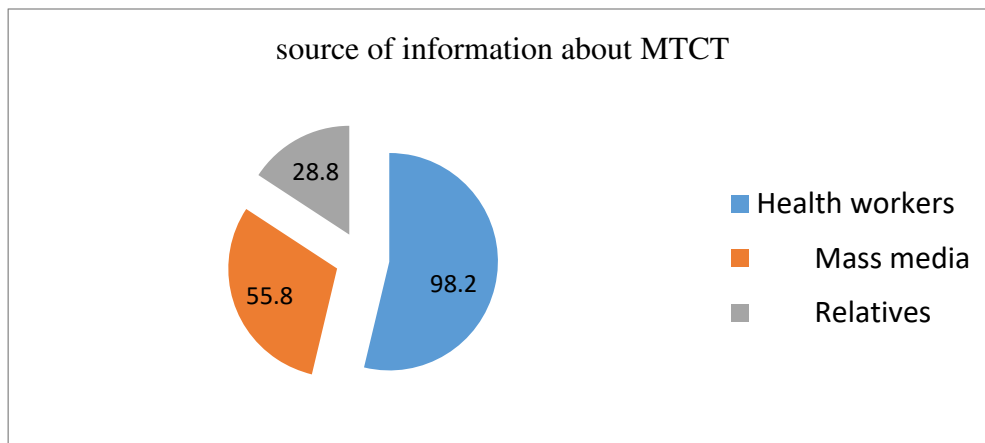
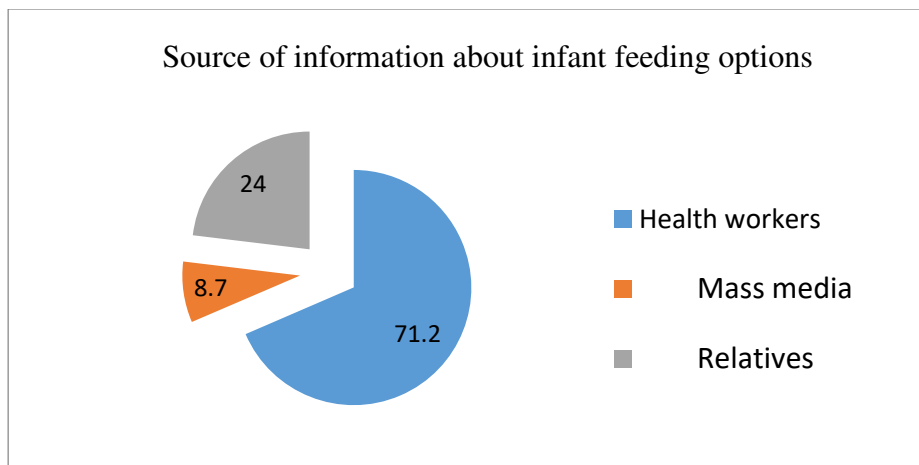


Figure 3: Distribution of mothers (n = 104) by their source of information about infant feeding options, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.



5.3. Knowledge and Attitude of Mothers towards Infant Feeding Options

Recommended to HIV Positive Women:

Mothers' knowledge about MTCT, PMTCT, and infant feeding options recommended to HIV positive women was assessed by asking questions about ways of transmission of HIV from infected women to her baby, the importance of VCT for pregnant women, ways of prevention of HIV transmission from infected women to uninfected persons and the child of infected women, and about the feeding options recommended to HIV positive women (Annex 3- a, b). In the same way, questions were asked to assess the presence of favorable or unfavorable attitude among mothers towards the infant feeding options (Annex 3-c). Then, the mothers were categorized as having "favorable" or "unfavorable" attitude, "sufficient" or "insufficient" knowledge about the issues under consideration based on their response to the questions and the definitions of the terms described under the heading 'operational definitions' in the thesis.

Based on the assessment below, 38.5%, 41.3%, & 66.3% of the mothers were having sufficient knowledge about MTCT, PMTCT, and infant feeding options recommended to HIV positive women respectively. Moreover, only 4.8% of the mothers were having favorable (good) attitude towards the feeding options (Table 2).

Table 2: Distribution of mothers by their knowledge about and attitude towards P/MTCT and infant feeding options recommended to HIV positive women, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Frequency	Percent
Knowledge about MTCT during pregnancy, labor, and breast feeding	Sufficient	40	38.5
	Not sufficient	64	61.5
Knowledge about PMTCT	Sufficient	43	41.3
	Not sufficient	61	58.7
Knowledge about infant feeding options	Sufficient	69	66.3
	Not sufficient	35	33.7
Attitude to feeding options	Favorable	5	4.8
	Unfavorable	98	94.2

5.4. Determinants of knowledge of the mothers

Bivariable analysis was carried out by taking into account to assess the relative effects of independent variables on the dependent variable (Table 3). Those variables with P value less than or equal to 0.25 were entered to the model.

Multivariable analysis showed that knowledge of the mothers about the feeding options, was significantly associated with Educational status, in that mothers who attend secondary school and above [with AOR (95% CI)= 5.804(1.906,17.67) were found to have better knowledge than the mothers only attend primary school or never went to school respectively (Table 4).

In this study mothers age, marital status, parity, religion, ethnicity, occupation, and household monthly income, ANC visit, counseling during ANC were not having a statistically significant association with knowledge of mothers towards the infant feeding options.

Table3: Bivariable analysis of knowledge of infant feeding options and its determinants in mothers who visited the ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Categories	Knowledge about infant feeding		COR	P value
		Yes	NO		
Age	>31	32	15	1.153(0.508-2.618)	0.733
	≤31	37	20	1	
Educational status	Secondary & above	44	9	5.084(2.061-12.544)	0.001
	Primary & below	25	26	1	
Occupation of mother	Housewife	37	20	0.867(0.382-1.969)	0.733
	others	32	15	1	
Monthly income	>3662.34 Eth birr	23	6	1.917 (0.651-5.647)	0.238
	≤3662.34 Eth birr	32	16	1	
Important person in decision	Health worker	38	13	2.074(0.901-4.775)	0.086
	Others	31	22	1	
Place of recent delivery	Gov't hospital	57	29	0.983(0.335-2.886)	0.975
	Gov't health center	12	6	1	
No of family members	≤3	21	12	0.839(0.353-1.994)	0.690
	>3	48	23	1	

Note: 1- reference group

Table 4: Multivariable analysis of knowledge of infant feeding options and its determinants in mothers who visited the ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Knowledge about infant feeding options		AOR (95% C.I.)	P value
		Sufficient	Insufficient		
Educational status	Secondary & above	44	9	5.804(1.906,17.67)	0.002
	Primary & below	25	26	1	
Monthly income	>3662.34 Eth birr	23	6	2.137 (0.653,6.99)	0.209
	≤3662.34 Eth birr	32	16	1	
Important person in making decision	Health worker	38	13	1.936(0.645,5.815)	0.239
	Others	31	22	1	

Note: 1- reference group

5.5 Attitude of mothers on infant feeding options

From the total of 5 mothers who had favorable attitude all were young age (31yrs), education at level of secondary and above, and family income of more than 3662.34 Eth birr.

Similarly all mothers with favorable attitude were counseled about infant feeding options during ANC and all had delivered their last child at government hospitals.

For the attitude of the mothers association couldn't be determined, as the numbers of mothers with favorable attitude were only 5 and assumption criteria couldn't be met to do crosstab or regression analysis.

Table 5: Distribution of mothers by their Attitude towards infant feeding options, ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017- Mar. 2017.

Variables	Category	Attitude of mothers About infant feeding	
		favorable	unfavorable
Age	≤31	0	57
	>31	5	42
Educational status	Secondary & above	5	48
	Primary & below	0	51
Family income	≤3662.34 Eth birr	0	48
	>3662.34 Eth birr	5	24
Counseled during ANC	Yes	5	92
	No	0	4
Place of recent delivery	Gov't hospital	5	81
	Gov't health center	0	18

5.6. Infant Feeding Practices of HIV positive mothers

Among the 104 mothers within 24 months postpartum who were asked about what they have been feeding their since birth, it was found that exclusive breast feeding was practiced by majority, 66(63.5%) of the mothers, mixed feeding by 26(25%) and exclusive replacement feeding only by 12(11.5%) of the mothers from birth up to the 6th months of age of their infants

As Table 6 below displays mothers who are less than 31yrs of age 38(36.5), married 61(58.7) practice EBF more than the referents. In the same way mothers who are married (18.2%), age ≤ 31 yrs (20.8%), house wives (11.5%), primary school and below (16.3%), who attended ANC (20.8%) and gave birth in government hospitals (19.2%) experience mixed feeding significantly than others.

A total of 17(16.3%) mothers had faced problem when they Breast feed, of this 12(11.5%) were face Insufficient breast milk and the rest 5(4.8%) had nipple problem.

Table 6: Distribution of mothers by their practice of infant feeding, ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Practice of EBF		Practice of Mixed feeding	
		Frequency	Percent	Frequency	Percent
Age	≤ 31	38	36.5	16	20.8
	> 31	28	26.9	4	5.2
Marital status	Single	3	2.9	3	2.9
	Married	61	58.7	19	18.2
	Divorced	0	0	4	3.8
	Widowed	2	1.9	0	0
Educational status	Primary & below	34	32.7	17	16.3
	Secondary & above	32	30.8	9	8.7
Religion	Orthodox	45	43.3	14	13.5
	Protestant	8	7.69	2	1.9
	Muslim	11	10.6	10	9.6
	Catholic	1	0.1	0	0
	other	1	0.1	0	0
Occupation	House wife	43	41.3	12	11.5
	Daily laborer	3	2.9	4	3.8
	Merchant	4	3.8	0	0
	Gov't employee	6	5.8	1	1
	unemployed	11	10.6	6	5.8

Monthly income	≤3662.34 Eth birr	27	35.1	16	15.4
	>3662.34 Eth birr	18	23.4	4	3.8
No of live birth	≥3	17	16.3	11	10.6
	<3	49	47.1	15	14.4
No of family members	≤3	19	18.3	16	15.4
	>3	47	45.2	10	9.6
Place of ANC	Gov't hospital	61	60.4	21	20.8
	Gov't health center	4	3.96	3	3
Counseled during ANC	Yes	64	63.4	22	21.8
	No	1	3.96	2	2
Important person in decision	Husband	10	9.6	2	1.9
	Sister	0	0	2	1.9
	Her self	16	15.4	10	9.6
	Health worker	40	38.5	12	11.5
Place of recent delivery	Gov't hospital	57	54.8	20	19.2
	Gov't health center	9	8.7	6	5.8

Relationship of infant feeding practices of mothers with the independent variables:

Although, marital status and occupation of mothers, No of live birth, important person in making decision and KPMTCT were associated with EBF, in the bivariale analysis(Table 7), only marital status, No of live birth and KPMTCT remained determinants on multivariable analysis.

Mothers with live birth ≥ 3 and mothers those have sufficient knowledge about PMTCT were found to practice exclusive breast feeding significantly more than those who have less than 3 live births and who have no sufficient KPMTCT with AOR 4.37 and 95% CI between 1.54 and 12.38 and with AOR of 2.89 and 95% CI between 1.08 and 7.76 respectively (Table 8).

In addition mothers educational status was significantly associated with mixed feeding practice in which mothers who had primary education and below had practice mixed feeding more than those who attend secondary school and above with AOR 4.2 and 95% CI between 1.32 and 13.37 (Table 9).

In this study, statistically significant association was not revealed between infant feeding practice of the mothers, and age, educational status, religion, ethnicity, occupation, monthly family income, No of family members, place of ANC and delivery, attitude towards feeding options, person in making decision.

Table 7: Bivariable analysis of infant feeding practice and its determinants in mothers who visited ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Exclusive BF		Mixed feeding	
		COR(95% C.I.)	P value	COR(95% C.I.)	P value
Educational status	Primary&below	1.31(0.59,2.93)	0.506	2.44(0.97,6.16)	0.058
	Secondary&above	1		1	
Marital status	Married	0.26(0.81, 0.86)*	0.027	3.74(1.17, 11.96)*	0.026
	others	1		1	
Occupation of mother	Housewife	0.37(0.164, 0.85)*	0.019	1.59(0.65, 3.88)	0.308
	others	1		1	
No of live birth	≥3	2.33(1.00, 5.43)*	0.049	0.57(0.23, 1.43)	0.230
	<3	1		1	
Important indecision	Health worker	0.34(0.15, 0.78)*	0.011	1.29(0.53,3.15)	0.572
	Others	1		1	
KPMTCT	Sufficient	2.47(1.09, 5.60)*	0.03	0.95(0.39, 2.33)	0.908
	Not sufficient	1		1	
Place of delivery	Govt hospital	1.97(0.70,5.49)	0.197	0.61(0.20,1.82)	0.372
	Govt health center	1		1	
Monthly income	≤3662.34 E.birr	0.79(0.31,2.02)	0.616	3.13(0.93,10.52)	0.06
	>3662.34 E.birr	1		1	
Knowledge Infant feeding options	Sufficient	0.96(0.414, 2.24)	0.927	1.65(0.661,4.12)	0.283
	insufficient	1		1	

Note: 1- reference group

* Statistically significant (p-value < 0.05)

Table 8. Multivariable analysis of Exclusive breast feeding practice and its determinants in mothers who visited ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Exclusive BF	
		AOR (95% C.I.)	P value
Marital status	Married	0.257(0.064, 1.028)	0.055
	Others	1	
occupation of mother	Housewife	0.732(0.266,2.015)	0.545
	Others	1	
No of live birth	≥3	4.37(1.54, 12.38)	0.005
	<3	1	
KPMTCT	Sufficient	2.89(1.08, 7.76)	0.035
	Not sufficient	1	
Place of delivery	Govt hospital	2.36(0.675,8.23)	0.179
	Govt health center	1	
Important indecision	Health worker	0.481(0.19,1.03)	0.133
	Others	1	

Note: 1- reference group

Table 9: Multivariable analysis of Mixed feeding practice and its determinants in mothers who visited ART clinic, SPHMMC, Addis Ababa, Ethiopia, Jan. 2017 - Mar. 2017.

Variables	Category	Mixed feeding	
		AOR (95% C.I.)	P value
Educational status	Primary&below	4.2(1.32,13.37)	0.015
	Secondary&above	1	
Marital status	Married	1.54(0.338,7.02)	0.576
	Others	1	
No of live birth	≥3	1.12(0.32,3.95)	0.855
	<3	1	
Monthly income	≤3662.34 E.birr	3.26(0.85,12.49)	0.085
	>3662.34 E.birr	1	

Note: 1- reference group

6. DISCUSSION

This study used primary data and it can be valuable base line data for planning and implementation of interventions/programs promoting safe infant feeding practices, PMTCT of HIV, and studies related to infant feeding in the context of HIV in our Institution.

This study revealed that mothers with sufficient KMTCT were only (38.5%) which is very low compared to the findings (92.3%) from a study done in Gondar (Ethiopia), 85% Lusaka (Zambia) and 33(83%) Ghana [24,36,37]. This situation could be due to the difference in study setting.

The main sources of information about MTCT of HIV were found to be health workers or health facilities (98.2%), although a small proportion of mothers in the study area had sufficient knowledge about MTCT (38.5%), PMTCT of HIV (41.3%), and infant feeding options recommended to HIV positive women (66.3%).

The current study identified that mothers' knowledge of infant feeding options, MTCT and PMTCT is significantly related to their educational status. Mothers who completed secondary school and above were about 6 times more knowledgeable than the less educated mothers about recommended infant feeding options. This may be because women with better education could get more information about recommended infant feeding options.

In this study, 96.2% of mothers visited health institutions for antenatal care during their last pregnancy. A relatively high (93.3%) number of mothers were counseled (got advice) on infant feeding as compared to the study done in Addis Ababa in 1992 (18%). In the contrary to other studies in Ethiopia, in this study counseling during ANC wasn't statistically significant to the knowledge about infant feeding options and to knowledge of PMTCT of HIV.

Most (94.2%) of the mothers were found to have unfavorable attitude towards the infant feeding options recommended to HIV positive mothers. This may be related to low awareness of the community specifically mothers, about the importance of the feeding options recommended to HIV positive women in the prevention of MTCT of HIV, which is supported by the observed insufficient knowledge of most of the mothers included in this study about MTCT and PMTCT of HIV in general and the feeding options in particular. Therefore, more advocacy work is needed to change the attitude of mothers.

This study also investigated infant feeding practices among HIV positive mothers visiting SPHMMC ART. The study revealed that more than half of HEIs were exclusively breastfed, 25% were mixed fed and 11.5% were exclusively replacement fed. In this study, the proportion of mothers practicing EBF (63.5%) were for the first 6 months of age were comparatively higher than the findings reported from Eastern Uganda (24%), Ghana (62%), Zambia (35%), Kenya (35%), Botswana (19.8%) and India (44%).

This might be due to the cultural preference of breast feeding of the Ethiopian mothers than giving replacement feeding as well as the availability of resources to practice exclusive breast feeding.

A study report from Addis Ababa the proportion of practicing exclusive breast feeding in 2008 was (30.6%) comparatively lower than from this study [25]. This might be due to change in guide line the Ethiopian Ministry of Health guideline on infant feeding recommendations of HIV exposed infants recommends exclusive breast feeding for the first 6 months and introducing complementary feeding at 6 months and continues breastfeeding until 12-18 months [17]

According to the WHO guidelines, the inclusion of any feeding in addition to breast-milk into the diet (with the exclusion of medicines) constitutes mixed feeding. The proportion of mothers practicing mixed feeding (25%) was comparatively higher than what was reported from 13 selected health institutions Addis Ababa during March, 2008 (15.3%), and study in Tigray 2014 (6.3%), Cameroon (4.3%), but lower than the study from (SNNPR) Ethiopia in 2015 (35.6%), Ghana (40%), and India (29%). [18,19, 21,22]

In the current study the reason for practicing mixed feeding by most mothers was neighbors' influence and sometimes insufficient milk. The other reasons forwarded were the increasing pressure from family members to introduce other liquids.

By tradition, mothers may consider breast milk is not enough for child growth and intend to use mixed feeding even though they have been educated. It has been documented that mixed feeding of infants will predispose them to increased risk of mother to child transmission [19]. Mixed feeding was also observed to result in higher rate of mortality due to diarrheal diseases [4].

The rate of exclusive replacement feeding was 11.5%. These finding was lower than compared to a study done in South Africa (60%) of the HIV positive mothers practiced exclusive replacement feeding [29]. This might be most of the mothers had low socio economic status so that cannot afford to buy the formula food & there are differences in national PMTCT guide lines.

The proportion of ERF was also lower than study conducted in Addis Ababa during March, 2008 (46.8%), Ethiopia it might due to difference in infant feeding recommendations [25].

The other important finding in this study was that EBF practice was significantly associated with No of live birth and KPMTCT whereas mixed feeding was significantly associated only with mother's educational status.

Mothers who had live births of ≥ 3 and sufficient KPMTCT were more likely to practice EBF (4.37 times) and (2.89 times) than the referent groups respectively. This could be due to mothers with bigger No of children have high probability of practicing breast feeding and repeated exposure to health institutions which can help in acquiring knowledge about PMTCT.

7. STRENGTH AND LIMITATIONS OF THE STUDY

Strength

Primary data is used in the study

Limitation

It was not able to include the minimum sample size requirement due to time limitation. Since it was health institution based, there is a possibility that study participants who received counseling on exclusive breast feeding practice way of infant feeding practice may simply answer questions correctly. This bias may underestimate the proportion of non-exclusive breast feeding practice and also Maternal since-birth recall of feeding patterns was also used which has its own limitations of long recall.

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusions

In this study, most of the mothers had insufficient knowledge about MTCT of HIV and PMTCT. In the contrary, more than half of the mothers had sufficient knowledge about infant feeding options, though only few number of mothers have favorable attitude towards infant feeding options recommended to HIV positive women.

Only educational status (secondary and above) was found to be determinant of knowledge of the mothers about infant feeding options recommended to HIV positive women, MTCT and PMTCT but it may require further study.

The infant feeding practice of majority of the mother's is EBF followed by mixed feeding and EBF was significantly associated with, No of live births and KPMTCT, however mixed feeding practice was significantly associated with mothers level of education.

Except the counseling towards infant feeding options given to HIV positive mothers, all of the MTCT, PMTCT services were deficient in providing follow-up care & support to HIV positive mothers to help them adhere to their choice of safe infant feeding options.

8.2. Recommendations

- To SPHMMC health workers - Since adequate knowledge of mothers regarding recommended infant feeding options, MTCT and PMTCT is essential in the goal of reduction of MTCT, the health education system should be strengthened and all mothers should be provided adequate information on the risks involved in each infant feeding options and PMTCT.
- To the government and other organization- PMTCT would have the greatest impact not only on the health the child but also to the country. It is recommend that empowering mothers using education is important for interventions promoting appropriate or safe infant feeding practices and prevention of MTCT of HIV.

9. REFERENCE

1. UNAIDS Global summary of the AIDS epidemic. AIDS epidemic update. 2016, 11 (2):49-52
2. WHO: PMTCT Strategic Vision 2010–2015, Preventing mother to child transmission of HIV to reach the UNGASS and Millenium Goals. Moving towards the elimination of Paediatric HIV. 2010, 14 (8): 76-78.
3. De Cock KM, Fowler MG, Mercier E, de Vincenzi I, Saba J, Hoff E, Alnwick DJ, Rogers M, Shaffer N: Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. JAMA. 2000, 283 (9): 1175-1182.
4. WHO: ART drugs for treating pregnant women and preventing HIV infection in infant: towards univseral acces - recommendations for a public health. 2010
5. Coovadia HM, Rollins NC, Bland RM, Little K, Coutsoadis A, Bennish ML, Newell ML: Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. Lancet. 2007, 369 (9567): 1107-1116.
6. Group KBS: Safety and effectiveness of antiretroviral drugs during pregnancy, delivery and breastfeeding for prevention of mother-to-child transmission of HIV-1: the Kesho Bora multicentre collaborative study rationale, design, and implementation challenges. Kesho Bora study group. Contemp Clin Trials. 2011, 32 (1): 74-85.
7. FHAPCO, FMOH (2007) Guideline for prevention of mother to child transmission of HIV in Ethiopia: Federal HIV/AIDS Prevention and Control office, Federal Ministry of Health.
8. Newell M. Current issues in the prevention of mother-to-child transmission of HIV-1 infection. Trans R Soc Tropical Medicine and Hygiene. 2006; 100:1–5.
doi:10.1016/j.trstmh.2005.05.012.
9. WHO (2005) Micronutrients and HIV infection: a review of current evidence. Durban, South Africa.
10. Shapiro RL, Lockman S, Kim S, Smeaton L, Rahkola JT, Thior I, Wester C, Moffat C, Arimi P, Ndase P: Infant morbidity, mortality, and breast milk immunologic profiles among breast-feeding HIV-infected and HIV-uninfected women in Botswana. J Infect Dis. 2007, 196 (4): 562-569.
11. Bahl R, Frost C, Kirkwood BR, Edmond K, Martines J, Bhandari N, Arthur P: Infant feeding patterns and risks of death and hospitalization in the first half of infancy: multicentre cohort study. Bull World Health Organ. 2005, 83 (6): 418-426.

12. FMOH (2011) Accelerated Plan for Scaling Up Prevention of Mother to Child Transmission (PMTCT) Services in Ethiopia. Addis Ababa, Ethiopia.
13. Ziegler JB, Cooper DA, Johnson RO, Gold J: Postnatal transmission of AIDS-associated retrovirus from mother to infant. *Lancet*. 1985, 1 (8434): 896-898.
14. WHO (2010) Guidelines on HIV and infant feeding: principles and recommendations for infant feeding in the context of HIV and a summary of evidence. Geneva, Switzerland.
15. UNICEF, UNAIDS, WHO, UNFPA: HIV and Infant feeding. A guide for healthcare managers and supervisors. 2003
16. WHO, UNICEF, UNFPA, UNAIDS (2006) HIV and Infant Feeding: New evidence and programmatic experience: Geneva, Switzerland.
17. Family Health Department. National guideline on the prevention of Mother -to – child Transmission of HIV in Ethiopia, Ministry of Health, Addis Ababa, Ethiopia, November 2001.
18. Amdom G/Hiwot . Infant feeding practice of HIV positive mothers and its determinants in public health institutions in central zone, Tigray Region, Northern Ethiopia. 2014, 401(2): 2-10.
19. Astewaya Mengstie. Assessment of factors associated with infant and young child feeding practices of human immunodeficiency virus (HIV) positive mothers in selected hospitals of Southern Nations, Nationalities, and Peoples' Region (SNNPR) Ethiopia, 2015.
20. Hailu C. Assessment of KAP among mothers about VCT and feeding of infants born to HIV positive women in Jimma town, Ethiopia. Unpublished MPH (Community Health) thesis. Addis Ababa: University of Addis Ababa, 2005.
21. Maru Y, Haidar J (2009) Infant feeding practice of HIV positive mothers and its determinants in selected health institutions of Addis Ababa, Ethiopia. *Ethiopian Journal Health Development* 23:107-114.
22. Suryavanshi N, Jonnalagadda S, Erande As, et al. Infant feeding practices of HIV-positive mothers in India. *J Nutr*. 2003 May; 133(5): 1326-31
23. Justina N, Nnamdi N, Ying L, Caitlin M, John E. Knowledge, attitudes and practices regarding infant feeding among HIV-infected pregnant women in Gaborone, Botswana, 2013.
24. Suuk Alexander Laar, Veloshnee Govender (2012) Factors influencing the choices of infant feeding of HIV positive mothers in Southern Ghana: The role of counselors, mothers, families and socio-economic status. *Journal of AIDS and HIV Research* 3: 129-137.

25. Maru Y, Haidar J (2009) Infant feeding practice of HIV positive mothers and its determinants in selected health institutions of Addis Ababa, Ethiopia. *Ethiopian Journal Health Development* 23:107-114.
26. UNAIDS. Evaluation of a national AIDS programme, UNAIDS/ 99.7 E – Section 3 Annex1. (Questionnaire)
27. WHO. Breastfeeding and Replacement Feeding practices in the context of mother-to- child transmission of HIV: An Assessment Tool For Research, RHR, CAH, WHO/ RHR/01.12, WHO/ CAH/01.21: p. 7&8
28. Tekle Silassie B.K. The status of breast feeding among mothers of children aged less than two years and implications for the occurrence of acute diarrhea, Jimma, Southwest of Ethiopia. (Unpublished thesis submitted to Department of Community Health, AAU) 2002.
29. Ladzani R, Peltzer K, Mlambo MG, Phaweni K (2011) Infantfeeding practices and associated factors of HIV-positive mothers at Gert Sibande, South Africa. *Acta Paediatr* 100:538-542.
30. Elias B., Tatek A., Kahsay Z. Infant feeding practice and associated factors among HIV positive mothers in Debre Markos Referral Hospital East Gojam zone, North West Ethiopia
31. Thairu LN, Pelto GH, Rollins NC, et al. Sociocultural influences on infant feeding decisions among HIV-infected women in rural Kwa-Zulu Natal, South Africa. *Matern Child Nutr* 2005;1:2–10...
32. Kiarie JN, Richardson BA, Mbori-Ngacha D, Nduati RW and John-Stewart GC. Infant feeding practices of women in a perinatal HIV – 1 prevention study in Nairobi, Kenya. *J Acquir Immune Defic syndr* 2004; 35 (1) : 75-81
33. Chopra M., Doherty T., Jackson D., Ashworth A. (2005). Preventing HIV transmission to Children: Quality of counseling of mothers in South Africa. *Acta Paediatrica*, 94 (3): 357-363.
34. De Paoli M, Manongi R, Helsing E, Klapp KI. Exclusive breastfeeding in the era of AIDS. *J Hum lact.* 2001 Nov; 17(4): 313-20.
35. Sebalda C.L., Peggy K.B., Anne N.A., Marina M.D. & Karen M.M. (2006). Translating Global Recommendations on HIV and Infant Feeding to the Local Context: The Development of Culturally Sensitive Counseling Tools in the Kilimanjaro Region, Tanzania.

36. 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.

37. Kaliwile C, Michelo C (2010) Determinants of Adherence to the Exclusive Breastfeeding Option among HIV Positive Mothers in Eight Selected Health Centres in Lusaka District.

10. APPENDICES

Annex 1. DATA COLLECTION TOOL

QUESTIONNAIRE FOR MOTHERS

St'paul millennium medical college

English version questionnaire

QUESTIONNAIRE IDENTIFICATION NUMBER _____

PARTICIPANT'S CONSENT FORM

INTRODUCTION: My name is _____. I am working as data collector in a survey I am here to collect data for the study conducted in collaboration with St'paul millennium medical college.

We are interviewing women here about infant feeding related knowledge, attitude, and practice in order to generate information necessary for the planning of appropriate strategies (interventions) to prevent mother to child transmission of HIV and promote appropriate infant feeding practice. To attain this purpose, your honest and genuine participation by responding to the question prepared is very important & highly appreciated.

CONFIDENTIALITY AND CONSENT

We would like you to answer some personal questions that some people may find it difficult to answer. Your answers are completely confidential. Your name will not be written on this form. The nurses, doctors, and other people will not be told what you said in connection to your name. You do not have to answer any question if you don't want to and you can stop the interview at any time. However your honest answer to these questions will help us to better understand the experience of mothers related to infant feeding practices. We would greatly appreciate your help in responding to this study. Would you be willing to participate?

If yes, proceed.

If no, thank and stop here.

Data collector name _____ Sig _____

Result Codes: Competed 1

Refused 2

Partially completed 3

Other (specify) _____

Checked by supervisor –name _____ Sig _____ Date _____

Annex 2: Correct or favorable responses to the questions used in the assessment of knowledge and attitude of mothers about infant feeding options recommended to HIV positive women

- a. Correct responses for the Questions Used in the Assessment of Mothers' Knowledge about Infant Feeding Options Recommended to HIV Positive Women:

No	Question	
	1. Feeding only breast milk is adequate to babies in the 1st 6 months for all women	True
	2. Breast milk prevents childhood illnesses.	True
	3. HIV infection can be transmitted from HIV infected mother to her baby through breast feeding.	True
	4. Feeding only formula or other food to baby prevents transmission of HIV from an infected woman to her baby.	True
	5. Feeding infants breast milk and formula or other fluids is good for all babies in the 1st 6 months.	Not true
	6. Giving both breast milk of the mother and complimentary food (other foods) starting the 6th month is important for the healthy growth of all babies of HIV negative mothers.	True
	7. Giving both breast milk of the mother and complimentary food (other foods) starting the 6th month will increase transmission of HIV from infected mother to her baby.	True

b. Correct responses for the Questions Used in the Assessment of Knowledge about MTCT, and PMTCT

No	Questions	Correct response
	I am going to read out some statements about HIV/AIDS. For each statement, please tell me whether you think it is true or not	
**	1. Women with HIV infection can infect their babies with HIV during pregnancy.	True
**	2. Women with HIV infection can infect their babies with HIV during labor	True
**	3. Women with HIV infection can not infect their babies with HIV through breastfeeding.	Not True
***	4. There are medicines which HIV infected mothers can take during pregnancy to prevent transmission of HIV infection to their babies.	True

** Used to assess Knowledge about MTCT

*** Used to assess Knowledge about PMTCT

c. Responses of Accepting or Favorable Attitude for the Questions Used in the Assessment of Attitude towards infant Feeding Options Recommended to HIV Positive Women:

No	QUESTIONS	Responses of favorable Attitude
	(Attitude to the feeding options): If your sister or relative has told you that she became HIV positive:	
	1. Would you encourage her only to breast feed her baby?	Yes
	2. Would you encourage her not to breast feed at all?	Yes
	3. Would you try to support her to feed only formula or cow's milk to her baby?	Yes

SECTION I: SOCIO-DEMOGRAPHIC AND ECONOMIC INFORMATION

No	Question	Coding categories	<u>Skip to</u>
101	How old are you? (Probe for best estimate)	_____years	
102	What is the highest education level you completed?	Unable to read & write-1 primary school-2 Secondary school-3 Higher education-4	
103	What is your current marital status?	Single 1 Married 2 Divorced 3 Widowed 4 Separated 5	
104	What is your religion?	Orthodox 1 Protestant 2 Catholic 3 Muslim 4 Other (describe)_____5	
105	What ethnic or linguistic group do you belong to?	Oromo 1 Amhara 2 Gurrage 3 Tigre 4 Others (describe) 5	
106	What is your current occupation?	Unemployed 1 Student 2 Housewife 3 House servant 4 Daily laborer 5 Merchant 6 Government Employee 7 Private employee 8 Other (specify) _____9	

107	What is your total monthly family income (approximately)?	_____Eth. Birr No income 1 Don't know 2 No response 3	
108	How many live births have you had in your life?	___Live births No one 0	110
109	How many children do you have now?	No of children___	
110	What is the total number of the members of the household?	No of member of house hold _____	

SECTION II: KNOWLEDGE AND ATTITUDE TOWARDS INFANT FEEDING OPTIONS, MTCT and PMTCT

No	(Attitude to the feeding options): If your sister or relative has told you that she became HIV positive:	Coding categories	Skip to
201	1. Would you encourage her only to breast feed her baby?	Yes 1 No 2 No response 99	
202	2. Would you encourage her not to breast feed at all?	1 2 99	
	3. Would you try to support her to feed only formula or cow's milk to her baby?	1 2 99	
203	4. If you don't want to support her to feed her baby only formula or cow's milk, why not? (PROBE any more? More than one answer is possible Circle 1 if mentioned 2 if not mentioned)	Yes No 1. Not breastfeeding at all is culturally unacceptable 1 2 2. Expensive to purchase it for long time 1 2 3. Getting fuel or cooking material is difficult 1 2 4. Frequent feeding with cup is difficult 1 2 5. Not breastfeeding leads to be suspected for HIV, stigma and discrimination 1 2 6. good for child health 7. Other (specify) _____ 99. No response	
	Knowledge on MTCT, AND PMTCT):		
204	2. Women with HIV infection can infect their babies with HIV during pregnancy.	True 1 Not true 2 Don't know 88	
205	3. Women with HIV infection can infect their babies with HIV during labor.	True 1 Not true 2 Don't know 88	
206	4. Women with HIV infection can not infect their babies with HIV through breastfeeding.	True 1 Not true 2 Don't know 88	
207	5. There are medicines which HIV infected mothers can take during pregnancy to prevent transmission of HIV infection to their babies.	True 1 Not true 2 Don't know 88	
208	What do you think importance of undergoing a voluntary HIV test for pregnant woman? 1. To find out her HIV status.	Correct 1 Incorrect 2 Don't know 88	

209	2. To receive medicines to prevent her baby from being HIV positive.	Correct 1 Incorrect 2 Don't know 88	
210	3. To decide on what to feed her baby to prevent the baby from being HIV positive.	Correct 1 Incorrect 2 Don't know 88	
211	4. To discontinue pregnancy when she is HIV positive.	Correct 1 Incorrect 2 Don't know 88	
212	From where did you get information about MTCT of HIV? (PROBE Any more? • More than one answer is possible • Circle 1 if mentioned, 2 if not mentioned)	Yes No 1. During HIV testing 1 2 2. During follow up antenatal visits 1 2 3. Post partum check 1 2 4. During child care visits 1 2 5. From mass media (radio, TV) 1 2 6. From friends (relatives) 1 2 7. Other specify _____ 1 2 88. Don't know 1 2 99. No response 1 2	
213	(Knowledge on infant feeding options): do you think these statements are true 1. Feeding only breast milk is adequate to babies in the 1 st 6 months for all women.	True 1 Not True 2 Don't know 88	
214	2. Breast milk prevents childhood illnesses.	True 1 Not True 2 Don't know 88	
215	3. HIV infection can be transmitted from HIV infected mother to her baby through breast feeding.	True 1 Not True 2 Don't know 88	
216	4. Feeding only formula or other food to babies is expensive than breast milk.	True 1 Not True 2 Don't know 88	
217	5. Feeding only formula or other food to baby prevents transmission of HIV from an infected woman to her baby.	True 1 Not True 2 Don't know 88	
218	6. Feeding infants breast milk and formula or other fluids is good for all babies in the 1 st 6 months.	True 1 Not True 2 Don't know 88	
219	7. Giving both breast milk of the mother and complimentary food (other foods) starting the 6 th month is important for the healthy growth of all babies of HIV negative mothers.	True 1 Not True 2 Don't know 88	
220	8. Giving both breast milk of the mother and complimentary food (other foods) starting the 6 th month will increase transmission of HIV from infected mother to her baby.	True 1 Not True 2 Don't know 88	

221	<p>Where did you get the information about infant feedings? (PROBE Any more?)</p> <ul style="list-style-type: none"> • More than one answer is possible • Circle 1 if mentioned, 2 if not mentioned) 	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="text-align: center;">Yes</th> <th style="text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td>1. During HIV testing</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>2. During follow up antenatal visits</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>3. Post partum check</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>4. During well baby clinic visits</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>5. From mass media (radio, TV)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>6. From friends (relatives)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>7. Other specify _____</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>88. Don't know</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>99. No response</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>		Yes	No	1. During HIV testing	1	2	2. During follow up antenatal visits	1	2	3. Post partum check	1	2	4. During well baby clinic visits	1	2	5. From mass media (radio, TV)	1	2	6. From friends (relatives)	1	2	7. Other specify _____	1	2	88. Don't know	1	2	99. No response	1	2	
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SECTION III: PRACTICE OF INFANT FEEDING

No	Questions	Coding categories	Skip to
301	During your last pregnancy, did you attend antenatal care in any health institution?	Yes 1 No 2 Don't know 3	306
302	If you went for antenatal checkup for the last pregnancy at what gestation age?	Gestation age in month : _____ Don't know 3	
303	If you went for antenatal checkups for your last pregnancy to which health institution did you go?	Governmental Hospital 1 Governmental Health Center 2 Governmental Clinic 3 Private Clinic 4 Other (specify) _____ 5	
304	During antenatal care visits, were you counseled about infant feeding?	Yes 1 No 2	306
305	What information (advice) on infant feeding was given to you during the antenatal visits? (Read Choices & Circle 1 if she was informed 2 if she was not informed)	Yes. No 1. About Breast feeding only 1 2 2. About bottle feeding 1 2 3. About supplementary feeding 1 2 4. About replacement feeding 1 2 5. Other (specify) _____	
306	Where was the place of your last child's delivery?	Governmental Hospital 1 Governmental Health Center 2 Governmental Clinic 3 Private Clinic 4 Own home 5 Other (specify) _____ 6	
307	What is the age of the child in month?	Child's Age (in months) _____ (_____ days)	
308	Since birth, what did the child receive? (• Read choices • Circle 1 if the child received it 2 if not received it)	Yes No DK 1. Water/tea 1 2 88 2. Water and sugar/salt 1 2 88 3. Breast milk 1 2 88 4. Powdered milk 1 2 88 5. Cow's milk 1 2 88 6. Porridge 1 2 88 7. Cereal based fluid 1 2 88 8. Adult food 1 2 88 9. Other(specify) _____ 1 2 88	
309	For the above foods, the foods you gave to your child, at what age were the different foods given (started)?	DK 1. Water/tea at ___ day/s ___ month/s 88 2. Water and sugar/salt tea at ___ day/s ___ month/s 88 3. Breast milk at ___ day/s ___ month/s 88 4. Powdered milk at ___ day/s ___ month/s 88 5. Cow's milk at ___ day/s ___ month/s 88 6. Porridge at ___ day/s ___ month/s 88 7. Cereal based fluid at ___ day/s ___ month/s 88 8. Adult food at ___ day/s ___ month/s 88 9. Other (specify at ___ day/s ___ month/s 88	

310	Up to what age did you feed (give) your child the above foods? (If less than one month record days, other wise months)	DK 1. Water/tea up to ___ day/s___month/s 88 2. Water and sugar/salt up to __ day/s___month/s 88 3. Breast milk up to___ day/s___month/s 88 4. Powdered milk up to___ day/s___month/s 88 5. Cow's milk up to __ day/s___month/s 88 6. Porridge up to___ day/s___month/s 88 7. Cereal based fluidup to___ day/s___month/s 88 8. Adult food up to ___ day/s___month/s 88 9. Other(specify) ___up to ___day/s___month/s 88	
311	If the child hasn't fed anything except breast milk till now, when do you intend (plan) to start additional diet? See the response to 316		
312	Are you still breastfeeding the child?	Yes 1 No 2	317
313	When do you usually breast-feed the child? (Read choice Circle 1 if applied 2 if not applied)	Yes No 1. When the child wants 1 2 2. When the child cries 1 2 3. On schedule 1 2 4. On convenience 1 2 5. When breast engorged 1 2 6. Other (specify) _____ 1 2	
314	Have you experienced any breast feeding problems while you were breast feeding the last child?	Yes 1 No 2	319
315	What was the breast feeding problem? (PROBE any more? More than one answer is possible Circle 1 if mentioned 2 if not mentioned)	Yes No 1. Not enough milk 1 2 2. Nipple / breast problem 1 2 3. Sourness of the baby's mouth 1 2 4. Other (specify) _____ 1	
316	(This question is only for mothers whose child is not on breast-feeding, or ceased breast-feeding) See the response to 315 When did you totally stop breastfeeding the last child?	When child's completed age (in month)_____	
317	(This question is only for mothers whose child is not on breast-feeding, never breastfed or ceased breast feeding) See the response to 310 and 315 Why did you stop breast-feeding (never breastfed) the last child? (PROBE any more? More than one answer is possible Circle 1 if mentioned 2 if not mentioned)	Yes No 1. Not enough milk 1 2 2. Nipple / breast problem 1 2 3. Sourness of the baby's mouth 1 2 4. Mother ill / weak 1 2 5. Child ill / weak 1 2 6. Mother working 1 2 7. told by health worker 1 2 8. other 1 2 9. fear of HIV transmission 1 2	
318	Were you able to execute your intention as you intended (planned) to feed your child?	Yes 1 No 2 Not applicable 66	

319	If 'No' Why not? (Mention only one main reason)	
320	What support from health workers would assist you to better feed your infant? (Mention only one main important suggestion)	
321	Who is the most important when making a decision on how you should feed your infant?	My father 1 My Husband/ Partner 2 My mother 3 My sister 4 My aunt 5 Myself 6 Health Worker 7 Other (Specify) -----8	

This is the end of the questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.