

Awareness about feeding options for infants born to HIV positive mothers and mother to child transmission of HIV in Gurage zone, south Ethiopia

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Abstract

Background: Strategies to respond to the global HIV epidemic include preventing new infections and providing care and support to infected individuals. Prevention of Mother to Child Transmission of HIV (PMTCT) is one of the strategies given high priority.

Objective: To assess awareness of prevention of mother to child transmission of HIV.

Methods: A cross-sectional community based study was conducted in Gurage zone in October 13-28, 2004. A total of 657 participants were involved in the study. Data were collected by 12 grade completed trained enumerators using structured interviewer administered questionnaire.

Results: Overall, 84% of the respondents were aware of the recommended feeding options for infants below six months born to HIV positive women. Subjects who had good knowledge about HIV/AIDS, and those residing in the urban areas were more likely to mention the recommended feeding options, OR (95%CI)= 2.53(1.40, 4.56) and (95%CI)= 1.83(1.13, 2.96), respectively. Only 24% mentioned that mother-to-child transmission occurs via breast milk. Respondents with good knowledge on HIV/AIDS were twice likely to know the usefulness of VCT during pregnancy in preventing MTCT, OR (95%CI)= 1.84(1.09, 3.09).

Conclusion: Awareness of the community about the risk of MTCT of HIV via breast milk was low. Urban residents and those who had good knowledge on HIV/AIDS were more likely to have correct knowledge on the feeding option for infants born to HIV positive mothers. [*Ethiop.J.Health Dev.* 2007;21(1):40-47]

Introduction

HIV/AIDS is causing a devastating impact on the world's children (1-2). Globally, over 1,500 unborn or newborn babies are infected every day and over 90% of newly infected children are babies born to HIV-positive women, who acquire the virus at birth or through their mother's breast milk (1,3). Mother-to-child transmission (MTCT) is by far the largest source of HIV infection in children under the age of 15, with 90% of the cases infected during pregnancy, birth, or breast-feeding (4-5). In countries where blood products are regularly screened and clean syringes and needles are widely available, it is virtually the only source infection in young children (5). Under-5 mortality rates showed an increase in most countries with high adult HIV prevalence (6). Though Africa accounts for only 10 percent of the world's population, one in four infants are delivered to an HIV-infected mother (7-8) and, in the absence of intervention, one in ten per year will become infected themselves (9), largely as a consequence of high fertility rates combined with very high infection rates. In Ethiopia, it is estimated that there were some 128,000 HIV positive pregnancies and 35,000 HIV positive births in 2003 (10).

The majority (63%) of children born to HIV-infected mothers are uninfected. About 10-20% of the babies acquire the virus from their mothers during breast-feeding for the first 24 months (11-12). However, the risk may increase depending on certain situations related to the

mother, the baby and the virus (11,13). The rate of MTCT prior to the advent of interventions in Europe and USA was around 15–20%, compared with about 30% in Africa (14). Most of this difference is a result of breast-feeding, which approximately doubles the transmission rate. In non-breast feeding populations, around two thirds of MTCT occurs around the time of delivery. The increased uptake of interventions in pregnancy has led to vertical transmission rates falling below 2% in women diagnosed prior to delivery (13). Although there are many possible explanations for this disparity, the distinct difference in the prevalence of breast-feeding among HIV-infected mothers in resource-rich versus resource-poor settings is likely implicated (14).

PMTCT is an approach towards mitigating the transmission of HIV/AIDS from mothers to their children. It focuses on the reduction of transmission of the virus to the baby in utero, during delivery and during breast-feeding by instituting optimal delivery practices and proper infant and young child feeding behaviours. There are five options for feeding babies born to HIV positive mothers: exclusive replacement feeding, wet nursing, expressing breast milk heat treating and cup feeding, and exclusive breast feeding with early cessation and exclusive replacement feeding with home modified animal milk or commercial infant formula when the replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS) (11,13). This can be

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realized through proper counseling of expectant mothers during the prenatal periods on the different infant feeding options (12-13).

Currently, the need to extend interventions in the PMTCT program to the mother, other children in the family and the male partner is increasingly being appreciated. UNICEF is committed to a major acceleration of "PMTCT Plus" programs, where the "Plus" package represents a comprehensive model of care that offers treatment with anti-retroviral drugs to those in need, family planning and reproductive health services, nutritional support, counseling and supportive care, and treatment of other diseases such as malaria and tuberculosis (15).

Prevention of mother to child Transmission (PMTCT) is one of the major focus areas of the National Strategic Framework for HIV/AIDS prevention. In Ethiopia, with the assistance from UNICEF, the government has also developed a national guideline on prevention of mother-to-child transmission and on clinical management of HIV infection in children and adults as well as a training manual on voluntary counseling and testing (16). Awareness of the community is one of the factors affecting the uptake of PMTCT programs (17). There is paucity of information on this issue in the study areas in particular and in the country in general. This study was therefore conducted to assess the awareness of the community about the feeding options available to infants below six months born to HIV positive women and issues related to mother to child transmission of HIV.

Methods

The study was conducted in the urban and rural communities in Gurage zone South Nations, Nationalities and People's Regions (SNNPR) South Ethiopia from October 13-28, 2004. Gurage zone has a total projected population of 1,530,422, which is distributed in 12 Woredas. For the purpose of this study all permanent residents of Gurage greater than 10 years who live within 5-10 kilometers of the VCT centers in each woreda (service areas) were included in the study. Towns having a total population greater than 5,000 were taken to be urban.

A cross-sectional study design was used to assess awareness of the community about infant feeding options for HIV positive pregnant women during the first six months and mother to child transmission. The sample size was calculated using Epi Info version 2000 at the expected prevalence of awareness of infant feeding options for HIV positive woman of 50%, assuming equal sample sizes for both urban and rural strata which gave a total sample size of 657 subjects to be selected from the urban and rural areas. This gives 99% power of detecting the difference in odds ratio of 2 in awareness about

PMTCT taking urban rural differences as an exposure at confidence level of 95%.

The total sample size of 657 was divided in to urban and rural strata making the number of samples to be included in the study to be 328 households from each area. Both in the urban and rural areas the total sample size 328 was divided using probability proportional to size of the kebeles involved within the strata. Then the households were selected from each kebele by using systematic sampling technique. In both rural and urban communities after identification of the sample household, one person per household of those 10 years and above was selected using a lottery method. Consent of each individual respondent was obtained before interview.

An interviewer administered Amharic version structured questionnaire was used to assess socio-demographic characteristics, infant feeding options and knowledge on the ways of mother to child transmission of HIV. The questionnaire was written in English first and then translated to Amharic and back translated into English by a third person and it was pre-tested and revised accordingly before the main study. Detailed methods on the assessment of knowledge and attitude on HIV/AIDS described elsewhere (18).

Ten 12 grade complete interviewers (5 female and 5 male) were given a thorough training on the interview techniques and the questionnaire for two days before data collection investigators verified more than 10 percent of the data during data collection. The questionnaires were checked using range and consistency check methods. The data were cleaned and coded before entering into a computer and then analyzed using SPSS for windows version 12.0. Statistical tests for significance were carried out wherever appropriate at a level of significance of 5%.

Permission of the Kebele leaders was secured through an official letter from Gurage zonal HIV/AIDS secretariat. Subjects were clearly told about the benefits and harms of participating in the study through a two-way communication. Consent of subjects was secured before the initiation of data collection and subjects were assured about the confidentiality of the information they gave. To maintain confidentiality the names of subjects were not registered on the questionnaire.

Results

Out of the 657 participants included in the study, 342(52.1%) were males and the rest 315(47.9%) female giving a sex ratio of 1.1:1. About half (49.9%) of the study population was from the urban areas and the rest from the rural kebeles. Over half of the respondents 336(51.1%) were single followed by those who were married 298(45.4%) and the majority 430(64.6%) of them had attended schools from grade 1-12, followed by those who attended more than 12 grade 60(9.1%). The

most frequent occupation was student (38.2%) seconded by farmer (15.2%) and merchant (14.6%), respectively. The majority 550 (83.7) of the study subjects was Gurage by ethnicity followed by Amhara and Oromo. Most 372 (56.6%) were followers of orthodox Christianity followed by Muslim 222(33.8%). Regarding their age distribution 452(68.8%) are in the age range between 15-34 years.

Three hundred and forty three (49.2%) of the study participants were aware of the fact that the virus can be transmitted from mother to the baby during pregnancy and delivery. Only 158(24%) knew that the virus can be transmitted through breastfeeding (Table 1).

Table 1: Ways of Mother to child transmission of HIV reported by the study participants, Gurage zone, October 2004

Ways of Mother to Child transmission of HIV (n=657)	Frequency (%)
During pregnancy and delivery	323(49.2)
Breast feeding	158(24.0)
Sharing sharp instruments	77(11.7)
Do not know	53(8.1)
Sharing sharp objects, pregnancy, delivery and breastfeeding	35(5.4)
Sucking the nose of the baby right after delivery for resuscitation	6(0.9)

*More than one answer is possible

Assessment of the awareness about the usefulness of taking voluntary counseling and testing during pregnancy for the prevention of mother to child transmission of HIV showed that 74.1% reported that it is useful, followed by those who said it is not useful, and those who do not know accounting for 23.3% and 2.6%, respectively (Fig 1).

When we control the different background variables using multivariate logistic regression model, those who had good knowledge about HIV/AIDS and PMTCT were two times more likely to state that VCT during pregnancy is useful to prevent mother to child transmission of HIV, OR (95%CI)= 1.84(1.09, 3.09), Table 2.

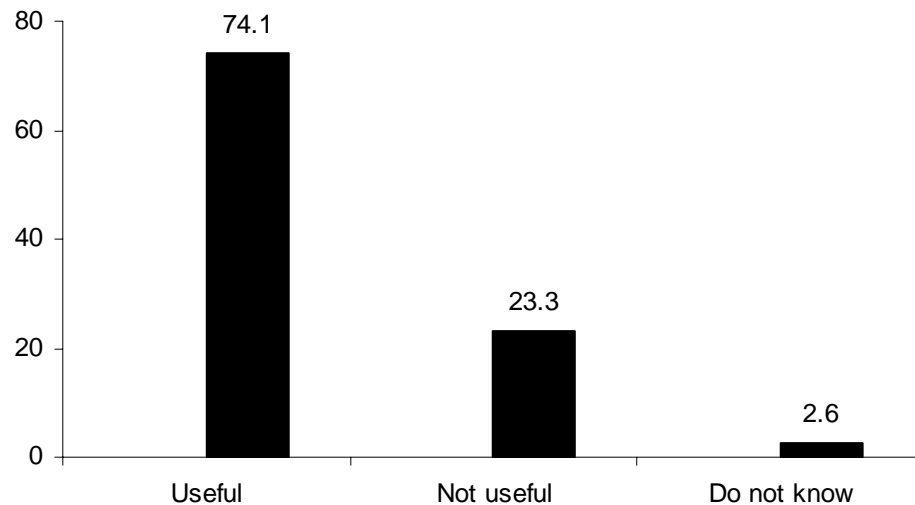


Figure 1: Knowledge of study participants about usefulness of VCT during pregnancy for prevention of mother to child transmission of HIV, Gurage zone, South Ethiopia. October 2004.

The majority (60%) of the respondents mentioned exclusive replacement feeding as an option for feeding of infants below six months born to HIV positive mothers. The rest 24% mentioned breast milk based options including: exclusive breast-feeding, expressed heat-treated breast milk, and wet nursing. Those who mentioned mixed feeding (breast milk plus home modified animal milk or commercial infant formula) and do not know what to feed accounted for 16% (Figure 2).

Regarding the choice of specific feeding option, most study participants mentioned cows milk (28.2%), commercial infant formula (22.1%), exclusive breastfeeding (16.2%). Some 10.2% of the cases, stated both commercial infant formula and home modified animal milk (Figure 3).

Logistic regression analysis to see the association between the different background variables, knowledge
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Table 2: Usefulness of VCT during pregnancy for PMTCT by socio-demographic variables, knowledge and attitude about HIV/AIDS, Gurage zone, October 2004.

Variables (n=657)	N	Usefulness of VCT of pregnant women for PMTCT		Adjusted OR (95% CI)
		Useful	Not useful/ Do not know	
Sex				
Male	342	262	94	.86 (0.55, 1.34)
Female	315	253	76	1
Age group				
10-24	365	271	94	1
25-34	166	127	39	.73 (0.41, 1.27)
35+	126	89	37	1.06 (0.57, 1.98)
Residence				
Urban	328	234	94	1.33 (0.90, 1.96)
Rural	329	253	76	1
Marital status				
Single	336	255	81	1.34 (0.35, 5.05)
Married	298	216	82	1.61 (0.46, 5.67)
Divorced	8	5	3	2.09 (0.31, 13.68)
Widowed	15	11	4	1
Educational status				
Illiterate	112	79	33	1
Read & write	55	42	13	.004 (0.37, 1.74)
Grade 1-6	172	128	44	.96 (0.53, 1.75)
Grade 7-8	121	89	32	1.11 (0.56, 2.19)
Grade 9-12	137	102	35	1.07 (0.54, 2.12)
Grade 12 & above	60	47	13	.85 (0.32, 2.22)
Occupation				
Student	125	192	59	1
Farmer	100	78	22	1.03 (0.49, 2.18)
Merchant	96	69	27	1.36 (0.70, 2.62)
House wife	106	72	34	1.36 (0.67, 2.74)
House maid	13	8	5	1.84 (0.53, 6.39)
Government employee	52	38	10	.94 (0.35, 2.67)
Other**	41	30	13	1.47 (0.69, 3.14)
Knowledge about HIV/AIDS				
Good	571	433	138	1.83 (1.09, 3.08)*
Poor	86	54	32	1
Attitude towards preventive methods of HIV				
Favorable	576	433	143	1.27 (0.74, 2.18)
Unfavorable	81	54	27	1

*P<0.05, **unemployed

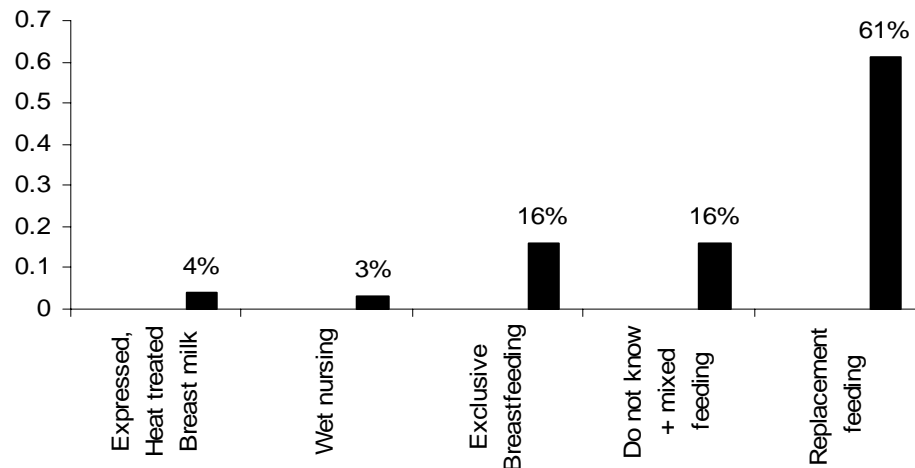


Figure 2: Feeding options for infants below 6 months born to HIV positive mothers as reported by the study participants categorized by correct and incorrect options (do not know & mixed feeding are incorrect options), Gurage zone, October 2004

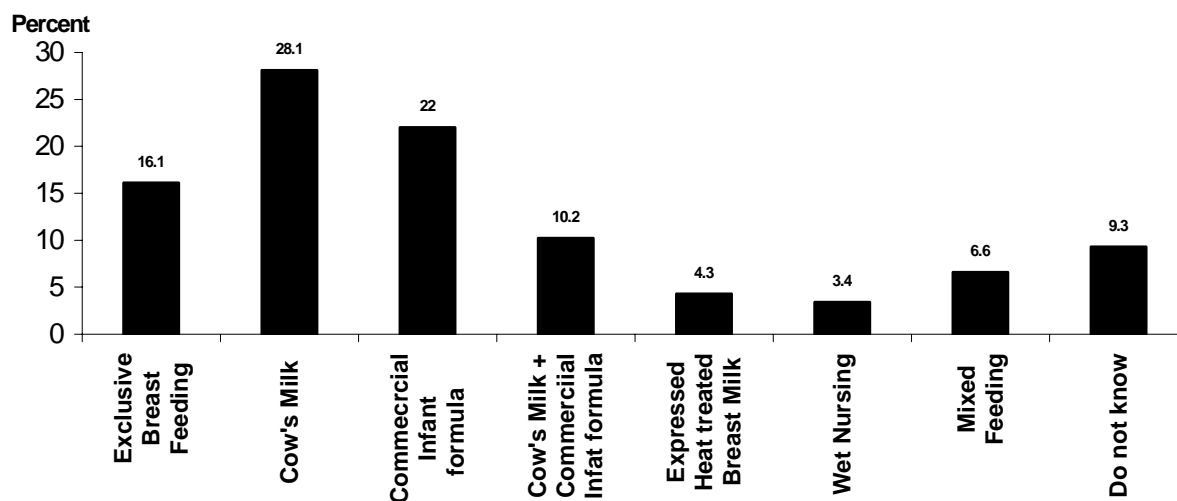


Figure 3: Specific feeding options for infants below 6 months born to HIV positive mothers as reported by the study participants, October 2004 (N=657)

and attitude towards HIV showed that residence, OR (95%CI)= 1.83(1.13, 2.96) and knowledge, on HIV/AIDS, OR (95%CI)= 2.53(1.40, 4.56) were significantly associated with correct knowledge on the recommended feeding options. Those subjects who had good knowledge about HIV/AIDS and those residing in the urban areas were more likely to mention the right feeding options recommended by the world health organization compared to their counter parts (Table 3).

Discussion

This study assessed the benefits of PMTCT- VCT vis-à-vis the different options for feeding infants below six months in the context of HIV/AIDS recommended by WHO. One of the most important intervention against mother to child transmission (MTCT) of HIV infection is proper counseling of mothers during the prenatal periods on the different infant feeding options to decrease the risk of acquiring the virus through breast feeding. Though the awareness of the community about the different feeding options was high (84%), over a quarter of the respondents were not aware about the usefulness of VCT during pregnancy in preventing MTCT. The right time for making decision on the infant feeding option is before delivery, which itself is dependent on the knowledge of HIV sero- status of the mother and other issues including affordability, Acceptability, Feasibility, Sustainability and Safety (AFASS) of replacement feeding options (11-13).

The global recommendations based on these parameters is that the mother should continue to breast feed exclusively with the possible early cessation even though she is HIV positive if AFASS conditions are not fulfilled

(11,13, 19,22, 23). HIV voluntary counseling and testing (VCT) has been shown to have a role in both HIV prevention and for people with HIV infection as an entry point to care including PMTCT (17). HIV voluntary counseling and testing (VCT) services and support systems predate prevention of mother-to-child transmission (PMTCT) services and greatly influence the acceptance and use of PMTCT services (11-13).

In this study, subjects who had good knowledge of HIV/AIDS were 2.4 times more likely to state that VCT of pregnant women is useful in preventing mother to child transmission of HIV indicating the need for intensive behavior change communication to enhance the uptake of PMTCT services.

WHO's recommendations on optimal infant and young child feeding (IYCF) in the context of HIV/AIDS involves five key alternatives: Exclusive breast feeding, expressed heat treated breast milk, Wet nursing, Home modified animal milk and commercial infant formula (11,13, 19,22, 23). Assessment of awareness of the respondents about the feeding options showed that subjects who had good knowledge of HIV/AIDS and those who were from the urban areas were 2.5 and 1.8 times more likely to be aware of the optimal infant feeding practices in the context of HIV/AIDS, respectively ($P < 0.05$). Knowledge of HIV/AIDS contributes to the waysan increase in the awareness of MTCT enabling the respondents to know the different feeding option for infants in the context of HIV/AIDS. Additionally, subjects from the urban areas are more accessible to information via mass media and other sources of information.

Table 3: Awareness of recommended feeding options for infants below six months born to HIV positive women by socio-demographic variables and knowledge and attitude about HIV/AIDS, Gurage Zone, October 2006

Variables (n=657)	N	Knowledge on recommended Feeding option for infant < 6 months		Adjusted OR (95% CI)
		Correct [¶]	Incorrect [§]	
Sex				
Male	342	289	53	.76 (0.44, 1.30)
Female	315	264	51	1
Age group				
10-24	365	304	61	1
25-34	166	145	21	1.03 (0.51, 2.11)
35+	126	104	22	1.44 (0.65, 3.18)
Residence				
Urban	328	269	59	1.82 (1.12, 2.96)*
Rural	329	284	45	1
Marital status				
Single	336	276	60	1
Married	298	258	40	.66 (0.34, 1.30)
Divorced	8	8	0	.00 (0.00)
Widowed	15	11	4	1.11 (0.27, 4.49)
Educational status				
Illiterate	112	87	25	1
Read & Write	55	50	5	.37 (0.13, 1.09)
Grade 1-6	172	144	28	.70 (0.34, 1.41)
Grade 7-8	121	104	17	.64 (0.28, 1.46)
Grade 9-12	137	114	23	.72 (0.32, 1.63)
Grade 12 & above	60	54	6	.62 (0.18, 2.15)
Occupation				
Student	251	210	41	1
Farmer	100	79	21	1.93 (0.82, 4.54)
merchant	96	85	11	.67 (0.28, 1.58)
House wife	106	92	14	.77 (0.31, 1.91)
House maid	13	10	3	1.19 (0.26, 5.29)
Government employee	52	45	3	.38 (0.08, 1.73)
Other ¹	41	32	11	1.80 (0.78, 4.14)
Knowledge about HIV/AIDS and PMTCT				
Good	571	491	80	2.53 (1.40, 4.56)**
Poor	86	62	24	1
Attitude toward preventive methods of HIV including PMTCT				
Favorable	576	486	90	.74 (0.37, 1.49)
Unfavorable	81	67	14	1

¹Unemployed, *P<0.05, **P<0.01,

¶=Exclusive Breast feeding, expressed heat treated breast milk, Wet Nursing, Home modified animal milk and Commercial Infant Formula ²¹⁻²³

§=Mixed feeding (breast milk and replacement feeding) or do not know the recommended feeding options.

In this study, some 16.2% stated exclusive breastfeeding during the first six months as an option for feeding of infants born to HIV positive women. Breastfeeding is associated with a significant additional risk of HIV transmission from mother to child as compared to non-breastfeeding. The risk of MTCT of HIV through breastfeeding appears to be greatest during the first months of infant's life but persists as long as breastfeeding continues. Half of the breastfeeding-related infections may occur after 6 months with continued breastfeeding into the second year of life (18).

In untreated women who continue breastfeeding after the first year, the absolute risk of transmission through breastfeeding is 10–20% (11,13, 19,22, 23). This risk depends on clinical factors and may vary according to pattern and duration of breastfeeding. The transmission of HIV virus to the infant through breast milk is much less efficient than transmission through maternal blood and other fluids present during birth. However, the period of exposure to breast milk in patterns of breastfeeding, which was common in the study community, can be as long as a year or more, allowing a much longer risk of exposure. The presence of cracked nipples or mastitis in

breastfeeding mothers can increase the transmission of virus to the baby, and it is important to inform mothers, families and providers of this easily avoided or treated route of transmission (25).

There are evidences that this risk has been reduced dramatically by interventions focusing on optimal infant and young child feeding in the context of HIV/AIDS (13).

Awareness of the community about the benefits of the PMTCT programs affects its programmatic uptake the resultant benefit in curbing the problem of MTCT (17). PMTCT programs after delivery involve, promotion of exclusive breastfeeding with early cessation, or exclusive replacement feeding (19-21) and promotion of safe sex for woman and all partners; and to partners' sexual networks to avoid infection/reinvention re-infection during breast feeding (17,23, 24,).

Each intervention has associated behaviors that involve individual pregnant women and new mothers, family members, and professional and traditional healthcare providers. While each element of the set of interventions/behaviors exerts its own effect on the reduction of MTCT, optimal results occur when the full set of interventions and the associated behaviors are put into practice (25).

In this study awareness of the community on mother to child transmission via breast-feeding was 24%, which is very low, compared to reports of a study in Ndola, Zambia which was 57-77%(26), but higher than reports from Uganda, which showed that 19% of pregnant women knew MTCT could occur during breastfeeding (27). The disparity between high level of awareness on feeding option and low level of knowledge on the risk of MTCT via breast milk is due to the fact that the majority (61%) of the respondents stated MTCT to occur during pregnancy and delivery. During the post natal period the route transmission mentioned was also sharing of sharp objects between the mother and the baby and sucking of the nose of the bay after delivery, which is a traditional resuscitation technique in the study community as observed from the FGD findings. So, the intent of using replacement feeding was also partly to avoid the contact between the mother and the baby if not only to avoid breastfeeding.

Creating widespread community awareness of the full set of behaviors necessary to prevent MTCT is an essential step to improve participation in and adherence to interventions that are part of PMTCT Programs. In many communities, even where PMTCT Programs are active, knowledge about mother-to-child transmission is low. Awareness of the mechanisms through which HIV can be transmitted from mother to child is variable at community level. Creating community awareness of the

importance of improved practices to reduce MTCT is also important. Improved practice cannot be targeted only at health professionals. TBAs, families and communities must be made aware of the factors contributing to MTCT and how to change practices accordingly (17).

According to this study 61% of the respondents stated that HIV positive women should give replacement foods to their baby. In developing countries, replacement feeding carries an increased risk of morbidity and mortality associated with malnutrition and associated with infectious disease other than HIV. This is especially high in the first 6 months of life and decreases thereafter (19,22,24). The local environment and the individual woman's situation affect the risk and feasibility of replacement feeding. When we come to the individual women, counseling of the infant feeding option need to asses the AFASS conditions very rigorously before recommending replacement foods as an option (11,13, 19).

It has been documented that mixed feeding of infants will predispose them to increased risk of mother to child transmission (13, 19,22, 23). Mixed feeding was also observed to result in higher rate of mortality due to diarrheal diseases (28), which makes replacement feedings unjustifiable in this context. In this study, 16% of the respondents said they will give mixed feeding or do not know what type of feeding is recommended for infants below six months born to HIV positive women, which needs public health intervention to increase their awareness.

In conclusion: though the majority (84%) community had correct knowledge on feeding options for infants below six months born to HIV positive mothers, over a quarter of the respondents did not have awareness on usefulness VCT of pregnant women in preventing mother to child transmission of HIV. Awareness of the community about the risk of mother to child transmission of HIV via breast milk was low, as only 24% mentioned MTCT via breast milk. The majority of the study participants stated replacement feeding as an option for infants below six months born to HIV positive women with or without AFASS. Urban residents and those who had good knowledge on HIV/AIDS were more likely to have correct knowledge on the feeding option for infants born to HIV positive mothers.

Intensive Information, education & communication to raise the awareness of the community on the risk MTCT via breast-feeding, Usefulness of VCT during pregnancy and AFASS issues for replacement feeding is recommended to promote the uptake of PMTCT services and enhance their effectiveness in Gurage zone.

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