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Full Length Research Paper

Exploring Factors Influencing Infant Feeding Choices Among HIV-Positive Pregnant Women in Addis Ababa: Insights from the Theory of Planned Behavior

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Although exclusive breast feeding during the first six months of life or replacement feeding are crucial in prevention of mother to child transmission of human immune deficiency virus (HIV), mothers intention on feeding options remain unstudied in Ethiopia. Therefore, this study was intended to assess HIV positive pregnant women's intention towards infant feeding options. The data were collected from 196 HIV positive pregnant women who were recruited consecutively from nineteen public health institutions in Addis Ababa. The study revealed that 159 (81.12%) and 25 (12.76%) of the respondents intended to exclusive breast feed and use replacement feeding, respectively. Mixed feeding intention was very low (6.12%). Not attending formal education, increased knowledge about preventing mother to child transmission (PMTCT), favorable attitude towards exclusive breast feeding, increased control belief (perceived ability to control the difficulties) to use exclusive feeding were significantly associated with intention to use exclusive feeding ($p < 0.05$). Mixed feeding intention was mainly associated with low control belief to use either exclusive or replacement feeding ($p < 0.05$). Recommended feeding option might have the chance to be practiced by most of the respondents. However, health professionals are still required to provide tailored messages which addresses attitude and beliefs related to recommended feeding and how to control a condition that makes behavioral performance difficult.

Key words: Intention, infant feeding options, exclusive breast feeding, preventing mother to child transmission (PMTCT), theory of planned behavior.

INTRODUCTION

Ethiopia is one of the countries with the largest populations of human immunodeficiency virus (HIV) infected people in the world (Federal Ministry of Health- Federal HAPCO, 2007). In 2009, adult HIV prevalence was estimated to be between 1.4 and 2.8% (Ethiopian Health and Nutrition Research Institute, 2010). Although adult prevalence (ages 15 to 49) is declining, HIV prevalence among pregnant women remains high; estimated at 1.1% in 2009. In 2011, approximately 42,900 pregnant women living with HIV delivered (Unite for Children against AIDS,

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2012). As a result, pediatric HIV infection remains the major concern in Ethiopia. For instance, in 2009 and 2011, 14,140 and 13,000 positive births were recorded, respectively (HAPCO-Ethiopa, 2010). On top of that, access to prevention of mother to child transmission (PMTCT) and anti retroviral therapy (ART) services are very limited in Ethiopia. In 2010, PMTCT services were available in only 43% of all Ante Natal Care (ANC) facilities (World Health Organization (WHO), 2011). HIV testing coverage (26% in 2010) among pregnant women is still very low (WHO, 2011).

In 2011, only 24% of people living with HIV (PLWHIV) received ART regimens for preventing mother-to-child transmission (MTCT) of HIV (UNAIDS, 2012). As a result, the mother-to-child transmission rate was very high; estimated at 30% in 2011 (UNAIDS, 2012). Beyond the health impact, HIV is a social and economic problem in Ethiopia; 16% of the orphaned children are due to acquired immune deficiency syndrome (AIDS) in Ethiopia (HAPCO-Ethiopia, 2010). Breastfeeding plays an important role in the transmission of HIV from mother to the child. Evidence has shown that 5 to 20% of the infections occur through breastfeeding. Globally, in 2010, approximately 40% of HIV-positive pregnant women have CD4 counts ≤ 350 cells/μl^3 and these women account for greater than 75% of MTCT risk, and greater than 80% of this infection occur during postpartum period (WHO/UNICEF/UNAIDS, 2010).

In Sub-Saharan African countries, breast milk causes between 30 and 40% of the cases of pediatric HIV infection (WHO/UNICEF/UNAIDS/UNFPA, 2008). The revised WHO infant feeding guideline for positive women recommends exclusive breast feeding (EBF) with an ART intervention for the first six months, and continued breastfeeding with complementary feeding until the child is at least a year old. Alternatively, where it is acceptable, feasible, affordable, sustainable and safe, WHO recommends complete avoidance of all breastfeeding and encourages replacement feeding (RF) option (WHO/UNICEF/UNAIDS/UNFPA, 2010). Unfortunately, encouraging mothers to practice exclusive breastfeeding is far from easy. In many societies, especially in sub-Saharan Africa, it is normal for a baby to be given water, teas, porridge or other foods as well as breast milk, even during the first few weeks of life (WHO, 2006; FHAPCO and FMoH, 2007). In addition, many women are concerned that their breast milk is not sufficient for their infant; because they are malnourished (FHAPCO and FMoH, 2007).

Ethiopia has adopted the WHO 2010 PMTCT guidelines (UNICEF, 2010). However, some report shows that the latest guidelines have not been disseminated in many countries, leaving women dangerously confused about the best nutritional path to protect their children from contracting the virus (UNICEF, 2013). In order to prevent the baby becoming infected with HIV, a greater empathize has laid on breastfeeding options (UNICEF, 2009). As mothers are the implementers of the guideline, the beliefs and attitude they would hold on feeding options plays crucial role in the effort being under taken to reduce MTCT. However, the beliefs, attitudes and behavioral intentions of expectant mothers, regarding the new guideline, have not been subjected to scientific inquiry in Ethiopia. Therefore, this study was aimed to fill this evidence gaps.

Conceptual basis of the study

This study used theory of planned behavior (TPB) as conceptual basis. TPB was developed by Ajzen and is one of the most popular behavioral theories (Bruce et al., 1984; Karen et al., 2008). According to the TPB, the most important determinant of human behavior is behavioral intention; measure of motivation or readiness to act. Studies indicate that intention can be used as a proximal measure of behavior (Bruce et al., 1984; Karen et al., 2008). Behavioral intention is directly determined by a person's attitude toward performing the behavior, subjective norm and perceived behavioral control (PBC). Attitude is determined by the individual beliefs about outcomes or attributes of performing the behavior (behavioral beliefs), weighted by evaluations of those outcomes or attributes. Thus, a person who holds strong beliefs that positively valued outcomes will result from performing the behavior will have a positive attitude toward the behavior (Bruce et al., 1984; Karen et al., 2008; Christopher and Mark, 2001). Similarly, a person's subjective norm is determined by his or her normative belief (whether important referent individuals approve or disapprove of performing the behavior), weighted by his or her motivation to comply with those referents.

A person who believes that certain referents think she should perform a behavior and is motivated to meet expectations of those referents will hold a positive subjective norm (Bruce et al., 1984; Karen et al., 2008; Christopher and Mark, 2001). Likewise, PBC is determined by control beliefs (the presence or absence of facilitators and barriers to behavioral performance) weighted by their perceived power (the impact of each control factor to facilitate or inhibit the behavior) (Karen et al., 2008; Christopher and Mark, 2001). PBC is relevant where the behavior is not under complete volitional control. In summary, the TPB asserted that attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention and the more favorable the attitude and subjective norm, the greater the perceived control, and the stronger should be the person's intention to perform the behavior in question (Karen et al., 2008; Christopher

and Mark, 2001). The TPB is open to the inclusion of additional external variables. As a result, we included some variables which are external to the TPB.

The TPB has adapted as a conceptual framework for several reasons. First, it is the most widely researched behavioral theory to study behavioral intentions. Secondly, TPB allows for an understanding of the cultural perspectives influencing the behavior as it provides a methodology for the elicitation of the salient beliefs of the population under study. Thirdly, behaviors under investigation is not fully under volitional control because mother's decision to adopt one infant feeding options is a result of intra and inter personal processes (Matji and Wittenberg, 2008). Thus, the theory is very useful to design tailored interventions to promote recommended infant feeding options in the case of HIV positive women (Bruce et al., 1984; Karen et al., 2008; Christopher and Mark, 2001).

METHODS AND MATERIALS

Study setting and population

A facility based cross sectional study was conducted among HIV positive pregnant women attending PMTCT services in Addis Ababa (the capital city of Ethiopia) in public health facilities over a period of one month (March 15 to April 15, 2011). In 2009, 2279 HIV positive pregnant mothers were registered for and following PMTCT services in Addis Ababa city and PMTCT services was being given in 31 health facilities. The sample size was calculated using single population proportion formula [$(n = (Z_{1-\alpha/2})^2 p(1 - p)/d^2)$] using a prevalence rate of 26% (prenatal intention to breastfeed or mixed feed) based on an estimate from South Africa study (Human Science Research Council/South Africa, 2008), 5% marginal error (d) and confidence interval of 95%. This yields a total sample size of 296 respondents. As the number of population (HIV positive pregnant women) was less than 10,000 in the study area, the sample size was corrected and considering 10% non-response rate, the final sample size was 194 individuals. New clients were not included in the study.

Sampling procedures

Nineteen public health institutions (two hospitals and seventeen health centers) providing PMTCT services were selected by simple random sampling method. Then, the sample size was proportionally allocated to each health institution based on the average number of client which visited each health institution during the last two months prior to the start of data collection. Finally, HIV positive pregnant women who visited the selected health institutions for ANC/PMTC follow up were consecutively included in the study during days of data collection until the allocated size was obtained. New clients were not included in the study.

Measurements

Data collection instruments were developed according to the standard guideline of the theory of planned behavior (Bruce et al., 1984; Karen et al., 2008). First, elicitation study was conducted to identify salient belief underlying attitude, subjective norm and perceived behavioral control. Then, the data obtained from the interview were analyzed and used to develop quantitative Likert scale questionnaires for each dimension of the TPB and translated to Amharic and pre-tested on similar population.

Intention to use different feeding options [EBF, RF and mixed feeding (MF)].

In this study we measured intention as outcome variable. To assess intention, respondents were asked nine items (three items for each aspect of feeding options). Each item was scored on a five point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Then, for each feeding options the items were summed up separately, and based on respondents' total score to each option, intention classification was made. If a woman received highest score for EBF, then she was classified as intender of EBF. The same method was used for mixed and replacement feeding.

Attitude towards each breast feeding option

Attitude toward each feeding option was assessed in two ways: directly and indirectly (belief based attitude). For direct measures, respondents were asked 15 items (five items for each) on five point ordinal scale to rate their attitude towards each infant feeding option. Then, total score to each feeding option was computed and used for regression analysis. Indirect measures of attitude were constructed from items asking belief regarding using each feeding option (behavioral belief) and the evaluation (outcome evaluation) of the belief. Eighteen items (3 items for each feeding options) were used to assess the behavioral belief and outcome evaluation. Items of behavioral beliefs and outcome evaluation were used to compose the indirect attitude scale where each behavioral beliefs item scores were multiplied to its corresponding outcome evaluation item scores and then summed up to compose the belief based attitude scale. The higher the score indicates the higher favorable attitude.

Subjective norms

Subjective norms (respondent's own estimate of the social pressure to adopt one of the recommended infant feeding options) were assessed using direct and indirect methods. In the direct method, respondents were asked to rate whether "most people important to them think that they should use EBF or mixed feeding or replacement feeding for their baby after birth". Twelve items (4 items on each option) were addressed to them on a 5-point Likert scale with end point "strongly agree" and "strongly disagree". Then, a total score was computed for each option separately and used for further analysis. The indirect measures, referred to as weighted normative beliefs, was obtained by having respondents rate whether different referents think they should approve and use one of the three infant feeding options and their motivation to comply with those referents. Eighteen items (9 for normative belief and 9 for motivation to comply) were used to assess the indirect measure of subjective norms. Composite measure was computed by multiplying normative belief score with its corresponding motivation to comply. The higher the score indicates the higher the favorable attitude.

Perceived behavioral control (PBC)

PBC was assessed in two ways: directly by asking respondents to

rate the extent they would be able to follow one of the feeding options. Seventeen items were used on five point Likert scale, and the result scores was computed as the sum of these items. The indirect measures of perceived control (weighted control beliefs) were constructed from 9 control belief and 9 perceived power items. The weighted control scores were computed by multiplying control belief score with its corresponding perceived power items. The higher the score shows the higher the belief on one's own ability to control factors which may impede intended feeding option. In addition to the constructs of TPB, other information such as socio-demographic characteristics, previous breast feeding experiences, knowledge related to HIV transmission, and disclosure of HIV sero status were collected from the respondents. Respondents' knowledge regarding PMTCT of HIV were assessed using five items on 'yes' and 'no' format. A correct answer was coded as '1' and incorrect answer was coded as '0'. Then, a total score was computed by summing up all the five items together. A higher score indicates the higher level of knowledge.

Data collection

The data were collected by PMTCT counselor in each institution. They were trained by principal investigators on the purpose of the study, how to interview and recruit participants. Close supervision was under taken throughout the data collection process.

Statistical analysis

The data were analyzed using STATA 11.0 according to the TPB analysis guideline (Karen et al., 2008). First, bivariate analysis was carried out to identify candidate variables for the multivariable regression analysis. Second, to identify the predictors of feeding options, only variables that were significantly associated in the bivarariate analysis were entered into a multinomial regression model in blocks. In the first regression model, the effects of socio-demographic variables were assessed while in the second and the third models, the effects of direct and indirect measures of TPB constructs were assessed, respectively. Finally, explanatory variables which had statistically significant association with the dependent variable ($P < 0.05$) were entered to the final regression model. Interactions between different variables were checked and collinearity diagnostics was done by checking the variance inflation factor. All tests were two sided and $P < 0.05$ was considered statistically significant. We report the result as odds ratios (ORs) and 95% confidence intervals.

Ethical consideration

This study was approved by the Ethical Clearance Committee of the Jimma University. Written informed consent was sought from each respondent. The data was collected by service providers to keep the confidentiality of the participants.

RESULTS

Socio-demographic characteristics of the respondents

All respondents approached (196 person) participated in the study yielding response rate of 100%. Table 1 presents socio-demographic characteristics of the respondents. Accordingly, half of the respondents were in the age range of 26 to 30 years. In terms of educational status, about 29 (15%) of the respondents did not attend formal education.

Knowledge about PMTCT, breast feeding experience and future intention

Table 2 shows respondents' knowledge, past experience and future intention of breast feeding. As displayed in the table, almost all, 187 (95.47%) of the respondents knew that HIV can be transmitted during breast feeding, and 168 (85.71%) had heard about infant feeding options during their ANC/PMTCT visit. Most, 169 (86.22%), of the respondents had disclosed their HIV status to others. With regard to the intended feeding options, 159 (81.12%) intended to exclusive breast feed (EBF), 25 (12.76%) intended to replacement-feed (RF) and the remaining intended to use mixed feeding (Table 2).

Socio-demographic predictors of intended infant feeding option

Table 3 contains the result of regression analysis of the effects of socio-demographic variables on infant feeding intention. A woman with primary (AOR = 0.64, 95% CI = 0.01 to 0.78) and secondary level (AOR = 0.71, 95% CI = 0.14 to 3.73) of education were less likely to intend to use mixed feeding as opposed to women without formal education. However, the latter was not significantly associated. Similarly, educational attainment of women had an inverse relation with intention to replacement feeding but the result was not significant. On the other hand, women with higher knowledge score had a reduced likelihood of both intention to replacement and mixed feeding as compared to women with lower knowledge score. A unit increase in the score of knowledge about MTCT significantly reduced the likelihood of intention to mixed feeding by 58% (AOR = 0.42, 95% CI = 0.22 to 0.82) and replacement feeding by 49% (AOR = 0.51, 95% CI = 0.29 to 0.91).

Predicting infant feeding intention from direct TPB constructs

The effect of direct measures of TPB variables on infant feeding intention is presented in Table 4. Accordingly, attitude toward exclusive breast feeding, subjective norms to EBF and perceived behavioral control to exclusively breast feed directly associated with exclusive

Table 1. Socio- demographic characteristics of the respondents, Addis Ababa, May, 2011.

Socio-demographic characteristics (n=196)	Frequency	Percentage
Age of respondents		
17-25	58	29.59
26-30	98	50.00
31-35	24	12.24
36-40	16	8.16
Educational status		
No formal education	29	14.80
Primary education	87	44.39
Secondary education and above	80	40.82
Religion		
Orthodox	157	80.10
Muslim	25	12.76
Others	14	7.14
Occupation		
Housewife	122	62.24
Others*	74	37.76
Marital status		
Married	149	76.02
Single	24	12.24
Widowed/divorced	23	11.73
Ethnicity		
Amhara	102	52.04
Oromo	49	25.00
Others**	45	22.95

*Government employee, private employee, **Gurage, Tigire.

breast feeding, however, the result for subjective norm to EBF is not statistically significant. For instance, a unit increase in score of attitude towards exclusive breast feeding would reduce the likelihood of intention to replacement feeding by 26% (AOR = 0.74, 95% CI = 0.58 to 0.95). Likewise, a unit increase in score of attitude toward exclusive breast feeding would reduce the odds of intention to mixed feeding by a factor of 0.74. Similarly, the higher favorable attitude, subjective norm and perceived behavioral control to use RF are the larger likelihood of intention to practice replacement feeding is. However, only the result for perceived behavioral control to replacement feeding had a statistically verified positive effect on intention to replacement feeding. This regression model explained 47.3% of the variance in the outcome variable (R^2 = 0.473).

Predicting infant feeding intention from indirect TPB constructs

Effect of indirect measures of the TPB variables on infant feeding intention was assessed and the result of regression analysis is displayed in Table 5. Behavioral belief toward replacement feeding had positive effect on intention to replacement feeding; a unit increase on score to this scale increased the likelihood of intention to re-placement feeding (AOR = 1.11, 95% CI = 1.03 to 1.21). The higher control belief score on exclusive breast feed, the smaller the likelihood of intention to replacement fee-ding (AOR = 0.89, 95% CI = 0.84 to 0.95) as compared to intention to exclusive breast feeding. Although the results are not significant, behavioral and normative beliefs towards EBF also operate to the detriment of the odds of

Table 2. Respondents' knowledge, experience and intention, Addis Ababa, May 2011.

Variables	Frequency	Percentage
Knowledge		
Know that HIV can be transmitted during pregnancy	182	92.86
Know that HIV can be transmitted during delivery	182	92.8
Know that HIV can be transmitted during breast feeding	187	95.41
Know that there is a medication to reduce MTCT	182	92.86
Heard about infant feeding options during ANC/PMTCT visit.	168	85.71
Past breast feeding experience		
Exclusively breast feeding	93	47.45
Mixed and replacement feeding	36	18.36
Did not have children	67	34.18
HIV disclosure status		
Yes	169	86.22
No	27	13.78
Intended breast feeding options		
Exclusive breast feeding	159	81.12
Replacement feeding	25	12.76
Mixed feeding	12	6.12

detriment of the odds of intention to replacement feeding as opposed to EBF. On the other hand, control belief to mixed feeding had a direct relation with intention to mixed feeding (AOR = 1.12, 95% CI = 0.04 to 1.21).

Overall predictors of intended infant feeding options

The effect of significant direct and indirect measures of TPB variables on infant feeding intention was also evaluated and the result was presented in Table 6. Accordingly, control belief (weighted) to exclusive breast feed had negative effect on intention to replacement feeding (AOR = 0.91, 95% CI = 0.86 to 0.97). However, behavioral belief (weighted) towards replacement feeding had positive effect on intention to replacement feeding (AOR = 1.10, 95% CI = 1.03 to 1.16). Likewise, control belief (weighted) towards mixed feeding significantly predicted intention to mixed feeding (AOR = 1.08, 95% CI = 1.03 to 1.14). This regression model explained 53.7% of the variance (R^2 = 0.537).

DISCUSSION

HIV positive mothers' decision to EBF, MF or RF is influenced by their attitude and the perceived control over the behavior. This study assessed intended breastfeeding options and the influence of attitude, social norms and perceived behavioral control regarding intention to use different infant feeding options using the TPB as a theoretical framework. The finding indicated that four in five women (81%) intended to use EBF; 13% intended to use RF; 12 (6%) intended to use MF. This is inconsistent with a study conducted in South Africa which showed that 74% intended to formula feed their babies, while 26% planned to breastfeed or mixed feed (Luyo and He, 2008). This difference may be due to the new guideline on infant feeding counseling which recommends EBF in the first six months in Ethiopia and might show the effectiveness of counseling on infant feeding options. In addition, the fact that formula is not being provided during counseling program, women may be less intended to use formula feeding.

The majority (93%) of the women knew that HIV can be transmitted during pregnancy and delivery and 95% knew that HIV can be transmitted during breast feeding. This is similar with a study conducted in China (Luyo and He, 2008) but higher than findings from the Ethiopian Demographic Health Survey (EDHS) (Central Statistical Agency of Ethiopia, 2006). This might be because this group of women has more access to information on ways of mother to child transmission and about medication.

In this study, respondents' with higher knowledge on MTCT of HIV chose EBF. This might be due to the fact they were well informed about ways of mother to child

Table 3. Socio-demographic predictors of infant feed options Addis Ababa, May, 2011.

Variable	Infant feeding option			
	Replacement feeding		Mixed feeding	
	Crude OR	Adjusted OR (95% CI)	Crude OR	Adjusted OR (95% CI)
Age				
17-19	1.00		1.00	
20-25	1.23	0.86 (0.86-8.72)	0.46	0.19 (0.01-2.77)
26-30	0.92	0.71 (0.07-6.66)	0.29	0.14 (0.01-1.86)
31-35	0.65	0.61 (0.04-8.51)	0.61	0.48 (0.30-7.72)
36-40	0.46	0.25 (0.01-5.76)	0.92	0.30 (0.015-6.10)
Educational status				
No formal education	1.00		1.00	
Primary education	0.38	0.33 (0.097-1.18)	0.08*	0.64 (0.01-0.78)*
Secondary education	0.53	0.41 (0.12-1.43)	0.86	0.71 (0.14-3.73)
Marital status				
Single	1.00		1.00	
Married	0.70	0.73 (0.20-2.65)	1.57	1.33 (0.13-13.20)
Dissolved	0.75	0.70 (0.12-4.02)	1.00	0.54 (0.02-15.54)
ANC/PMTCT visit	1.25	1.22 (0.74-1.99)	0.94	0.87 (0.38-1.99)
Monthly income	1.00	1.00 (0.99-1.00)	1.00	1.00 (0.99-1.00)
Knowledge about ways of MTCT	0.58*	0.51 (0.29-0.91)*	0.45*	0.42 (0.22-0.82)*

Reference category for outcome variable=intention to exclusive breastfeeding, (*indicates significant association at $p < 0.05$).

Table 4. Predicting infant feeding intention from direct TPB constructs, May 2011.

Direct measure of TPB	Infant feeding option			
	Replacement feeding		Mixed feeding	
	Crude OR	Adjusted OR (95% CI)	Crude OR	Adjusted OR (95% CI)
Attitude to EBF	0.62*	0.74 (0.58-0.95)*	0.69*	0.74 (0 .56-0.97)*
Attitude to RF	1.44*	1.23 (0.92-1.63)	1.32*	1.27 (0.92-1.76)
Attitude to mixed	0.83*	1.20 (0.89 -1.62)	0.71*	0.93 (0.69-1.26)
Subjective norm to EBF	0.66*	0.91 (0.73-1.15)	0.79*	0.96 (0.74-1.24)
Subjective norm to RF	1.33*	1.19 (0.93-1.51)	1.23*	1.06 (0.83-1.35)
Subjective norm to MF	1.20*	0.86 (0.65-1.14)	1.36*	1.01 (0.73-1.38)
Perceived control to EBF	0.74*	0.63 (0.45-0.86)*	0.91	0.95 (0 .66-1.37)
Perceived control to RF	1.31*	1.40 (1.05-1.87)*	1.47*	1.06 (0.79-1.43)
Perceived control mixed	1.18*	1.39 (0.96-2.01)	1.30*	1.18 (0 .83-1.67)

Reference category for outcome variable=intention to exclusive breastfeeding, (*indicates significant association at $p < 0.05$).

transmission and recommended feeding options. Thus, lack of understanding about transmission was therefore an unlikely cause of planning mixed feeding in this study population. It is possible that this would be a more important factor. In this study, women who intended to use EBF (94.3%) answered the question 'can the virus that cause AIDS be transmitted from MTC during breast feeding?' correctly in more cases than those intending to

Table 5. Predicting infant feeding intention from indirect TPB constructs, May 2011.

Indirect measure of TPB	Infant feeding option (predicted)			
	Replacement feeding		Mixed feeding	
	Crude OR	Adjusted OR (95% CI)	Crude OR	Adjusted OR (95% CI)
Behavioral belief to EBF	0.88*	0.97 (0.90-1.05)	0.91*	0.92 (0.83-1.01)
Behavioral belief to RF	1.10*	1.11 (1.03 -1.21)*	1.05*	1.03 (0.95-1.12)
Behavioral belief to MF	1.06*	1.02 (0.93 -1.11)	1.08*	1.06 (0.97-1.15)
Normative belief to EBF	0.89*	0.93 (0.83-1.04)	0.94*	0.97 (0.89-1.07)
Normative belief to RF	1.02	1.04 (0.92-1.18)	1.03	1.03 (0.94-1.12)
Normative belief to MF	0.98	0.89 (0.78-1.02)	1.05*	0.91 (0.80-1.02)
Control belief to EBF	0.89*	0.89 (0.84-0.95)*	0.94*	1.00 (0 .93-1.07)
Control belief to RF	1.07*	1.05 (0.98-1.12)	1.04*	0.96 (0.0.89-1.03)
Control belief to MF	1.04*	1.03 (0.97-1.10)	1.10*	1.12 (0 .04-1.21)*

Reference category for outcome variable=intention to exclusive breastfeeding, (*indicates significant association at $p < 0.05$).

Table 6. Predicting infant feeding intention from direct and indirect TPB constructs, May 2011.

Direct and indirect measure of TPB	Infant feeding option			
	Replacement feeding		Mixed feeding	
	Crude OR	Adjusted OR (95% CI)	Crude OR	Adjusted OR (95% CI)
Attitude to EBF	0.62*	0.89 (0.68-1.17)	0.69 *	0.83 (0.62-1.09)
Perceived control to EBF	0.74*	0.85 (0.62-1.16)	0.91*	0.89 (0.66-1.21)
Perceived control to RF	1.31*	1.32 (1.03-1.69)*	1.47*	1.11 (0.85-1.44)
Behavioral belief to RF	1.10*	1.10 (1.03-1.16)*	1.05*	1.03 (0.97-1.09)
Control belief to EBF	0.89*	0.91 (0.86-0.97)*	0.94*	0.98 (0.92-1.04)
Control belief to mixed	1.04*	1.02 (0.96-1.07)	1.10*	1.08 (1.03-1.14)*

Reference category for outcome variable=intention to exclusive breastfeeding, (*indicates significant association at $p < 0.05$).

use RF (88%) and intending to use MF (83.3%). It must be noted that the remaining from each category answered the question incorrectly and there is only a slight difference in their knowledge on each specific ways of mother to child transmission. It may therefore be that knowledge on HIV transmission during breast feeding alone is insufficient in some cases to influence the choices that women make to use a particular feeding option.

In contrast to knowledge on ways of MTCT and educational status, level of disclosure, number of ANC/PMTCT, income, marital status and family size did not have an impact on feeding intention of the women in this study. This implies that if a woman knows how to prevent her baby from getting the virus and has a better understanding of MTCT, she will prefer to use EBF. The findings indicated that the constructs of the TPB were significantly associated with women's infant feeding intention and this finding is similar with cluster-randomized trial based on the TPB which showed mothers' intention towards recommended feeding behaviors was positively associated with mothers' attitudes, subjective norms and self-efficacy (Matji and Wittenberg, 2008).

Attitude towards exclusive breast feeding, subjective norms to EBF and perceived behavioral control to exclusively breast feed were significantly associated with exclusive breast feeding, however subjective norm to EBF was not significantly associated. However, attitude toward RF and perceived behavioral control to RF are po-sitively associated with intention to replacement feeding. This is consistent with the TPB assumption that when attitude and perceived control become positive toward the behavior the likely hood of performing the behavior is high (Bruce et al., 1984; Karen et al., 2008). The simultaneous predictive power of direct measures of TPB (attitudes, subjective norms and perceived behavioral control) on intended infant feeding option in terms of the adjusted R^2 was 0.473 (that is, explained only 47.3%

of variance).

On multinominal regression analyses, the indirect predictors of intention, higher behavioral belief (weighted) score on RF associated with increased intention to RF. However, control belief (weighted) towards exclusive breast feeding significantly reduced intention to RF. Control belief towards mixed feeding significantly increased intention to MF compared to EBF. This is in line with the assumption of TPB (Bruce et al., 1984; Karen et al., 2008; Christopher and Mark, 2001). The simultaneous predictive power of weighted behavioral belief, normative belief and control belief on intention in terms of the adjusted R^2 was 0.579.

Limitations of the study

The finding of the study may suffer from social desirability bias as the data were collected by service providers at health facility settings and the theme of the study is relatively sensitive. In addition, the fact that the interview took place at health facilities, respondents may have over emphasized the importance of knowledge obtained at health facility than their real intention.

CONCLUSIONS

Despite these limitations, it could be concluded that more than three-quarters of the women who participated in this study intended to use EBF which indicates that the recommended feeding option might have the chance to be practiced by most of the mothers in the study area. This study also indicated that counseling on feeding choices for HIV- positive pregnant women should be extremely sensitive to the numerous internal and external factors impinging on that decision. For example, internal factors like attitude, perceived behavioral control and social pressures. Thus, health care providers and counselor need to explore and address the salient behavioral beliefs underlying preference for infant feeding options. Further efforts are needed to foster women's ability and confidence (behavioral and power of control) to practice infant feeding options as per guideline of HIV infant feeding in HIV positive mothers.

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