

## Original Article

# Service Utilization of Prevention of Mother to Child HIV Transmission and Associated Factors among Antenatal Care Clients in Dera Woreda Health Institutions, South Gondar, Ethiopia

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## Abstract

**Back ground:** Mother to child transmission of HIV is one of the factors in raising the prevalence of HIV/AIDS during pregnancy, labor, and delivery and through breastfeeding among pregnant women. It is one of the recommended services for a pregnant mother to combat the spread of HIV from mother to child.

**Objective:** assess PMTCT service utilization and factors affecting among clients attending ANC in Dera Woreda Health institutions.

**Methods:** Cross sectional study design was utilized and 433 study participants were selected through a systematic random sampling technique. The collected data was entered and processed using SPSS version 20 statistical software and simple descriptive analysis to determine the service utilization rate and bivariate and multivariate logistic regression analysis was carried out through this software to determine the effect of independent variables on the outcome variable and control the effect of confounders. P value < 0.05 was considered as statistically significant at 95% confidence interval throughout the study.

**Result:** The level of acceptance of PMTCT service utilization among ANC clients is 9.7%. PMTCT service utilization among ANC clients has a strong association with have learnt about mother to child transmission (MTCT) of HIV (AOR=0.376, 95%CI=0.156, 0.909) and ever thinking of HIV transmission from mother to child through breastfeeding (AOR=6.211, 95%CI=2.403, 16.053).

**Conclusions and recommendation:** - The level of acceptance of PMTCT service utilization among ANC client is low. Therefore, imperative health education program intended at bringing behavioural change should be designed and implemented by giving more emphasis on the identified factors.

**Key words:** PMTCT, service utilization

## Introduction

Globally, more than 2 million children are infected with HIV that causes acquired immunodeficiency syndrome (AIDS), and half a million children are newly infected every year. However, these infections are mainly the result of mother-to-child transmission (MTCT) of HIV during pregnancy, labor and delivery, or through breastfeeding (Zeh, Weidle et al. 2011).

Data from UNICEF and the Demographic and Health Service indicate that globally only about 50% of men and women are actually aware of ways to prevent mother-to-child transmission of HIV. When pregnant women go to health facilities for antenatal care, few of them are counseled about Prevention of mother-to-child transmission of HIV. But, without counseling service, a very small percentage of them get tested for HIV. Although there has been an increased coverage of the prevention of mother to child transmission (PMTCT) program globally, there are still many unresolved barriers to the program, particularly in sub-Saharan Africa. Among the main barriers are low access to PMTCT and low acceptability of testing are leading factors (Doherty, McCoy et al. 2005).

Offering counselling and testing (C&T) services to women seeking ANC services helps to identify HIV-infected women and provides an opportunity to empower HIV-positive women to make crucial decisions regarding specific MTCT-related issues such as antiretroviral (ARV), infant feeding, and sexual and reproductive health (Cooper, Charurat et al. 2002)

PMTCT plays a major role in limiting the number of children being infected by HIV. Without any intervention in the range of 20-45% of infants would be infected, 5-10% during pregnancy, 10-20% during labor and delivery and 5-20% while breast feeding. Implementing PMTCT program can reduce the overall risk to less than 2% (Kellerman and Essajee 2010)

The prevalence of HIV at PMTCT sites has shown a four-fold decrease during the five-year period. A study shows that only 53% of known HIV-positive mothers and 48% of known HIV-exposed infants have received ARV prophylaxis. Based on assumption of constant HIV prevalence, the estimated ARV coverage was found to be 11.6% for HIV positive mothers and

8.4% for their babies (van't Hoog, Mbori-Ngacha et al. 2005).

This study will identify the major reason why mother attending ANC have not undergone HIV testing and got the PMTCT service. Although the PMTCT service is widely expanding throughout health centers and hospitals in the country, mothers are not still willing to get tested for HIV, due to different factors which will be explained in this study.

## Methods

### Study Design

Cross-sectional study design was conducted to describe the level of the acceptance of PMTCT service utilization and factors affecting it among ANC clients.

**Study Setting:**-The study was conducted in Dera Woreda, South Gondar zone, Amhara Region North West Ethiopia. Ninety five percent of the population of this Woreda are rural dwellers. According to the 2007 population and housing census, the population is 27,589 of which 14,443 are male and 13,146 are female (28). The altitude of the area is 1560-2600mm above sea level. It is 40kms far from the Amahara Regional State - Bahir Dar and 600km far from Addis Ababa.

**Source Population and Sample:** All pregnant women in Dera Woreda who visit Dera Woreda health institutions for ANC service, were selected as sample. The sample size was determined by using single population proportion formula with the following assumptions; 95% confidence interval, 0.05 (5%) margin of error, 50% PMTCT services utilization and 15% non response rate (nr). With the afore mentioned assumptions, it was calculated using STAT CAL program of EPI INFO 3.5.1

$$n = \frac{(z\alpha/2)^2 \cdot P(1-p)}{W^2}$$

The sample size for the second objective was also calculated and it is included on the first objective so that the final sample size to answer this research question was 433.

Systematic random sampling method was applied to select the study subjects i.e. four health centers were included in Dera Woreda that provides PMTCT service. In each health center 15 clients get the service in each day i.e. 60 clients/4 health centers. The number of study subject to be taken

per day was calculated using  $K=n/N(5 \text{ from } 15 \text{ ANC clients}), K=3,$

Inclusion criteria were ANC clients who were mentally healthy and voluntary and Exclusion criteria ANC clients who were mentally ill, seriously ill were excluded in the study.

Dependent variable is PMTCT service utilization and independent variable Socio demographic factors, Fear of positive test result for HIV, Failure to limit pregnancies despite HIV+ test result, access of PMTCT service.

**Data collection Instruments and data collection procedure:** Data was collected by interview using structured questionnaire which was pretested 2 weeks before data collection in a similar setting. The questionnaires were prepared in English and translated in to Amharic by authorized translators. The Amharic version again was translated into English to check for any inconsistencies in the meanings of words for data analysis. Data was collected from March 22/2014- April 22/2014.

**Quality Assurance:** Quality of data was assured through pre-test. Data was collected by four trained interviewers who were diploma nurses and they were supervised by two trained BSC nurses. A two days training was given for data collectors and supervisors about the data collection, instrument and the general purpose of the study have been discussed clearly. Every day the collected questionnaires were checked for completeness and consistency. Supervisors provide a close follow up and consultation for data collectors when they got problems during data collection.

**Data Management and Data Analysis:** The collected data was entered and processed using SPSS version 20 statistical software. Frequencies and percentages of variables were calculated. Bivariate and Multivariate logistic regression analysis was performed to control the effect of each predicting variables on the outcome variable by adjusting to the potential effect of confounding variables.

**Ethical consideration:** Ethical clearance was secured from ethical committee of Bahir Dar University and GAMBY College of Medical Sciences. Ethical clearance and official letter was given to the head office of Dera Woreda health institutions. Informed consent was obtained from the study participants, after explaining purpose of

the study, the confidentiality of the response of study subjects had been told to them that it is secured. Respondents were told that they have the right to give up or withdraw from the interview at any time and health education was given to the study subjects about PMTCT service after the data collection for those who showed deficit of information.

## Result

### Socio-economic variable

The study included a total of 433 ANC attendants with a response rate of 100%. From these, 89(20.6%) were found to be unable to read and write, 30(6.9%) can read and write, 76(17.6%) had completed elementary school, 199(46%) were high school completed and 39(9%) had diploma and above educational status. Fifty five (12.5%) of the respondents were government employed, 6(1.4%) were petty traders, 259(59.8%) were house wife and the remaining 113(26.1%) were farmers.

Of the total 433 study participants, forty two (9.7%) of participants had experience of using combined ART drug to prevent mother to child HIV transmission during their pregnancy.

Four hundred eighteen (96.5%) of the respondents had heard about MTCT of HIV where as 15(3.5%) were found as they had never heard about MTCT. Media was the main source of information for 318(73.4%) respondents, 25(5.8%) heard about MTCT of HIV from friends, and 90(20.8%) of them got the information from Health Institutions. Out of 433 study subjects 381(58%) were Orthodox Christians and 52(12%) were Muslims. The highest level of education of their husbands were diploma and above for 268(61.9%); 57(13.2%) of the pregnant mothers' husbands were unable to read and write, 52(12%) of the husbands were able to read and write and 28(6.5%) were with elementary school educational level. Forty (9.2%) of the respondents have experience of one time pregnancy, 86(19.9%) two time pregnancy and 4(0.9%) women had seven times pregnancy. Of 433 study participants 420(97%) were married and 13(3%) were divorced.

### Bivariate Analysis:

As shown in the bivariate analysis of the study, who ever heard about mother to child transmission (MTCT) of HIV was a significant

predictors of PMTCT service utilization among ANC clients i.e, study participants who had ever heard about PMTCT was 7.04 times more likely to use PMTCT service utilization than those who didn't ever heard about PMTCT(COR=7.04, 95%=2.38,20.99). Those study subject who didn't ever learn about PMTCT, were 0.366 times less likely to utilize PMTCT (COR=0.36, 95%CI= 0.15, 0.85) than those who had ever learnt about PMTCT.

This study declares that those study participants who believe as HIV infected women can transmit the virus to their babies during pregnancy were found to have 3.6 times more likely to have had PMTCT service utilization than those who did not believe that HIV infected women can transmit the virus to their babies during Pregnancy (COR= 3.598, 95%CI= 1.502, 8.622).

The study also showed us those study subjects who believe HIV infected women can transmit virus to their babies during labour and delivery were found to have 5 times more likely utilize PMTCT service than those who did not (COR=5.013, 95%CI=1.916, 13.115). Study participants who believe as HIV infected women can transmit the virus to their babies through breast feeding were found to be 6.34 times more

likely to utilize PMTCT service than those who did not (COR=6.336,95%CI=2.483, 16.170)

### Multivariate analysis

In order to control the effect of confounding variables and detect the true determinants of the outcome variable, multivariate analysis had been done. Variable which with P-value <0.02 in the bivariate analysis were taken to multivariate analysis. P value <0.05 at 95% C.I was considered as significant predictors for PMTCT service utilization. Ever learn about mother to child transmission (MTCT) of HIV and believe as HIV can transmit from mother to child through breast feeding have been found to have predictors of PMTCT service utilization. Those study participants who learnt PMTCT during current pregnancy were more likely to utilize PMTCT service (AOR= 0.376 95%CI=0.156, 0.909). on the other hand, those study subjects who believe as HIV infected women can transmit virus to their babies through breast feeding were found to have 6 times more likely to have had PMTCT service utilization than those who did not believe that HIV infected women can transmit the virus to their babies during breast feeding (AOR=6.11, 95%CI=2.403,16.053).

**Table 1 Socio Economic Variable OfANC Clients Of In DeraWoreda, May 2014South Gondar,Ethiopia**

Variable	Category	Number (433)	Percent
<b>Age</b>	15-19	19	4.4
	20-24	82	18.9
	25-29	174	40.2
	30-34	125	28.9
	35-39	33	7.6
<b>Occupation</b>	Gvt employee	55	12.7
	House wife	259	59.8
	Petty trading	6	1.4
	Farmer	113	26.1
<b>Religion</b>	Orthodox	381	88
	Muslim	52	12
<b>Educational status</b>	Unable to read and write	89	20.6
	Read and write	30	6.9
	Elementary	76	17.6
	High school	199	46
	Diploma and above	39	9

**Table 2 : Bivariate analysis for PMTCT service utilization among ANC attendants at Deraworeda, 2014, South Gondar Ethiopia**

Variables	PMTCT service		COR (95%CI)
	Yes	No	
<b>Heard about MTCT of HIV</b>			
No	6	9	7.074(2.383, 20.999)*
Yes	36	382	1
<b>Learn about PMTCT</b>			
Before this pregnancy	34	360	1
During this pregnancy	8	31	0.366(0.156, 0.859)*
<b>Believe as HIV infection transmit during Pregnancy</b>			
No	8	24	3.598(1.502, 8.622)*
Yes	34	367	1
<b>Believe as HIV infection transmit during delivery</b>			
No	7	15	5.013(1.916, 13.115)*
Yes	35	376	1
<b>Believe as HIV infection transmit during breastfeeding</b>			
No	8	14	6.336(2.483, 16.170)*
Yes	34	377	1

Key: \*\*= $p < 0.02$

**Table 3 Multi variate analysis of PMTCT service utilization determinants among ANC attendants of Deraworeda, 2014, South Gondar, Ethiopia.**

Variables	PMTCT service		COR (95%CI)	AOR (95%CI)
	Yes	No		
<b>Learn about PMTCT</b>				
Before this pregnancy	34	360	1	
During this pregnancy	8	31	0.36(0.156, 0.859)*	0.37(0.156, 0.909) **
<b>Believe as HIV infection transmit during breastfeeding</b>				
No	8	14	6.34(2.483, 16.170)*	6.21(2.403, 16.053) **
Yes	34	377		

Key \*\*= $p < 0.05$

## Discussion

The magnitude of acceptance of PMTCT service utilization is 9.7%, which is slightly higher than a study conducted in Amahara region (8%), this may be due to the coverage of the study. The regional study may include highly remote areas in which access of health institutions are very poor.

A study conducted in Coast Provincial General Hospital (CPGH), Mombasa, Kenya showed that a hospital based observational study over one year period among pregnant women with first-ANC visit to review coverage of the nevirapine in the existing PMTCT model, they found a

counselling rate of 71% and a testing rate of as high as 97% (9). Another study in Kenya revealed that PMTCT uptake of counselling and testing improved from 55 to 68% ( $P < 0.001$ ) (Giuliano, Magoni et al. 2005), the difference may be due to community awareness differences, the study conducting site, and the time of study which is conducted for a solid of one year.

In this study, the magnitude of PMTCT acceptance in rural area is lower than that of the urban study setting. Despite these efforts, i.e. among 42 study subjects who follow PMTCT service 29(9%) were living in urban and 13 (11.7%) of them living in rural area of the study setting. Although PMTCT interventions can be

highly successful in reducing the risk of HIV transmission, access to and utilization of PMTCT services is still limited in many parts of sub-Saharan Africa owing to a variety of structural-contextual factors. Although Ethiopia has made progress in the quality of PMTCT services provided, coverage, especially in rural areas, still remains very low (Iliyasu, Kabir et al. 2005; Peltzer, Mosala et al. 2007; Nguyen, Oosterhoff et al. 2008; Byamugisha, Tumwine et al. 2010; Conkling, Shutes et al. 2010; Østergaard and Bula 2010; Larsson, Thorson et al. 2011) A study conducted in the Eastern Cape, South Africa, family planning among HIV positive and negative PMTCT clients in a resource poor setting in the Eastern Cape, South Africa, showed that those study subjects who were ever thinking with HIV infected women can infect their babies with HIV through breast feeding were found to have an important predictor for PMTCT service utilization ( $p < 0.001$ ). The same study revealed that previous knowledge or learning about PMTCT before this pregnancy is not an input variable for the odds of PMTCT service utilization. This study agrees with HIV infected women can infect their babies with HIV through breast feeding and this is supported by another study conducted in Northern Tanzania on Mother's knowledge and utilization of PMTCT service which showed that those study subjects who were ever thinking with HIV infected women can infect their babies with HIV through breast feeding were found to have an important predictor for PMTCT service utilization ( $p < 0.05$ ) (13) and disagree with previous knowledge or learning about PMTCT before this pregnancy. The difference may be due to lack of awareness, lack of access to health services, poor decision-making power, and fear of stigmatization, isolation and effect on marriage security (Worku and Enquselassie 2007; Ghys, Walker et al. 2008; Kellerman and Essajee 2010)

Those study participants who learnt about PMTCT during this pregnancy have reduced PMTCT service utilization by 62.4% than those who ever learnt about PMTCT before this pregnancy (AOR=0.376, 95% CI=0.156, 0.909), this agrees with a study conducted in Addis Ababa on factor determining acceptance of VCT among pregnant women attending ANC at army hospital in Addis Ababa which showed that VCT acceptance was significantly associated with knowledge about MTCT and previous VCT

experience (AOR=7.34, 95% CI=3.44, 15.67), and (AOR=2.51, 95% CI=1.03, 6.17) respectively

### Conclusion

Taking the limitation in to consideration, this study has revealed some important findings related to PMTCT service utilization among ANC clients of Dera Woreda Health centers in South Gondar. From this finding it is possible to conclude that:-The magnitude of acceptance of PMTCT service utilization among ANC client is 9.7%. Ever learn about mother to child transmission (MTCT) of HIV, thinking of HIV transmission from mother to child through breastfeeding were found to be determinant factor associated with the magnitude of acceptance of PMTCT service utilization among ANC clients in Dera Woreda health institutions.

### Lists of abbreviation

AIDS-Acquired Immunodeficiency Syndrome (AIDS)

ANC-Antenatal Care

AOR-Adjusted Odds Ratio

ARV- Anti Retro Viral

CI-Confidence Interval

COR-Crude Odds Ratio

C and T-Counseling and Testing

HAPCO-HIV/AIDS Prevention and Control Organization

HIV-Human Immune Deficiency Virus

MTCT-Mother-To-Child Transmission

OR-Odds Ratio

PLC-Private Limited Company

PMTCT-Prevention of Mother to Child HIV Transmission

SPSS-Statistical Packages for Social Sciences

UNICEF-United Nation Children Fund

USAID-United States Aid Agency

WHO-World Health Organization

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