

PMTCT SERVICE UTILIZATION AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING PUBLIC HEALTH FACILITIES IN HAWASSA CITY, SOUTHERN ETHIOPIA

Fana A. Debela, MD, MPH¹, Ababi Z. Giref, Ph.D¹, Seifu H. Gebreyesus, Ph.D¹, Tewodros G. Yirtaw, MSc², Sisay T. Bahaga, MSc²,
Tsefalem T. Tessema, MSc²

ABSTRACT

BACKGROUND: Among various interventions to control HIV transmission, prevention of mother-to-child transmission program have been implemented to offer a range of related services to the women and their infants. In Ethiopia, although the overall trend of the program coverage has shown improvements over time, studying its utilization and identifying factors that influence the utilization among pregnant women could have paramount importance for improving the service by addressing important bottlenecks. The aim of this study was to determine the utilization of prevention of mother-to-child transmission service and its associated factors among pregnant women attending public health facilities in Hawassa City, Southern Ethiopia.

METHOD: Institution based cross-sectional study was conducted among pregnant women who visited six public health facilities for Antenatal Care service. A sample of 588 pregnant women having at least two Antenatal Care visits were included in the study using a systematic sampling technique. Trained nurses collected the data using the Amharic version structured questionnaire that was pretested before the actual data collection. The collected data were entered and analyzed using Epi info version 7.0 and Statistical Package of Social Science version 20 statistical software respectively. Bivariable and multivariable logistic regression analysis was conducted and we reported both crude and adjusted odds ratios with 95% confidence intervals.

RESULT: Among the study subjects, 531 (90.3%) utilized prevention of mother-to-child transmission service for their current pregnancy. Pregnant women having only two antenatal care visits were 76% less likely to utilize the service as compared to pregnant women having three or more antenatal care visits [AOR= 0.24, 95% CI=0.11,0.53]. Pregnant women who do not support the idea that every pregnant woman should be tested for HIV/AIDS were 91% less likely to utilize prevention of mother-to-child transmission service as compared to those who support the idea [AOR= 0.09, 95% CI= 0.03, 0.29]. Finally, pregnant women who don't know the view of her partner regarding HIV testing were 96% less likely to utilize the service as compared to pregnant women having a partner who supports couple counseling [AOR=0.04, 95% CI= 0.01, 0.12].

CONCLUSION AND RECOMMENDATION: Nearly all of the study subjects utilized prevention of mother-to-child transmission service for their current pregnancy. The number of antenatal care visits, the view of the women on supporting the idea that every pregnant should be tested for HIV and the view of husband regarding HIV screening were found to be the major predictive factors. Encouraging partner involvement on the importance of HIV testing could have an important contribution to further improve the utilization of prevention of mother-to-child transmission service. Further studies to document the best practice of the prevention of mother-to-child transmission service should be undertaken.

KEY WORDS: PMTCT, Utilization, Public Health Facilities, Hawassa, Southern Ethiopia

(The Ethiopian Journal of Reproductive Health; 2-19; 11;4: 16-23)

¹ School of Public Health, Addis Abeba University, Addis Ababa, Ethiopia

² Department of Public Health, St Paul's Millennium Medical College, Addis Ababa, Ethiopia

BACKGROUND

According to the 2016 UNAIDS report, globally 36.7 million people were living with HIV/AIDS. Nearly 18 million and 2.1 million of them were women aged >15 years and children <15 years respectively. Sub-Saharan African region remains the worst affected region in the world accounting for 64% of all people with new HIV infections from the global community¹. In 2017, there were an estimated 613,000 people living with HIV in Ethiopia, of whom 62 % were women. The HIV prevalence among women and men aged 15-49 in Ethiopia was 0.9 % while the prevalence among women age 15-49 was 1.2% with a peak of 3% in the age group 40-44 years. Between 2000 and 2017, Ethiopia has witnessed a marked reduction in HIV/AIDS morbidity and mortality through its leadership commitment and country ownership of the HIV response program. This is evidenced by the development of relevant policy frameworks; series of strategic plans; national policy and technical guidelines, and implementation plans for strengthening the overall national response².

Among various interventions, Prevention of Mother-To-Child Transmission (PMTCT) program has been implemented to offer a range of services to women and their infants. These include preventing HIV infections among women of reproductive age (15-49 years), preventing unwanted pregnancies among women living with HIV, and providing women living with HIV a lifelong ART to maintain their health and prevent transmission during pregnancy, labour and delivery, and breastfeeding³. The scale-up of the PMTCT of HIV services is one of the greatest public health achievements in recent times. Nevertheless, the global pace of progress is slowing as indicated by the UNICEF projects that if the reduction in new pediatric HIV infections continues at the same rate, there will be 100,000 new infections among children in 2020 alone, in relation to the 20,000 super-fast-track targets⁴. In line with the global commitment, attaining virtual elimination of Mother-To-Child Transmission (MTCT) is among the strategic objectives of national HIV prevention Road Map that

serves as a framework for the prevention response during the years 2018-2020².

Although the overall trend of PMTCT service utilization in Ethiopia has shown improvements in overtime, studies identified various barriers to the implementation of PMTCT of HIV services including socioeconomic and cultural factors affecting the uptake of Voluntary Counseling and Testing (VCT) services, initiation of ARV prophylaxis, and loss to follow-up after starting ARV for PMTCT⁵. Therefore, studying the utilization of PMTCT service and identifying factors that influence the utilization among pregnant women in different parts of the country could have paramount importance for improving the service utilization by addressing important bottlenecks. The aim of this study was to determine the utilization of PMTCT service and its associated factors among pregnant women attending public health facilities in Hawassa City, Southern Ethiopia.

METHOD

Study Area, Study Design and Population: This study was conducted in Hawassa, a capital city of the Southern Regional State of Ethiopia, which is located 273 km South of Addis Ababa. There were a total of four public health centers and two public hospitals in the city. The study was carried out from September 2015 to May 2016 among all health facilities in Hawassa City namely: Hawassa referral hospital, Hadare hospital, Hadare health center, Alamora health center, Millennium health center, and Tula health center. Institution based analytic cross-sectional study was conducted. All pregnant women who showed up to the health facilities with at least one previous ANC visit were included in the study. Those pregnant women who were seriously ill were excluded from the study.

Sample Size and sampling technique: The minimum required sample size for this study was obtained using a single population proportion formula. The assumptions considered included: the prevalence of PMTCT service utilization ($p=72.8\%$), taken from a study conducted in East Hararge Zone of Oromia Regional State of Ethiopia (6), the reliability coefficient for 95% CI, 4%

margin of error and 20% for non-response. Accordingly, 591 pregnant women were required for the study. The calculated sample size was proportionally allocated to the health facilities considering the total number of pregnant women who had been attending the Antenatal Care (ANC) service at the selected facilities during the previous three months period. A systematic sampling procedure employed to select the study subjects based on the average number of daily ANC visits of each of the health facilities and the planned number of data collection per day. Accordingly, the selected pregnant women were invited to take part in this study right after completing their routine ANC visit.

Data Collection Procedures and Data Quality Control:

A structured questionnaire that was initially prepared in English was used for the data collection. The questionnaire was translated into Amharic and back translated to English to ensure the consistency of the translation language. Six nurse data collectors (one from each health facilities) and two supervisors who were fluent Amharic speakers were recruited and trained for two days on the data collection and supervision procedures. The data collectors administered the questionnaire after obtaining verbal informed consent from selected pregnant women. Pretest of the data collection tool involving the data collectors and supervisors was conducted on 5% of sample size in Yirgalem hospital. Close supervision of the data collection procedures were also employed. The investigators and the supervisors were reviewed the questionnaires to make sure the completeness and consistency. To reduce data entry error, experienced data clerks conducted double data entry procedure.

Data Analysis: The collected data were entered and analyzed using Epi info version 7.0 and Statistical Package of Social Science (SPSS) version 20 statistical software respectively. Descriptive analysis was used to summarize the characteristics of the study subjects. Bivariable logistic regression analysis was used to assess the association between each of the independent variables and the utilization of PMTCT service.

Multivariable logistic regression analysis was conducted using significant variables and both crude and adjusted odds ratio with 95% confidence interval were reported. Ethical considerations: Ethical clearance for the study was obtained from the Institutional Ethical Review Board (IRB) of Addis Ababa University School of Public Health. Administrative permissions were also obtained from the participating institutions including the Regional Health Office, Hawassa City Administration Health Offices and the Health Facilities. The detail nature and objective of the study was fully explained to all pregnant women participated in the study before the data collection and verbal informed consent was received.

RESULT

A total number of 591 pregnant women were approached to take part in the study and 588 of them were willing to take part included in the study with a response rate of 99.4%. The mean (\pm SD) age of the study subjects was 24.74 (+4.34). Almost all 578 (98.3%) of the study subjects were married and 341(58%) of them were protestants by religion. Four hundred forty-four (75.5%) of the study subjects attended formal education while 338 (57.5%) of them were housewives. With regard to the number of ANC visit, 374 (63.6%) of the study subjects had 3 or more ANC visit for their current pregnancy and the overwhelming, 473 (80.4%) have two or less alive children [Table 1].

Table 1: Socio-demographic Characteristics of the Pregnant Women Attending ANC Service in Public Health Facilities of Hawassa City, Southern Ethiopia, 2016

Variables	Category	Frequency	Percent (%)
Marital Status	Married	578	98.3
	Other	10	1.7
Religion	Orthodox	163	27.7
	Muslim	53	9
	Catholic	31	5.3
	Protestant	341	58
Educational Level	No formal Education	144	24.5
	Formal Education	444	75.5
Occupation	Housewife	338	57.5
	Government employed	111	18.9
	Self employed	123	20.9
	Other	16	2.7
Number of ANC Visit	Two	214	36.4
	Three or more	374	63.6
Number of Alive Children	Two or Less	473	80.4
	Three or more	115	19.6

Nearly all of the study subjects 563 (95.75%) heard about MTCT and for very large minorities 244 (41.50%) of them, health institutions were reported as a major source of information. To assess the MTCT related knowledge of the women, they were asked whether HIV could be transmitted from mother to child through pregnancy, labour and delivery, and breastfeeding. Accordingly, 373 (63.435%), 397 (67.52%) and 489 (83.16%) of the study subjects reported that HIV-Positive women can transmit the virus to her baby/ies during pregnancy, during labour and delivery and during breastfeeding respectively.

Two-third 404 (68.70%) of the study subjects also reported that HIV-positive pregnant women could use medication for PMTCT. Furthermore, nearly all 555(94.40%) of pregnant women support the idea that very pregnant should be tested. Among the partners of the participated pregnant women, 429 (72.96%) of them were tested for HIV and more than half 311 (52.90%) of partners have a view that support couple testing [Table 2].

Table 2: HIV and MTCT Related Characteristics of the Pregnant Women Attending ANC Service in Public Health Facilities of Hawassa City, Southern Ethiopia, 2016

Variables	Category	Frequency	Percent (%)
Heard about MTCT	Yes	563	95.75
	No	25	4.25
Source of information	Health institution	244	41.50
	Media (TV, radio,...)	165	28.06
	Traditional ceremony (idir,...)	122	20.75
	Relatives	22	3.74
	Friends	35	5.95
MTCT of HIV during pregnancy	Yes	373	63.44
	No	215	36.56
MTCT of HIV during labour and delivery	Yes	397	67.52
	No	191	32.48
MTCT of HIV during breastfeeding	Yes	489	83.16
	No	99	16.84
Support the idea that very pregnant should be tested	Yes	555	94.40
	No	33	5.60
The availability of medication for PMTCT	Yes	404	68.70
	No	184	31.20
Partner ever tested for HIV	Yes	429	72.96
	No	159	27.04
Partner view on HIV testing	Support couple testing	311	52.90
	A wife should be tested alone	177	30.10
	I don't know	100	17.00

Among the study subjects, 531(90.3%) utilized PMTCT service for their current pregnancy. Among them, all of them were received the test result and 510 (96.04%) were negative and the remaining 21 (3.96%) were positive for HIV.

To identify factors independently associated with the utilization of PMTCT services, which is an outcome variable, bivariable logistic regression analysis was used.

Accordingly, educational level, the number of ANC visits, supporting the idea that every pregnant woman should be tested for HIV, partner ever tested for HIV and the view of partner on HIV testing were found to have association with the utilization of PMTCT service. The knowledge that HIV-Positive women could transmit the virus to her baby/ies during pregnancy, labor/ delivery and breastfeeding and the knowledge of the availability of medication for PMTCT were also found to be significantly associated with the utilization of PMTCT service ($p < 0.2$). Based on the finding of multivariable logistic regression model, the most important factors associated with the utilization of PMTCT service were having the number of ANC visits, the view of the women on supporting the idea that every

pregnant should be tested and the view of partner on HIV testing. Pregnant women having only two ANC visits were 76% less likely to utilize PMTCT service as compared to pregnant women having three or more ANC visits [AOR=.024, 95% CI=0.11,0.53]. Pregnant women who do not support the idea that every pregnant woman should be tested for HIV/AIDS were 91% less likely to utilize PMTCT service as compared to those who support the idea [AOR= 0.09, 95% CI=0.03, 0.29]. Finally, pregnant women who don't know the view of her partner on HIV testing were 96% less likely to utilize PMTCT service as compared to pregnant women having a partner who supports couple counseling [AOR=0.04, 95% CI=.01, 12] [Table 3].

Table 3: Factors Associated with the Utilization of PMTCT Service among Pregnant Women Attending ANC Service in Public Health Facilities of Hawassa City, Southern Ethiopia, 2016

Variables	Utilized PMCT	Not-utilized PMTCT	COR (95%CI)	AOR (95%CI)
Educational Level				
Formal Education	410	34	1	1
No formal Education	121	23	0.44(0.25, 0.77)	0.89(0.38,2.11)
Number of ANC Visit				
Three or more	351	23	1	1
Two	180	34	0.35(0.20, 0.61)	0.24(0.11,0.53)*
MTCT of HIV during pregnancy				
No	177	38	0.25(0.14, 0.45)	0.69(0.27,1.77)
Yes	354	19	1	1
MTCT of HIV during labour and delivery				
No	153	38	0.20(0.11, 0.36)	0.75(0.29, 1.94)
Yes	378	19	1	1
MTCT of HIV during breastfeeding				
No	77	22	0.27(0.15, 0.48)	0.85(0.33, 2.18)
Yes	454	35	1	1
The availability of medication for PMTCT				
No	154	30	0.37(0.21,0.64)	1.03(0.46, 2.30)
Yes	377	27	1	1
Support the idea that every pregnant should be tested				
No	13	20	0.02(0.01, 0.05)	0.09(0.03, 0.29)*
Yes	518	37	1	1
Partner ever tested for HIV				
No	115	44	0.08(0.04, 0.16)	0.61(0.22, 1.67)
Yes	416	13	1	1
Partner view on HIV testing				
I don't know	29	71	0.02(0.01, 0.04)	0.04(0.01, 0.12)*
A wife should be tested alone	140	37	0.31(0.14, 0.68)	0.40(0.15, 1.06)
Support Couple testing	285	26	1	1

DISCUSSION

The study finding indicates that more than nine out of ten study subjects 531(90.3%) were utilized the PMTCT service for their current pregnancy. The study finding is consistent with similar studies conducted in different parts of Ethiopia such as the studies conducted in Sebeta Town,⁵ Addis Ababa City⁷, Assosa town,⁸ and East Hararge Zone⁶ and other developing countries such as Cameroon⁹. The higher level of PMTCT service utilization could be explained by the fact that the introduction of various intervention strategies and quality improvement programs in Ethiopian public health system could have attracted more pregnant women who have been utilizing the PMTCT services. The leadership commitment and the ownership of the HIV response program by the Ethiopian government to strengthening the overall national response could also have the lion share for the observed higher level of utilization².

The number of ANC visit that the women had for their current pregnancy also have significantly associated with utilization of PMTCT service where those who have three or more ANC visits were more likely to use PMTCT service. In a study conducted in Addis Ababa City, women with two or more prenatal clinic visits were more likely to be tested for HIV (10). A similar study conducted in the East Hararge Zone also revealed that the previous ANC visits were significantly associated with the utilization of PMTCT service⁶.

The view of the women on supporting the idea that every pregnant should be tested for HIV showed a statistically significant association with utilization of PMTCT service. Studies also demonstrated that earlier information on HIV transmission routes and the knowledge of MTCT and PMTCT that are assumed to be the major pillars to support the idea of every pregnant should be tested for HIV were associated with the utilization of PMTCT service^{6,11,12}.

In this study, the view of the husband on HIV screening was also significantly associated with utilization of PMTCT service where to pregnant women having a partner who supports couple counseling were more

likely to utilize PMTCT service. Other studies conducted previously found out similar finding where having a discussion with husband on HIV testing, having a plan to disclose the test results to husbands and family and community support have a significant association with the utilization of PMTCT^{5,8,13}. Other studies were also identified the lack of communication within the couple, the reluctance of men to learn their HIV status, the misconception by men that their spouse's HIV status was a proxy of theirs, and the unwillingness of women to get their partners involved due to fear of domestic violence, stigmatization or divorce were among the individual factors¹⁴. The cross-sectional nature of the study and the inclusion of the study subjects from only the health facilities were some of the limitations of the study.

CONCLUSION AND RECOMMENDATION

Among the study subjects, more than nine out of ten of them utilized PMTCT service for their current pregnancy. Among those who utilized the service, all of them were received the test result and 510 (96.04%) were negative and 21 (3.96%) were positive for HIV. Among various factors included in the study, the number of ANC visit that the women had for their current pregnancy, supporting the idea of every pregnant should be tested for HIV and the view of husband on HIV screening were found to be the major predictor factors affecting the utilization of PMTCT service. In the recommendation, while working to improve the utilization of PMTCT service, all concerned bodies should pay attention to the major factors affecting the utilization. Improving the wider use of ANC service could offer an opportunity to engage more women that are pregnant in the PMTCT service. Targeting the partners of pregnant women and encouraging their involvement could also have an important benefit for promoting PMTCT service in the Ethiopian context. Further studies to document the best practice of the PMTCT intervention of the study area should be undertaken.

ABBREVIATIONS

ANC: Antenatal Care; AOR: Adjusted Odds Ratio, COR-Crud Odds Ratio; MTCT: Mother-To-Child Transmission; PMTCT: prevention of Mother-To-Child Transmission; VCT: Voluntary Counseling and Testing

ACKNOWLEDGMENTS

The authors would like to thank Addis Ababa University (AAU) for funding this project. We would also like to thank the staffs of Southern Regional Health Office, Hawassa City Administration Health Office and the health facilities included in the study. We are also grateful to all the data collectors, supervisors and pregnant women who took part in the study.

FUNDING STATEMENT

Addis Ababa University funded this research project.
Competing interests

The authors declare that there is no conflict of interest regarding the conduct and publication of this research work.

CORRESPONDING AUTHOR:

Tesfalem T. Tessema, MSc.
Department of Public Health, St Paul's Millennium
Medical College, Addis Ababa, Ethiopia
Email: tesfabemnet2005@gmail.com

REFERENCES

1. UNAIDS. UNAIDS DATA 2017. Avenue Appia, Geneva, Switzerland; 2017.
2. FHAPCO. HIV Prevention in Ethiopia National Road Map 2018-2020. Addis Ababa, Ethiopia; 2018.
3. WHO. Prevention of mother-to-child transmission (PMTCT) of HIV. Avenue Appia, Geneva, Switzerland; 2018.
4. UNICEF. CHILDREN AND AIDS: Statistical Update. 2017.
5. Merga H, Woldemichael K, Dube L. Utilization of Prevention of Mother-to-Child Transmission of HIV Services and Associated Factors among Antenatal Care Attending Mothers in Sebeta Town , Central Ethiopia. *Adv Public Heal* [Internet]. 2016; Available from: <http://dx.doi.org/10.1155/2016/6250898>
6. Gobena M, Nigatu T, Yimam B, Tasisa A, Wagaw D, Birmechu F, et al. Utilization of Prevention of Mother to Child transmission (PMTCT) services and factors that affect knowledge and service uptake among pregnant women attending antenatal care in East Hararge Zone of Oromia Reginal State. *Ethiop J Heal Dev*. 2014;28(Special Issue 1):26-35.
7. Deressa W, Seme A, Asefa A, Teshome G, Enquesellasse F. Utilization of PMTCT services and associated factors among pregnant women attending antenatal clinics in Addis Ababa , Ethiopia. *BMC Pregnancy Childbirth* [Internet]. 2014;14:328. Available from: <http://www.biomedcentral.com/1471-2393/14/328>
8. Abteu S, Awoke W, Asrat A. Acceptability of provider - initiated HIV testing as an intervention for prevention of mother to child transmission of HIV and associated factors among pregnant women attending at Public Health Facilities in Assosa. *BMC Res Notes* [Internet]. 2015;8:661. Available from: DOI 10.1186/s13104-015-1652-4
9. George A, Njukeng PA, Ndasi JA, Mbuagbaw LT. Prevention of mother-to-child transmission of the Human Immunodeficiency Virus: investigating the uptake and utilization of maternal and child health services in Tiko health district, Cameroon. *Pan Afr Med J* [Internet]. 2015;20. Available from: <http://www.panafrican-med-journal.com/content/article/20/20/full/>
10. Negash TG, Ehlers VJ. Prevention of Mother-to-Child Transmission of HIV in Ethiopia : A Literature Review. *ARC J AIDS*. 2016;1(1): 7-13.
11. Alemu YM, Ambaw F, Wilder-smith A. Utilization of HIV testing services among pregnant mothers in low income primary care settings in northern Ethiopia : a cross sectional study. *BMC Pregnancy Childbirth*. 2017;17:199.
12. Ejigu Y, Tadesse B. HIV testing during pregnancy for prevention of mother-to-child transmission of HIV in. *PLoS One*. 2018;13(8). Available from: <https://doi.org/10.1371/journal.pone.0201886>
13. Peltzer K, Skinner D, Mfecane S, Shisana O, Nqeketo A, Mosala T. Factors influencing the Utilisation of Prevention of Mother-to-Child Transmission (PMTCT) Services by Pregnant Women in the Eastern Cape , South Africa. *Heal SA GESONDHEID*. 2005;10(1): 26-40.