

## ORIGINAL ARTICLE

# ASSESSMENT OF EFFECTIVE COVERAGE OF HIV PREVENTION OF PREGNANT MOTHER TO CHILD TRANSMISSION SERVICES IN JIMMA ZONE, SOUTH WEST ETHIOPIA

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### ABSTRACT

**BACKGROUND:** Coverage assessment of prevention of Pregnant Mother to Child Transmission (PMTCT) of HIV service is useful to measure the health system effort or performance of health service delivery function and to influence decisions. The objective of this study was to assess effective coverage level for prevention of Pregnant Mother to Child Transmission services in Jimma University Hospital.

**METHODS:** Health institution based cross-sectional quantitative and qualitative study was conducted on prevention of Pregnant Mother to Child Transmission of HIV services.

**RESULTS:** Out of total 1904 pregnant women who received at least one antenatal care service, 1472 (77.3%) were covered with PMTCT service in 2005 in Jimma University Hospital. The overall PMTCT service coverage for the target group in the Jimma Zone was 1.1 %. The prevalence of positive HIV blood test among pre counseled women was 101 (6.9%). Of all HIV positive pregnant women 62(61.3%) were taking Neverapine at home.

**CONCLUSION:** From the data obtained, it was observed that PMTCT service coverage was low. Thus, we recommended that the services to be strengthened, for a better achievement and optimizing coverage

**KEY WORDS:** Effective coverage, availability, utilization, continuity, quality, PMTCT, services

### INTRODUCTION

HIV/AIDS is the most far-reaching and damaging epidemic the world has ever seen. Within a single generation, it has grown into an individual and societal tragedy with huge implications for human security, for social and political stability and for economic development (1).

The health sector can play a unique role in delivering prevention and care interventions through a range of health services and can use varied entry point for reaching out to people in need. Most national programs seek to achieve their goals by expanding access to information and high

quality services for every one who need them. One measure of how well a program is performing is the coverage level it achieves.

HIV can be transmitted from mother to child during pregnancy, delivery or breast-feeding. If no proper measure is taken, the risk of an infant acquiring the virus from an infected mother is 25% to 35%. A study indicated that the rate of PMTCT in Ethiopia is estimated to range from 29% to 47% (NAC2001). The key objective of PMTCT service is to minimize the vertical transmission of HIV by increasing coverage and accesses to PMTCT services (2).

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Coverage can be measured for a specific health intervention individually, in order to evaluate a health program. However, WHO suggests using effective coverage as a measure of the performance of the sub national health service delivery system (3).

Prevention of mother-to-child transmission refers to services that counsel pregnant women about HIV status and offer HIV test and provide prevention services to those who are positive. Prevention services should include treatment with anti retroviral drugs, breast-feeding counseling and supplemental feeding. Compare 'Other services include prevention programs provided for women of reproductive age to safeguard them from becoming infected with HIV (4).

Since the start of HIV/AIDS prevention, care and intervention programs of PMTCT, there was no coverage assessment done in previous years in the Jimma Zone. As result it became necessary and important to assess the effective coverage of PMTCT in terms of service availability, utilization, continuity and quality in order to know how well the programs are serving those who need them.

The result of this study revealed micro-level basic information on HIV/AIDS prevention and care service coverage to develop appropriate scaling up program at local level. The study also evaluated the available service capacity whether it was properly utilized or not. It also provided bases for planning and management in coverage of HIV/AIDS prevention and care services, to guide resource allocation as well as for monitoring and evaluation of the performance of health facilities in terms of effective coverage.

## METHODS

The study was conducted in Jimma Zone which is located in South West of Addis Ababa and the Zone has 13 administrative woredas (districts). HIV/AIDS prevention and care service provision in Jimma zone is through governmental and nongovernmental organizations (NGOs) that includes VCT services in 8 health centers, 2 hospitals and 2 (NGOs). The study was conducted from January – April 2006 in Jimma University Hospital where PMTCT service is provided.

The study design was health institution based quantitative and qualitative cross-sectional study to determine effective service coverage of PMTCT services in Jimma University Hospital. Study subjects for quantitative study included records of clients of PMTCT that was provided from January 1<sup>st</sup> to December 31, 2005. The study population for

qualitative study was facility heads, district health office heads and counselors in respective health facility.

Data collectors and supervisors for the interview were health personnel who were not involved in VCT, PMTCT and Anti Retroviral Therapy (ART) services. Semi structured questionnaire was developed and used based on WHO effective coverage assessment guideline. The developed instrument was pre-tested before the actual data collection. Based on finding of pre-test, questionnaire was revised.

Training was given to data collectors and supervisors addressing the study objectives, methods of data collection and field supervision. Furthermore, each question included in the questionnaire was discussed in detail. First visit of PMTCT service was recorded from register. In depth interview were conducted with Heads of the district health offices, health facilities, and with the counselors using in-depth interview guide questions in Amharic language to keep the communication uniform among all key informants.

PMTCT service effective coverage was measured by the number of people received the service in the year using service statistics provided in 2005 and corresponding to projected population needing the service in the same year. The proposed measurement of PMTCT intervention would be by use of coverage indicator domains: Availability, Utilization, Continuity and Quality.

**Availability indicators** to measure access for PMTCT used in the study were availability of service site, condom, STD drugs, HIV test kits, ART drugs, referral support network, and the availability of long-term support.

**Utilization indicators** to measure acceptability for PMTCT used in the study were use of HIV test counseling, HIV test, counseling on infant feeding options and women who took Nevirapine.

**Continuity indicators** for PMTCT used in the study were use of post test counseling, condom provision, HIV positive mothers delivered in hospital, clients referred to ART and support by organization.

**Quality indicators** for PMTCT used in the study were existence of policy document, plan and national guidelines, number of service provider training received, safety precaution followed by service providers. During data collection close supervision was carried throughout the period by supervisors and principal investigator after giving them necessary orientation on the tools of the study. The completed questionnaires were checked for each question items and variables at regular

intervals. Data was cleaned and entered by investigator using SPSS version 12.

The responses were edited before analysis, coding of certain variables was done. Data was entered and processed using the Statistical Package for Social Science (SPSS) for window version 12.0. First descriptive statistics was used which included frequency, mean and median. Then bivariate and multivariate analysis was done. Chi square test was used for hypothesis testing and p-value of below 5% taken as significant. Odds ratio with 95% CI was used to know relationship of variables.

The qualitative data was transcribed, translated, coded and categorized by using study themes as a guide and then grouped the data related to the themes. Differences and similarities between the answers have been examined.

Permission to conduct the study was obtained from ethical clearance committee of Jimma University. Consent letters from Jimma Zone Health Department, Jimma university Hospital, and respected service providers were obtained. General information including objective of the study was explained. Identification was coded to assure confidentiality.

## RESULTS

### PMTCT Service Availability

In Jimma zone prevention of mother to child transmission (PMTCT) service was provided only in Jimma university specialized hospital. It was reported that condom, drugs for sexually transmitted diseases (STDs), ARV drug and necessary HIV test kit were available throughout the year and it was provided free of charge.

### Utilization

In the year 2005 the total pregnant mothers who were registered for PMTCT counseling were 1472. Their age ranges between 15 and 44 years. The age group below 30 years scores 70% of the total clients, while the mean age was 25.46 years (95% CI = 25.13 - 25.78), 82.8% of the respondents were married, 73.6% had educational level from primary to tertiary education, 66.4% unemployed and 64.5% reside in urban setting (Table1).

Out of 1904 pregnant women who received at least one ANC 1472 (77.3%) were covered with PMTCT service in 2005 in Jimma university hospital. The over all PMTCT service coverage for the target group (all pregnant) in the Jimma zone was 1.1%.

All counseled 1472 (100%) mothers were tested for HIV. The prevalence of HIV sero-positivity among PMTCT service utilized clients was 101(6.9%) and the rest were negative. Infant feeding option was counseled for all 101(100%) of total HIV positive mothers. Of all HIV positive pregnant women 62(61.3%) were provided Nevirapne and only sixteen (15.8%) delivered in a health facility.

Rural residents were more likely positive for HIV blood test than urban residents and the difference was statistically significant both in bivariate and multivariate analysis (OR = 1.75, 95%CI = 1.16-2.64). Unemployed and who had some occupation of PMTCT service utilized clients were almost equally become risk to HIV infection. (OR =0.50, 95% CI =0.307 – 0.828).

Pregnant mothers who were 15-29 years of age that utilized PMTCT service were more likely found infected with HIV than comparative group. The observed difference was statistically significant at unadjusted and adjusted regression models (OR = 0.39, 95%CI = 0.23 -0.69) (Table 2).

**Table 1.** Socio demographic characteristics of PMTCT utilized mothers, Jimma zone, 2006.

Variables	Frequency (N=1472)	Percent (%)
Age		
15-19	290	19.7
20-24	444	30.2
25-29	296	20.1
30-34	247	16.8
35-39	140	9.5
40-44	54	3.7
Residence		
Urban	949	64.5
Rural	522	35.5
Marital status		
Never married/Single	161	10.9
Married	1219	82.8
Separated/divorced	92	6.3
Educational status		
No formal education	388	26.4
Primary	801	54.4
Secondary	189	12.8
Tertiary	94	6.4
Occupation		
Unemployed including housewife	977	66.4
Employed	266	18.1
Merchant	98	6.7
Student	114	7.7
Peasant	17	1.2
Religion		
Muslim	546	37.1
Orthodox	715	48.6
Protestant	154	10.5
Catholic	54	3.7
Other*	3	0.2

\* Other includes Jehovah and unspecified religions

Of all post test counseled pregnant mothers only 6.9% were counseled for infant feeding options, but all HIV positive mothers found to be counseled. Out of HIV positive cases in the year only 16 (15%) covered by institutional delivery and all

delivered in hospital and received ART on labor. Five (4.9%) of positive cases were referred for ART service in the year. Infant feeding counseling provided to 100% of mothers who delivered in hospital and their neonate took ART at birth.

**Table 2.** Prevalence of HIV sero positivity of PMTCT utilized clients by socio-demographic variables, Jimma Zone, 2006.

Variables	HIV sero-status		Total N (%)	Bi-variate OR (95% CI)	Adjusted OR (95% CI)
	Positive N (%)	Negative N (%)			
<b>Residence</b>					
Urban	52(5.5)	897(94.5)	949(100%)	1	1
Rural	49(9.4)	474(90.6)	523(100%)	1.79(1.19-2.68)	1.75(1.16-2.64)*
Total	101(6.9)	1371(93.1)	1472(100%)		
<b>Occupation</b>					
Unemployed	80(8.2)	896(91.8)	976(100%)	1	1
Employed +	21(4.2)	475(95.8)	496(100%)	0.49(.30 -.81)	0.50(.30 -.83)*
Total	101(6.9)	1371(93.1)	1472(100%)		
<b>Edu. status</b>					
No education	72(6.6)	1012(73.9)	1084(100%)	1	
Some +	29(28.7)	359(26.1)	388(100%)	0.88(.56-1.37)	
Total	101(6.9)	1371(93.1)	1472(100%)		
<b>Marital status</b>					
Never married	7(4.3)	154(95.7)	161(100%)	1	
Ever married	94(7.2)	1216(92.8)	1310(100%)	1.70(.77-3.73)	
Total	101(6.9)	1370(93.1)	1471(100%)		
<b>Age</b>					
15-29	86(8.3)	944(91.7)	1030(100%)	1	1
30-44	15(3.4)	425(96.6)	440(100%)	0.39(.22 -.68)	0.39(.23 -.69)**
Total	101(6.9)	1369(93.1)	1470(100%)		

\* *P-value* <0.005\*\* *P-value* <0.001**Quality**

All PMTCT service in Jimma hospital provided by appropriately trained mid wife and other nurses with consultation to specialists. It is reported that there is no adequate space to ensure counseling session. Necessary professionals such as specialists, general practitioners, laboratory technicians, midwife, nurses, pharmacists and social workers were trained in advance to provide the PMTCT services. Almost all the services related to PMTCT were provided by nurses and midwives. The sixteen (all) mothers who managed for delivery in hospital gave birth without any invasive procedures (episiotomy and instrumental delivery). The PMTCT service providers reported that they follow safety precautions.

**DISCUSSION**

The main objective of PMTCT is to reduce the transmission of HIV infection from HIV infected mothers to children. To achieve this objective the service has to be available to be used by pregnant mothers. In Jimma Zone the only institution that provides PMTCT service is Jimma University Specialized Hospital. According to the study done in hospital, the relevant trained health personnel,

necessary test kit, ARV drug, STD drug were found to be available through out the year in 2005.

Out of 1904 pregnant mothers who received at least one antenatal care (ANC) 1472(77.3%) were counseled and tested for PMTCT service in 2005. This finding was in agreement with the finding in Rwanda and Kenya (5, 6). Even though the coverage was good (77%) still there is a missed opportunity about 23% of pregnant women who received ANC were not counseled and tested for HIV.

Of all target population (130,976) who will be pregnant in the year 2005, only 1.1% received PMTCT service in Jimma zone. The finding was still below the global coverage 6.7% and 5% for African region in 2003 (4). Overall coverage improvement has to be through service expansion to the primary health care units by integrating maternal and child health care services and increasing the community awareness for better utilization.

All pregnant women who were pre test counseled (100%) were tested for HIV. It was similar finding (97%) in Kenya (6). This finding showed that counseling for PMTCT service in Jimma university hospital is in good status. Out of tested mothers 6.9% were positive for HIV test and

the finding was lower (10.2%) when compared to prevalence reported in 2003 sentinel surveillance (7). The possible justification for prevalence difference might be PMTCT users were women who were counseled and agreed to be tested, but in sentinel surveillance the tested women were all ANC service users. The study found out that the coverage of infant feeding counseling for the HIV positive women was 100%. It was very good coverage compared to the finding (75%) in Tanzania (8). Counseling on an infant feeding option is one of the major program components of PMTCT services (4). The total number of HIV positive mothers who took nevirapine in the year were 62 (61.3%) which was better coverage than (20%) found in Study done in Mombassa, Kenya by Temmerman (6).

The take – home dose principle was followed in administration of antiretroviral therapy by PMTCT service unit of Jimma university hospital. This option has more advantages and reduces missed opportunity than administration of Nevirapine to the mother on admission, because the finding showed that 62 mothers provided take – home dose compared to 16 mothers administered in labour in the 2005. But, the South African study contradict this finding in that administration of Nevirapine on admission in labour increases the pre-delivery uptake rather than take- home dose (9). The possible justification for the difference was higher number of positive mothers delivered in Kenyan health institution. Mothers who were identified as HIV positive have to be followed until delivery by improving the continuity of service through out pregnancy period.

Ongoing counseling was not provided or data was not available. This finding indicates that mothers who were positive for HIV were not followed, and continuity as well as the objective of the service was questionable. To help HIV positive mothers make the best choice, they should receive counseling that includes information about both the risk and benefits of various infant feeding options. They should also have access to follow-up care and support, including family planning and nutritional support (10).

Out of positive mothers in the year 16 (15%) delivered in hospital and all of them (100%) received ARV therapy prior to delivery. Those infants who were delivered from HIV positive mothers 100% received ARV prophylaxis and the finding was higher than the finding in Jamaica (83%) in 2001-2002 (11). The possible reason for the difference was the time of assessment.

The profile of women who participated in PMTCT program showed that 70% were below the age of 30 years, the mean age was 25.46(95%CI= 25.13 – 25.78), 83% were married, 73.6% had some education and more, 66.4% were unemployed and 64.5% were urban residents. The finding indicate that the majority of users were pregnant women whose age were below 30 years and this age group is the most vulnerable age group to HIV, so, PMTCT service is the potential site where good opportunity exists to educate mothers.

Upon logistic regression analysis rural residence and age 15-29, were found to have higher risk to become HIV positive compared to the urban resident and age 30 and above. This finding might be due to the fact that urban resident have better access to information and health service, but the justification for the more positivity of the age group 15-29 years was that they are the majority (86%) of PMTCT service users.

In conclusion, this study demonstrated that effective coverage of PMTCT services were very low. It had also identified the level and bottlenecks PMTCT service delivery system that needs to be addressed in order to improve the coverage of HIV/AIDS intervention packages. Moreover, the study highlights the gap between service expansion and utilization of HIV/AIDS prevention and care, policy, guideline and target coverage point of view.

The following recommendations were forwarded based on the findings to achieve effective coverage of availability, utilization, continuity and quality of PMTCT services.

Health service managers of different levels have to implement strategies already developed by Ministry of Health to increase utilization of available PMTCT service in Hospital and health centers. Effective utilization of staff providing services to maximize utilization of services by reducing missed opportunities. PMTCT service has to be decentralized to primary health care units for better accessibility of the population. Counselors need adequate training to impart quality counseling and to cope with stress and avoid misconceptions. Further operational health system research beyond provider's side should be undertaken.

#### ACKNOWLEDGEMENTS

We would like to acknowledge Jimma Zone Health Office and Jimma University Hospital for cooperation and help offered during data collection. Our thanks also goes to the health workers who

participated in data collection. We also acknowledge Jimma University for the financial support to carry out the research.

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