

ORIGINAL RESEARCH ARTICLE

Scaling up Prevention of Mother to Child Transmission of HIV Infection to Primary Health Facilities in Nigeria: Findings from Two Primary Health Centres in Northwest Nigeria

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Abstract

Nigeria is scaling up prevention of mother-to-child transmission (PMTCT) of HIV interventions to primary health care centres (PHCs). This retrospective study of PMTCT was at two PHCs in Northwest Nigeria with the main outcome measure being HIV infection rate of exposed infants at 6 weeks of life. Of 10,289 women who had antenatal HIV test, 74 had positive results. This gave a prevalence of 0.7%. The uptake of antenatal (99.8%) and intrapartum (97.3%) tests was high at both centres. 30% of HIV infected mothers and 25% of exposed infants were lost to follow-up (LFU). Most women (85.7%) had highly active antiretroviral therapy (HAART) and vaginal delivery (98%). Perinatal mortality rate was 66/1000 births and 95.3% of exposed infants had negative HIV-DNA polymerase reaction test at 6 weeks of life. Despite a high LFU, a new vista has been opened to attaining a zero infection rate. *Afr J Reprod Health 2013 (Special Edition); 17[4]: 130-137.*

Keywords: HIV in pregnancy, PMTCT in primary health centre

Résumé

Le Nigeria intensifie la prévention de la transmission de la mère à l'enfant (PTME) des interventions du VIH dans des centres de soins de santé primaire (CSSP). Cette étude rétrospective de la PTME était à deux CSSP dans le nord-ouest du Nigeria, ayant comme le principal critère de jugement le taux d'infection chez des nourrissons exposés à 6 semaines de vie. Sur 10 289 femmes qui avaient subi l'analyse prénatale pour détecter le VIH, 74 ont eu des résultats positifs. Cela a donné une prévalence de 0,7%. L'absorption des soins prénatals (99,8%) et (97,3%) des analyses des intra-partum étaient élevées dans les deux centres. 30% des mères infectées par le VIH et 25% des nourrissons exposés ont été perdus au suivi (LFU). La plupart des femmes (85,7 %) ont eu un traitement antirétroviral hautement actif (TARTHA) et l'accouchement vaginal (98%). Le taux de mortalité périnatale était de 66/1000 naissances et 95,3 % des nourrissons exposés avaient subi l'analyse de réaction de polymérase ADN-VIH négatif à 6 semaines de vie. Malgré une forte LFU, une nouvelle perspective a été ouverte pour atteindre un taux d'infection zéro. *Afr J Reprod Health 2013 (Edition Spéciale); 17[4]: 130-137.*

Mots clés: VIH pendant la grossesse, PTME dans les centres de santé primaire

Introduction

Nigeria's national prevalence of Human Immunodeficiency virus (HIV) is 4.1%¹. At this level of prevalence, as at 2010, about 3.1million people are infected with HIV, of whom 1.5 million require ARV drugs¹. Nigeria accounts for 9% of the global burden of HIV infection, the largest after South Africa². Within Nigeria, there is a wide disparity in

prevalence of the infection; Kebbi State in North West has 1% while Benue state in the North central zone has 12.7%¹.

HIV- infected pregnant women are at the risk of transmitting the virus during pregnancy, childbirth, and breastfeeding. Ninety percent of the paediatric HIV infections are from mother to child transmission of the virus which is aptly influenced by the viral load, mode of delivery, prolonged

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rupture of membranes and breastfeeding practices³. Fortunately, with specific interventions, the risk of mother to child transmission can be reduced to less than 2% and less than 5% in non-breastfeeding and breastfeeding population respectively⁴.

Traditionally, the care of HIV-infected pregnant women had been physician driven, thus the services were initially concentrated in Specialist and Teaching Hospitals, which are usually located in the cities. Since the inauguration of PMTCT services in Nigeria in 2001 with six tertiary health facilities, the services have gradually been extended to 677 health facilities in 2010, including primary health facilities⁵.

This public health approach and strategy was implemented to improve access to and utilization of PMTCT services nationwide without a compromise of quality care. This was because the 2008 National Demographic and Health Survey (NDHS) reported an abysmally poor PMTCT services nationally⁶. Specifically, in Northwest Nigeria, only 7.3% pregnant women had antenatal HIV counselling, and a much lower 3.8% of them were offered test, accepted to test and got the results of their HIV screening during the antenatal period⁶. This is in the face of the willingness of most pregnant women to undergo HIV screening in pregnancy^{7,8}.

For Nigeria to sustain its commitment to achieving the millennium development goal of combating HIV/AIDS, she has scaled up treatment to primary health facilities nationwide⁹. This intervention became inevitable since about two – thirds of the populace resides in the rural areas where primary health centres remain the first level of contact with healthcare and more importantly, the observed increase in number of states with high prevalence in rural sites called for an intensified focus of intervention on rural areas in Nigeria¹.

We are not aware of any previous report of prevention of mother to child transmission of HIV infection from primary health facilities in Nigeria. However, in previous studies on PMTCT at rural health facilities of other African countries, 69% of the women attending antenatal clinic for the first time accepted HIV testing¹⁰ while some women refused pretest counseling because they needed

their husband's consent and did not return¹¹. Also, only 16.3% of women who collected their result started anti-retroviral therapy¹⁰ and 8% of husbands of HIV positive women accepted VCT¹¹. Contrary to these findings, a much higher number (86%) of women had intrapartum HIV testing and almost all husbands of women in labour (98%) had VCT¹².

In addition to lack of reports on PMTCT services in rural primary health facilities in Nigeria, those from other countries reported variable uptake of the different components of PMTCT at the rural health facilities. The aim of this study was to document the findings from PMTCT services in two primary health centres (one rural and one urban) in two adjoining states of Northwest Nigeria over a 24 month period and compared the interventions at both facilities. The specific objectives included the estimation of the uptake of HIV screening tests and the prevalence of HIV infection in pregnancy and in HIV-exposed infants at 6 weeks of life.

Methods

This was a retrospective study of PMTCT services at Takai Comprehensive Health Centre (TCHC) in Kano State and Maternal and Child Health Centre (MCHC) Kofar Kaura in Katsina State between 1 January 2010 and 31 December 2011. While the TCHC is located in a rural community in Kano state, and it is about 60km from the Federal Medical Centre Birnin Kudu, Jigawa state, the MCHC Kofar kaura is located within the state's capital of Katsina town and it is about 1.5km from the Federal Medical Centre Katsina, the only tertiary health facility in the state. The PMTCT team lead was a midwife at the MCHC Kofar Kaura, while a general duty doctor headed the team at TCHC, Takai.

In November 2009, due to challenges of supervision of the PMTCT services at both primary health facilities and the proximity of tertiary health facilities to them, two consultant Obstetricians (1 & 2) were appointed by the Northwest regional office of Institute of Human Virology of Nigeria.

The consultants had on-site and off-site supervisory meetings. At the on-site meetings, the

consultant obstetrician met with all health personnel - health records clerk, pharmacy technician, community health extension workers and the Midwives involved with PMTCT at the facility. In the case of TCHC, the medical officer was included. Each personnel discussed challenges in the month under review within their duty descriptions as well as challenges of the entire programme. At the off-site meetings, only the focal person and one other personnel visited the Obstetrician with a report of activities and challenges of the month under review which was discussed. The on-site and off-site meetings held alternately, every month.

Aside these meetings, telephone calls were made to the Obstetricians whenever there was an issue or dilemma on any PMTCT related matter. Matters beyond the Obstetricians were referred to the institute's regional office in Kano for attention. Data was collected with National PMTCT tools; Antenatal clinic register, counselling and testing register, delivery register, anti-retroviral drugs register and treatment card. The Northwest regional office of the institute, the implementing partner of both primary health centres up to September 2011, funded the facilitative supervisory meetings, provided data collection tools, anti-retroviral drugs (ARVs) and other PMTCT-related consumables. The institute also trained and retrained all health personnel involved in the services on all aspects of HIV care, including but not limited to community care of the HIV-infected client.

Case records of women who came to register for antenatal supervision of their current pregnancy and unbooked women who presented for the first time in labour at the two primary health centres were used for this study. The researchers (4&5) recorded the study-related information on a study proforma without any identifiable parameter and personnel unrelated to the research had no access to these information. Women who registered for antenatal supervision had group counselling done and had HIV screening using the "opt-out" method in accordance with the Nigerian national guidelines¹³. On-site, one-day testing was done and women who had positive results had one-on-one post-test counselling to ensure confidentiality. All

unbooked women who presented intrapartum were counselled, and those who gave consent screened. Post-test counselling of women with positive results included partner notification and testing, use of ARVs and infant feeding options.

Prior to initiation of ARVs in pregnancy, baseline blood investigations; full blood count, serum urea, electrolytes and creatinine, liver function tests and CD4 cell estimation were done. Samples from MCHC were sent to the Federal Medical Centre Katsina, while those from TCHC were taken to the institute's regional office in Kano.

The national guidelines on PMTCT were used for interventions at the two health centres. Prior to June 2010, all positive pregnant women had daily Zidovudine from 36 weeks and single dose Nevirapine in labour (WHO option A) while their exposed infants had single dose Nevirapine post-partum, and daily Zidovudine for 6 weeks. However, the two centres adopted the revised guidelines in June 2010 (WHO option B) after which all HIV-infected pregnant women were given highly active anti-retroviral therapy (HAART), and their exposed infants, daily Nevirapine for 6 weeks¹³.

At six weeks of life, exposed infants had blood samples collected for early infant diagnosis (EID) of HIV infection. Polymerase chain reaction (PCR) was used to detect viral antigen. If negative, but the infant was being breastfed, a repeat test was done 6 weeks after complete cessation of breastfeeding. Infants with positive EID test results were referred to the paediatrician at the tertiary health facility in Katsina from MCHC or managed by the doctor who heads the PMTCT team at TCHC.

Data presentation was done with descriptive statistics and relevant comparative statistics was done using Fisher exact-corrected 1-tailed chi square with level of statistical significance set at $P < 0.05$ at 95% confidence interval. The study was approved by the Katsina State Health Research Committee (KTSHREC).

Results

Uptake of HIV screening test

Ten thousand two hundred and ninety five (10,295) women had antenatal group counselling

out of whom 6 women reported being HIV positive prior to pregnancy. Ten thousand two hundred and eighty nine (10289) women had HIV testing done.

TCHC had an antenatal HIV counselling and testing uptake of 100%. The centre had 746 deliveries by unbooked parturients during the period with an intrapartum HIV test uptake of 99%.

At MCHC, antenatal counselling and uptake of screening test was 99% and 66 unbooked women who delivered had 100% intrapartum test uptake.

HIV prevalence

Seventy four (74) of 10289 women were positive for HIV infection. This gave a HIV infection prevalence of 0.7% for both centres over the period.

TCHC had antenatal HIV-infection rate of 0.6% (36/6081) and intrapartum HIV infection prevalence of 1.3% (9/714).

At MCHC, the antenatal HIV infection prevalence was 0.9% (38/4208) while the intrapartum HIV infection prevalence was 4.6% (3/66).

Loss to follow up

Fourteen (35%) women were lost to follow up at TCHC while 25% of those with HIV positive results were lost to follow up at MCHC. There was no statistical significant association between maternal loss to follow up and facility location ($\chi^2 = 0.5357$; $P = 0.2323$).

Uptake of HIV screening by husbands of women with HIV infection in pregnancy

At both facilities, 16 husbands (8 from each facility) of HIV-positive women had counselling and testing and 78% (58/74) of them did not come for counselling and testing. The sero-discordant rate of 37.5% was the same at both centres.

Characteristics and treatment of women with HIV infection in pregnancy

Overall, 56 women with a mean age of 25.4 ± 5 years took informed decision following counselling and had PMTCT-related antenatal

supervision. Their demographic pattern is in table 1. HIV infection in the women was diagnosed before and during pregnancy in 10.7% (6/56) and 83.9% (47/56) of the women respectively.

Table 1: Demographic pattern of women with positive antenatal screening test (N=56)

Characteristics	Number (%)
<i>Parity</i>	
0	8 (14.3)
1	13 (23.2)
2	11 (19.6)
3	7 (12.5)
4	9 (16.1)
≥ 5	8 (14.3)
<i>Age (years)</i>	
16-20	16 (28.6)
21- 25	18 (32.1)
26 – 30	16 (28.6)
31 – 35	4 (7.1)
36 – 40	2 (3.6)
<i>Occupation</i>	
Housewife	56 (100)
<i>Religion</i>	
Islam	56 (100)
<i>Marital status</i>	
Married	56 (100)

There was similarity between the mean pre-ART haemoglobin concentration of the women at both TCHC and MCHC (10.4 g/dl vs. 8 g/dl), mean weight (54.8 Kg vs. 57.4 Kg), mean CD 4 cell estimates (333 cell/mm³ vs. 335 cells/mm³) and mean gestational age (23 weeks vs. 22 weeks). Overall, most women (85.7%; 48/56) had HAART while 14.3% had Zidovudine/Lamivudine (Mylan Laboratories, Maharashtra, India). Of the women who had HAART, 60% (29/48) had Efavirenz (Strides Arcolab Ltd, Bangalore, India) with Zidovudine/Lamivudine; 25% (12/48) had Nevirapine (Hetero Drugs Ltd, Jeedimetia, India) with Zidovudine/Lamivudine ; 8% (4/48) had Tenofovir/ Emtricitabine (Aspen Pharmacare, Port Elizabeth, South Africa) with Nevirapine and 6.2% (3/48) had Efavirenz, Lamivudine (Aurobindo Pharma Ltd, Ranga Reddy District, India) and Stavudine (Strides Arcolab Ltd, Bangalore, India).

In this study, all but one woman (55/56; 98%) had vaginal delivery. The only woman who was delivered by caesarean section at the nearby tertiary health facility in Katsina had a huge genital wart. All the women chose exclusive breastfeeding as the infant feeding method of choice.

Sixty eight (68) deliveries (56 women diagnosed in the antenatal period + 12 women who had intrapartum diagnosis) occurred by HIV-infected women during the study period. All the women had intrapartum anti-retroviral drugs and their infants were given prophylaxis.

Perinatal outcome

There were 4 perinatal deaths with a perinatal mortality of 62/1000 births in this study. These comprised 1 still birth and 3 early neonatal deaths. TCHC had 1 perinatal death while 3 perinatal deaths occurred in MCHC in the study period.

Uptake and results of early infant diagnosis (EID)

Forty eight (48) exposed infants had EID with polymerase chain reaction at 6 weeks of life to determine HIV infection while 16/64(25%) infants were lost to follow up. While 4/52 (7.7%) of infants of women who had antenatal supervision did not have EID, 12/12(100%) of women who had intrapartum HIV positive diagnosis did not bring their exposed infant for EID. There was a significant association between intrapartum HIV diagnosis ($\chi^2=6.9$; $P= 0.0136$) and not bringing infants back for EID. A woman who had intrapartum HIV infection diagnosis was 10 times more unlikely to bring her child for EID.

EID was negative in most exposed infants 93.8% (45/48), while 3/48 infants (6.3%) were infected. On a closer look, none of the exposed infants of mothers who had Zidovudine/Lamivudine had positive EID result while the 3 positive infants were from women who had HAART. The mothers of the EID-positive infants either had EFV/AZT/3TC or AZT/NVP/3TC regimen with a relative risk of infection of 1:5.

Discussion

The scaling up of interventions to avert vertical transmission of HIV to primary health facilities became a national strategy to reduce the gap in the proportion of pregnant women who did not get tested for HIV infection on one hand, and the number of HIV-infected pregnant women who did not get anti-retroviral drugs in pregnancy on the other. As thoughtful as the intervention was, there are challenges which were not envisaged. These included unwillingness of spouse to be tested for HIV infection, loss to follow-up of HIV positive women and exposed infants. Despite previous studies on PMTCT at the primary health levels, direct comparisons are difficult because the effectiveness of PMTCT programmes depend on multiple factors such as breastfeeding pattern, the type and duration of ARV drugs (prophylaxis) and the age at which infants are tested¹⁰. In spite of this, to attempt a discussion of the findings of the audit without comparison with previous studies would be an injustice to the women whose health information had been used for the researches and a disservice to care of those infected with HIV in pregnancy.

There was high uptake of antenatal screening tests at both health centres during the study period. Despite being at primary level of health care systems, intrapartum test uptake was higher than that reported at a tertiary hospital in Nigeria⁸, and also higher than 86% intrapartum test acceptance rate reported in a rural Ugandan facility¹². There was also a high uptake, considering the rural nature of Takai when compared to Katsina. The high uptake of screening tests was due to availability of screening kits at both facilities most times. At periods of stock out, the facilities had contacted the obstetricians by telephone who liaised with the programme managers at the tertiary hospitals to ensure they got screening kits pending when the PHCs were supplied.

From our findings, the prevalence of HIV infection diagnosed in the antenatal period at both health centres was less than 1%, contrary to a much higher intrapartum HIV infection rate, especially that at MCHC, Katsina. Though the women had supervised delivery and intrapartum

anti-retroviral therapy, the need to strengthen health systems to ensure round-the-clock availability of kits and skilled manpower to perform intrapartum counselling and testing of HIV infection cannot be over emphasized.

Loss to follow-up of women was reported at both the rural and urban primary health centres without any significant difference. Though we could not ascertain the reasons for loss to follow-up in this study, a previous study reported fear of stigma, inability to afford transport cost and long waiting time at the antenatal clinics as reasons for loss to follow up¹⁴. The reasons all unbooked women with HIV positive screening test did not bring their infants for EID could not be ascertained, but it may be related to inadequate counselling and lack of reinforcement of contents of the counselling after delivery since HIV infection was detected in labour.

We would want to reiterate the need for universal screening of all pregnant women because despite the mean CD 4 cell count of 335 cell/m³, some women needed anti-retroviral drugs even if they were not pregnant since they had counts < 350 cells/mm³ according to the revised guideline¹³. The women looked well, had mean weight and haemoglobin of 56kg and 9.7 g/dl respectively, were in WHO clinical stage 1 and would ordinarily have been missed. The linkages with the tertiary health facilities ensured that baseline investigations, including CD 4 cell count, were done for all women and these were repeated in accordance with the national guidelines. This need to be brought to the fore since the capacity to perform these investigations are lacking at the primary level of health care delivery.

The use of HAART at the primary health centres was a unique feature of this report. This was made possible by the Institute of Human Virology Nigeria and facilitated by the Obstetricians. Most of the women had Efavirenz, Lamivudine and Zidovudine for their treatment and no adverse effects were reported. There was insignificant concern over the teratogenicity of Efavirenz in the combination because most women did not start antenatal care and ART until about 22 weeks of gestation.

Furthermore, all but one woman had vaginal

delivery. The only caesarean section was for a huge warty lesion at the vulva. Again, this was a benefit of the supportive supervision provided by the obstetricians as a telephone call was made to the first author, on whose advice, the client was referred to the tertiary centre for caesarean delivery. Though they chose to exclusively breastfeed their infants, mixed feeding could not be ruled out since exclusive breast feeding has become stigmatized as an indicator for HIV infection¹⁵.

Regardless of the choice of infant feeding, EID tests the effectiveness of antepartum and intrapartum interventions against vertical transmission of HIV infection. The rate of HIV infection in exposed infants of this population of women who breastfed was about 6%. This was higher than expected and indicates more may have been needed to be done than occasional supervision as the case was.

The challenges of partner testing has brought to the fore the need for male involvement in pregnancy care as this would be a good way to increase the proportion of men who get voluntary testing and counselling. This is supported by the report of high uptake (98%) of HIV screening test by husbands of women who were in labour¹².

Education and counselling of the women is pivotal to addressing the problems of loss to follow up. They need to understand that PMTCT interventions, especially the use of ART, slow down their disease progression and prevent their unborn child from getting the infection. In this regard, mobile telephone could be used in tracking clients since at least one person close to her would have one. Thus at booking a telephone number other than that of the clients should be recorded on the clients folder. Most importantly, they need to be acquainted with the fact that their unborn children are the focus of all PMTCT interventions hence they need to bring them back after delivery for EID at 6 weeks of life.

The retrospective nature of this study is a limitation. A cohort study of HIV infected women in pregnancy and their exposed infants would give more information on reasons for loss to follow-up and the actual infant-feeding practices of the women.

Conclusion

The scale up of prevention of mother to child transmission of HIV interventions to the two primary health facilities has shown the inherent potentials of PMTCT scale up to PHCs, especially with linkages and supportive supervision from a higher level of care. This is buttressed by high uptake of antenatal and intrapartum screening tests. The unacceptable rate of loss to follow-up notwithstanding, a new vista has been opened for HIV care policy makers and program managers to tap in with a view to attaining a zero infection rate in the near future.

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Contribution of Authors

Dr. Okusanya supervised PMTCT interventions at MCHC, Kofar Kaura Katsina, conceived the idea of the study, modified the introduction, did initial data analysis and partly wrote the draft of the discussion. Dr. Ashimi supervised PMTCT interventions at TCHC, Takai, wrote the draft of the introduction, subjects and methods section and modified the results and discussion of the manuscript. Dr. Aigere modified the analyzed results, wrote the draft of the result and partly the discussion. Dr. Salawu managed the PMTCT clients at TCHC Takai, retrieved the data, contributed to the subjects and methods part of the manuscript and also modified the draft manuscript. Hajiya Rakiya managed the PMTCT clients at MCHC Kofar Kaura, Katsina, retrieved the data and modified the manuscript.

All the authors approved the final version of the manuscript submitted to African Journal of Reproductive Health

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