PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) OF HUMAN IMMUNODEFICIENCY VIRUS (HIV): PERCEPTIONS AND PRACTICE OF ANTENATAL CLIENTS IN NNEWI, SOUTH-EAST NIGERIA

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ABSTRACT

Context: With increasing feminization of the human immunodeficiency virus (HIV) pandemic especially in Africa, more seropositive women are getting pregnant. There is therefore an increasing need for prevention of mother to child transmission (PMTCT) of HIV and increased need for awareness by our women.

Objective: To determine the perceptions and practice of PMTCT of HIV among antenatal clients in Nnewi, south-eastern Nigeria.

Study design, setting and subjects: This was a cross sectional descriptive study of six hundred (600) consecutive antenatal clients attending the Nnamdi Azikiwe University Teaching Hospital and five private specialist hospitals in Nnewi, a semi-urban town in Anambra State, south-eastern Nigeria. The study was questionnaire based and was conducted over a six-month period.

Results: The mean age of all the 600 clients was 31.4 (SD2.8) years. Most of the clients were married (94%) and in the third trimester of pregnancy (69%). Majority (65%) lived in the semi-urban town of Nnewi and place of domicile did not make any significant difference to knowledge of MTCT (p=0.96). All the clients studied were Christians. Most – 348 (58%) attended secondary school while 5 (0.83%) had no formal education. There was a statistically significant relationship between level of education and knowledge of MTCT (p<0.00001). Specifically, 544 clients (92.33%) knew about MTCT; 393 (65.50%) clients were aware MTCT could be prevented (PMTCT) but only 37% knew about specific PMTCT measures. HIV counselling and testing (HCT) was done for only 216 (51.55%) of the clients.

Conclusion: The study showed that even though a majority of the women were aware of MTCT, they lacked adequate knowledge of the various modalities of PMTCT. Mandatory HIV testing without counselling is still widely practiced in our environment. Concerted efforts are needed to further increase knowledge of MTCT, institute widespread HCT and thus improve PMTCT.

INTRODUCTION

Recent estimates by the Joint United Nations Programme on HIV/AIDS (UNAIDS) reveals that the HIV prevalence rate among adults aged 15-49 years in Nigeria has stabilized to about

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4.6% since 2008[1] from the all time high prevalence of 5.8% in 2001. Since the first official report of HIV/AIDS in the USA in 1981 and the subsequent first report in a 13 year old girl in Nigeria in 1986,[2,3] the spread of this dreaded pandemic has largely remained unabated. Subsaharan Africa (SSA) has continued to bear the greatest burden. Even though it is home to only about 10% of the world's population, SSA accounts for two-thirds (about 63%) of the world's people living with HIV/AIDS (PLWHA), two-thirds of all new infections globally and three-quarters of all AIDS deaths in spite of recent improvements in access to antiretroviral treatment.[3,4] Africa currently has over 12million AIDS orphans.[1,4]

The World Health organization (WHO) estimates that at least 50% of worldwide HIV infections are in females, majority of whom are in their reproductive years and still elect to have children.[4,5] With global feminization of the epidemic, an approximate 57% of adults living with HIV in Africa are women.[1,4] Heterosexual transmission of HIV, therefore, appears to be increasing (accounting for nearly 80% of all HIV infections[4]) even in the developed word where male homosexual practice was the initial predominant mode of spread. Since over 90% of infant infections is through MTCT, as more women contract the virus the number of children infected keeps increasing. It has been estimated that about 1.5million HIV positive women get pregnant annually and that 600,000 children are infected annually via MTCT (about 1,600 daily).[1]

National sentinel HIV seroprevalence estimates are usually derived from women of childbearing age (mainly antenatal clients) due to logistic and other reasons. These women constitute up to 25% of the Nigerian population and mother to child transmission (MTCT) accounts for over 90% of paediatric HIV infection.[4,6] Prevention of MTCT (PMTCT) has thus become a reliable strategy strongly recommended for reducing HIV/AIDS in the offspring of those pregnant and even non-pregnant but procreation-desirous women who become HIV infected in sometimes unfortunate circumstances often not entirely under their control.

The effects of HIV on pregnancy and vice versa have been severally studied but the current consensus is that pregnancy does not seem to accelerate asymptomatic or early HIV infection.[3,5,7] Without intervention, the risk of MTCT or vertical transmission of HIV is between 25-35% in Africa (15-25% in Europe).[3,5] However, with antiretroviral therapy, elective caesarean delivery and avoidance of breastfeeding , transmission can be reduced to below 2%.[5] Several studies conclude that combination antiretroviral therapy also known as highly active antiretroviral therapy or HAART plays major role in the dramatic decrease in HIV-related morbidity and mortality where they are available and are used.[7-9] They are also not associated with adverse pregnancy outcomes.[9] Even though combinations containing protease inhibitors have been linked with risk of very low birth weight babies, this remains unconfirmed.[5,10]

Voluntary counselling and confidential testing (VCT) or HIV counselling and testing (HCT) of all pregnant women at the antenatal clinic has been developed as a convenient entry point for PMTCT.[11-13] Studies suggest that universal routine (opt out) approach has been found to increase uptake of HIV testing.[14,15] Universal (opt out) HIV testing means that all individuals attending specified settings are offered and

recommended to have an HIV test as part of routine care but an individual has the option to refuse a test.[16] Knowledge of HIV status has been associated with reduction in risk behavior and therefore reduced onward transmission including MTCT.[16,17] This study seeks to determine how our antenatal clients perceive MTCT and PMTCT, possible determinants of such perceptions and their practice of these. Relevant conclusions and recommendations would be made.

SUBJECTS, MATERIALS AND METHODS

This research was a cross-sectional descriptive study based on an anonymous, structured, pretested questionnaire designed to assess antenatal clients' perceptions and practice of PMTCT. The questionnaires were both self (client) administered and interviewer administered as necessary. Some of the questions demanded simple "Yes", "No" or "Don't know" answers with further questions deriving from these answers. Other questions had options provided with some requiring a choice of more than one option.

Six hundred consecutive antenatal clients participated in the study. The Sample Size was determined using an appropriate statistical formula for estimating sample size in health studies viz: $n = Z^2Pq/d^2$, where n is the required sample size, Z is the coefficient of Z statistic (the standard normal deviate at 95% confidence level obtained from the standard normal distribution table), P is prevalence rate in %, q is 100-P, and d is the desired precision of the study or sampling error tolerated in %. Using a prevalence rate P of 9.2% obtained from a previous similar study in Nnewi, a confidence limit of 95% (d=5%), and Z of 1.96, the calculated sample size, n was 128. The sample size of 600 used in this study was almost four times the calculated one. This was deliberate in order to reduce sampling error, eliminate bias, obscure possible confounders and thus improve the power and precision of the study.

The hospitals used included the Nnamdi Azikiwe University Teaching Hospital (a major national PMTCT centre) and 5 private specialist hospitals run by consultant obstetricians and gynecologists uniformly spread around Nnewi's four major communities. Two of the private hospitals serve as outposts of the PMTCT programme in Anambra State while the other three also offer comprehensive PMTCT services.

The proportion of respondents from the various hospitals was determined using their antenatal clinic attendance registers for the previous one year. Based on the records, the allocation was thus 250 clients to NAUTH, 100 to each of the two PMTCT outposts and 50 to each of the other three hospitals. The first 600 consecutive new antenatal clients attending the hospitals within the six-month (26 weeks) study period (1st September 2008 to 28th February 2009) were recruited for the study. Recruitment was stopped once the target for each hospital was reached.

The clients were studied using such demographic variables as age, parity, occupation, place of domicile, religion, educational status, marital status and trimester of pregnancy. Perceptions of MTCT and PMTCT was obtained using variables like information source, modes of transmission, most likely period of MTCT and PMTCT intervention modalities. Practice of PMTCT was obtained using such variables as HIV status (positive, negative, not tested), clients' belief in the reliability of PMTCT measures, consent to VCT

and clients' chosen mode of delivery and infant feeding practice.

The data was collated and tabulated. Simple percentages (proportions) were calculated. Statistical analysis was done using EPI-INFO 2002 software. Means with standard deviations were derived where necessary. Significance of some of the demographic variables (educational status and place of domicile) on MTCT awareness was tested using the chi square test at 5% level of significance or 95% confidence interval (P = 0.05).

RESULTS

Table 1 shows: The age and parity distribution of the clients. Two hundred and eight clients (34.67%) were aged 26-30 years; 195 (32.50%) were aged 31-35 years. The age range of the clients was 16-46 years with a mean of 31.4 (SD2.8) years. The mean parity of the clients was approximately 2.36 (SD1.60). The multipara (para 2-5) formed the majority with 278 clients (46.33%). 414 (69%) of the clients were in the third trimester. 138 (23%) were in the second and 48 (8%) in the first trimester. Majority – 246 (41%) were traders; 174 (29%) were housewives; 96 (16%) were students; 72 (12%) were civil servants.

Three hundred and ninety (65%) clients lived in semi-urban towns like Nnewi, 72 (12%) came from urban areas like Onitsha and Awka while 138 (23%) were from rural areas. All the 600 clients were Christians made up of 246 (41%) Catholics; 168 (28%) Anglicans; 150 (25%) Pentecostals; and 36 (6%) from other denominations. Three hundred and forty eight (58%) clients had secondary education; 127 (21.17%) were in or had tertiary education; 120 (20%) had primary education while 5 (0.83%) had no formal education.

Five hundred and fifty four clients (92.33%) were aware of MTCT of HIV while 46 clients (7.67%) were unaware. Three hundred and ninety three clients (65.50%) were aware of PMTCT while up to 207 clients (34.50%) did not know about it. Majority – 378 (63%) of the 600 clients did not know any specific PMTCT measure while 222 (37%) knew about some - the most commonly known PMTCT measure by 206 clients (34.3%) was avoidance of breastfeeding. 192 clients (32%) knew that taking HIV drugs during pregnancy was a PMTCT measure while only 42 clients (7%) were aware that elective caesarean section was a PMTCT modality. While the clients' place of domicile did not make any significant difference to awareness of MTCT ($p=0.96$; see table 2), there was a statistically significant relationship between the educational status of clients and awareness of MTCT ($p<0.00001$). The more highly educated a client was, the more likely she was to have had knowledge of MTCT; see table 3.

Three hundred and eighty two clients (63.67%) tested negative to HIV and 37 (6.17%) tested positive making a total of 419 clients tested. 181 (30.17%) were not tested. Of the 419 clients tested for HIV, 216 (51.55%) had counselling before testing (VCT) while 203 (48.45%) had mandatory testing (table 4). The true prevalence was 8.83% among those tested, with 91.17% screened negative.

Table 4 also shows: That only 61 clients (10.17%) would consent to elective caesarean section as a PMTCT measure. Majority of the clients - 352 (58.66%) would accept vaginal delivery only while 187 clients (31.17%) said they would consent to operative delivery (emergency caesarean section) only when vaginal delivery fails. Most of the clients – 492

(82%) would subscribe to artificial formula feeding only (avoiding breastfeeding entirely); 70 clients (11.67%) would practice exclusive breastfeeding only while 38 (6.33%) would practice mixed feeding (alternating breastfeeding and infant formula feeding at the same time).

Table 1: Age and parity of the clients (respondents)

Age	No	%	Parity	No	%
20 and below	16	2.67	Nullipara	127	21.17
21-25	52	8.67	Primipara	152	25.33
26-30	208	34.67	Multipara	278	46.33
31-35	195	32.50	grandmultip	53	7.17
36-40	89	14.83	**Total**	**600**	**100**
41-45	38	6.33	Mean parity = 2.36 (SD 1.60)		
Above 45	2	0.33			
Total	**600**	**100**			

Mean age = 31.4 (SD 2.8) years

Table 2: Place of Domicile versus Knowledge (Awareness) of MTCT

Domicile	Aware	Not aware	Total
Urban	66	6	**72**
Semi-urban	360	30	**390**
Rural	128	10	**138**
Total	**554**	**46**	**600**

Chi square=0.08, degrees of freedom=2, p=0.96

Table 3: Educational status versus Knowledge (Awareness) of MTCT

Level of education	Aware	Not aware	Total
Tertiary	127	0	**127**
Secondary	344	4	**348**
Primary/None	83	42	**125**
Total	**554**	**46**	**600**

Chi square=150.18, degrees of freedom=2, p<0.00001

Table 4: HCT/VCT and PMTCT practice

HIV Testing	No	%
Counselling before testing (VCT)	216	51.55
Mandatory testing	203	48.45
Total clients tested	**419**	**100.00**
Mode of delivery for PMTCT		
Elective Caesarean section	61	10.17
Vaginal delivery alone	352	58.66
Vaginal delivery ± emergency c/section	187	31.17
Total	**600**	**100.00**
Infant feeding practice		
Artificial formula feeding only	492	82.00
Exclusive breast feeding only	70	11.67
Mixed (breast + artificial milk) feeding	38	6.33
Total	**600**	**100.00**

DISCUSSION

The occurrence of HIV/AIDS in pregnancy has become a global public health problem and as the incidence in women increases, the number of such patients increases.[18] The HIV prevalence of 8.83% among those tested in this study is higher than the current national prevalence of 4.6%.[1,4] It is even much higher than those in earlier studies from the Nigerian cities of Kano,[13] Abuja[19] and Abakaliki[20] and from the Mongomo district of Equatorial Guinea[21] where prevalence of 2.54%, 3.2%, 4.74% and 1.23% were respectively reported. It is however similar to the prevalence of 7.3% and 8.1% respectively reported among pregnant women in Port Harcourt[22] and Jos[23] but less than 10.73% reported in Makurdi.[24] Many factors and confounding variables are at play in these wide variations in seroprevalence rates. Indeed the validity and reliability of sentinel survey figures derived from antenatal clients have been called into question prompting some workers to suggest a redirection of campaign and surveillance to artisans, traders and those living away from their spouses.[32] Logistic and other difficulties remain stumbling blocks to this alternative.

The age range, parity and marital status of the clients in this study conform to similar studies elsewhere[19-21,23,24] where majority included married multiparous or primigravid women in their reproductive years.

While this study found about 92% awareness of MTCT among antenatal clients, an earlier study in the same setting[25] recorded 80% awareness – the latter study involved a smaller number of 312 subjects. Even less known or appreciated by the respondents is PMTCT as found in this study (65.5% of clients) and others.[4-6,26] Though most clients knew that MTCT could occur during pregnancy, labour/delivery and breastfeeding, they felt that breastfeeding was the major route. Experts have since shown that if 100 HIV positive mothers get pregnant, deliver and breastfeed their babies for 18-24 months, about 63 babies will not be infected with HIV at all, about 7 babies will be infected during pregnancy and 15 babies each will be infected during labor/delivery and through breastfeeding.[6]

It has been estimated that less than 1 in 10 people know their HIV status especially in those parts of the world most severely affected by HIV/AIDS and the major hindrance is lack of access to voluntary counselling and testing (VCT) services.[11,27] This, among other factors constitutes a major barrier to PMTCT uptake.[28] Ezegwui et al found good uptake of HIV screening among antenatal clients in Enugu with educational qualification being a significant determinant.[29] They recommended routine VCT of all antenatal women just like other investigators.[14-16] Of the 419 clients tested in this study only 216 (51.55%) received VCT. Others (48.85%) were tested without counselling. A recent study of 200 antenatal women in Benin similarly showed that out of 50 that had taken an HIV test, only 14 (27.5%) were counselled.[30]

The lack of knowledge of specific PMTCT modalities by majority (63%) of the clients in this study can also be explained by low VCT service. This may equally explain why only 10.17% (61) clients would consent to elective caesarean section for PMTCT if they were HIV positive. The pervasive aversion to caesarean section even in the general population in our environment is also a factor here. Other workers also found low acceptance of caesarean section for PMTCT in their series.[31,32] Meta analysis of randomized controlled trials recommend elective caesarean section for women on antiretroviral therapy (ART) who have HIV-RNA levels above 1000 copies/ml near delivery but the attendant costs and human resource implications of such a policy are barriers to implementation in an under-resourced setting like ours.[33] Most (82%) of the clients in this study would adopt artificial formula feeding for PMTCT as similarly found in Ibadan (71.8%).[34]

The finding that clients' place of domicile did not have any impact on knowledge of MTCT while level of education did can be explained by the prevailing socio-economic situation where educational status may not necessarily determine the residence of individuals. Highly educated but unemployed (and thus not economically empowered) women may be found in rural areas while less educated but economically empowered women (with wealthy spouses, good businesses, etc) may reside in urban centres. Secondly, there is a fairly good spread of information to all areas especially via the electronic media (the major source for most clients) even in vernacular which the largely less educated rural population understands.

CONCLUSION

Majority of mothers are aware of the possibility of perinatal or vertical transmission (MTCT) of HIV but not as many know about its prevention (PMTCT). Effective PMTCT uptake is still hampered by several barriers most important of which are low VCT services and limited availability of antiretroviral drugs. Appropriate sensitization by the mass media, adequate social mobilization and support by all levels of government and their agencies, non-governmental, faith-based and other organizations are highly recommended to significantly further increase awareness levels of the various dimensions of the pandemic especially MTCT. These would undoubtedly improve VCT uptake and PMTCT practice.

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