



Review and Follow up Findings on HIV Serodiscordance among Couples in Benue State Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors OMS and OS designed the study, wrote the protocol and collated data, author OMS wrote the abstract and the first draft of the manuscript. Authors OMS and NSI performed the statistical analysis, managed the analyses of the study and the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Sexual contact with an HIV infected individual is a significant risk in HIV transmission. We observed occurrence of HIV sero-discordance among some couples in our environment and went further to determine the prevalence of such discordance in Benue state, Nigeria.

Aim: To report HIV discordance rate among couples attending some antenatal care clinics in Benue state, Nigeria in order to stimulate search for factors responsible for such discordance.

Methodology: This study was carried out in collaboration with the Site Coordinators of Prevention-of-Mother-to-Child-Transmission (PMTCT) programs in Benue State, Nigeria. Antenatal care clients attending HIV/AIDS Counseling & Testing were screened for HIV from January 2006 to December 2008. At screening HIV testing was done using paired commercial HIV rapid tests run in parallel. Fourth generation enzyme immunoassays (EIA) HIV kits Manufactured by Alere Medical Company Limited and Trinity Biotech were used. To confirm partner's positivity, paired rapid-assay were also used. Manufacturers' instructions were fully followed. Each of the HIV positive patients was

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requested to come along with her spouse at the next follow up visit for partner counseling and screening. Socio-demographic data were obtained from all subjects. A group of discordant couples were followed up till December, 2012.

Results: A total of 3,508, 5,531, and 4,475 women were counseled and screened annually from 2006 to 2008. HIV positive patients recorded in those years were 15.8%, 17.4% and 46.5% respectively. The peak HIV prevalence occurred in the 21-30 years age group. Among the positive patients, the following percentages accepted partner notification; 53.5% (2006), 72.0% (2007), 67.3% (2008) and came back on consequent follow up visit with their partners while 25%, 15.7%, 47.0% partners accepted to be screened in 2006, 2007 and 2008 respectively. Among the partners screened, there was a sero-discordance of 46% (n=34/74) in 2006. 57% (n=62/109) in 2007 and 45.3% (n= 298/658) in 2008. The highest incidence of HIV sero-discordance occurred among couples < 5 years old in marriage(40%), couples with history of sexually transmitted infections in the past one year(55%) and male circumcision(30% in uncircumcised, 70% in circumcised). Among a cohort of 20 discordant couples consecutively followed up, 80% of the couples were still seen and sero discordant four years after the initial discovery.

Conclusion: We recommend risk-reduction behavior, empowerment of vulnerable groups, effective life planning skills as well as behavioral and cultural change among couples. This group of patients can be a major study point for identification of possible factors responsible for prevention of HIV transmission. These findings should guide prevention interventions in order to achieve maximal impact.

Keywords: HIV; Sero- discordance; couples; Benue Nigeria.

1. INTRODUCTION

HIV discordance is a situation where one member in a regular sexual partnership is HIV negative while the other is HIV positive [1,2]. The HIV negative partner is at high risk for getting HIV, if the couple does not take steps to protect him/her. On the other hand, inherent genetic or behavioural factors in the sero-negative individual in the partnership may interplay in the picture.

It is baffling that there is increasing incidence of discordance in relationships. This scenario began to emerge with increased incidence of a wife testing positive and husband negative as seen in Nigeria [3].

As high as 45 per cent of discordance was recorded at Prevention of Mother to Child Transmission of HIV (PMTCT) clinics at the University College Hospital, Ibadan [3]. Several cases of sero-discordance are often faced with the challenges of unhappiness or breaking homes, because most of the husbands accuse their wives of unfaithfulness resulting in divorce. Unfaithfulness, which is the most common reason one partner may test HIV positive while the other remains negative, does not completely explain the medical possibilities [2]. A study reported that despite ongoing research, the causes of sero discordance are still largely unknown [2]. Diversity in the pathophysiologic

mechanisms of the virus and genetic diversity in diverse African populations may be an important factor. Although a couple of indicators have been suggested for the occurrence of HIV sero-discordance, some causes among couples have been traced to the interrelation of the several factors ranging from transmission rates due to differences in the anatomy of male and female genitals where men are less vulnerable to contracting the virus than women; virulence of HIV strains; circumcision factors and level of sexual experience at the point of marriage [2-5].

In Benue State, Nigeria where the prevalence of HIV is as high as 12% [6], we investigated the prevalence of sero-discordance among married partners. This may stimulate interest to further investigations into factors associated with discordance in the global scientific world.

2. MATERIALS AND METHODS

2.1 Study Area

This study involves all the 23 local government areas located within Benue state, Nigeria. Benue state is located within the North central geopolitical zone of Nigeria.

2.2 Subjects

Ethical approval for the study was obtained from Benue State University Teaching Hospital and

patients' written consents were sought. All antenatal care clients attending HIV/AIDS Counseling & Testing program within the study population from January 2006 to December 2008 were recruited into the study.

2.3 Method

This study was done in collaboration with the Site Coordinators of Prevention-of- Mother-to-child-Transmission (PMTCT) programs. HIV testing was done for each pregnant woman after appropriate pre-test counseling on HIV. Disclosure of HIV status was done after proper post-test counseling. Each of the HIV positive patients was requested to come along with her spouse at the next follow up visit for partner counseling and screening. Socio-demographic data of age, gender, occupation, risk group assessment and informed consent were obtained from all subjects.

2.4 Laboratory Testing

HIV testing Screening for HIV was done using paired commercial HIV rapid tests run in parallel. Fourth generation enzyme immunoassays (EIA) HIV kits Manufactured by Alere Medical Company Limited and Trinity Biotech were used. To confirm partner's positivity, paired rapid-assay were also used. Manufacturers' instructions were fully followed.

2.5 Quality Control

Study-site clinics' laboratories were enrolled in External Quality Assurance (EQA) programme for HIV serology coordinated from Federal Medical Center, Makurdi, Nigeria. Laboratory technicians in these laboratories were retrained periodically on correct testing, documentation and reporting every 3 to 6 months.

2.6 Post Testing Activities

Participating couples and individuals were counseled with regards to HIV risk reduction, drug adherence and family planning. Free condoms and training on correct usage were provided. Free HAART were provided if clinically indicated, based on clinical symptoms, CD4 testing, in accordance with national guidelines.

Results of the HIV screening for the patients and their spouses were collated from primary and secondary hospitals providing PMCTC services.

2.7 Analysis

Results were analyzed using SPSS 11.0 statistical software; chi-square was used to compare association between proportions and p. values <0.05 were considered significant at 95.0% confidence level.

3. RESULTS

Table 1 showed the HIV sero prevalence among antenatal patients during the study period. Among a total of 3,508, 5,531, and 4,475 pregnant women who were counseled and screened in 2006, 2007 and 2008 respectively, 553 (15.8%), 965 (17.4%) and 2,079 (46.5%) were HIV positive in 2006, 2007 and 2008 respectively. The peak HIV prevalence occurred among 21-30 years age group.

Table 2 showed the nature of response of couples to HIV seropositivity among the study population. A total of 296, 695 and 1,400 HIV sero positive pregnant women patients accepted partner notification and came back on consequent follow up visit with their spouses in the year 2006, 2007 and 2008 respectively. Among these, 74, 109 and 658 male spouses accepted to be screened in 2006, 2007 and 2008 respectively. Among the partners screened, 34, 62 and 298 were negative giving a sero-discordance rate of 46%, 57% and 45.3%. This gave an average discordant rate of 49.3% across three years period. The highest incidence of HIV sero-discordance occurred among couples < 5 years old in marriage (40%) and male circumcision (30% in uncircumcised, 70% in circumcised). Infection burden was higher in female throughout the three years study. Fifty-five per cent of couples affected in the study has had sexually transmitted infections within the previous one year.

Among a cohort of 20 discordant couples consecutively followed up, 80% of the couples were still seen and sero discordant three years after the initial discovery.

Table 1. HIV sero prevalence among antenatal patients during the study period

Year	Total tested	Total positive	Prevalence (%)
2006	3,508	553	15.8
2007	5,531	965	17.4
2008	4,475	2,079	46.5
Total	13,514	3,597	26.6

Table 2. Partner notification, acceptance and sero-discordance among HIV sero negative partners

Year	Agreed to notify partner	No of spouse screened	No of sero-negative spouses	Sero-discordance rate (%)
2006	296	74	34	46
2007	695	109	62	57
2008	1,400	658	298	45.3
Total	2,391	841	394	49.3

4. DISCUSSION

The study shows an average discordant rate of 49.3% across three year period of 2006 to 2008 in Benue state, Nigeria. Other studies conducted across several geographical areas in Nigeria have recorded discordance rate of 78.8% in Benin City (Southern Nigeria), 48.4% in Jos (Central Nigeria) and 7.7% in Kano (Northern Nigeria) [2].

Heterosexual transmission of HIV is responsible for a large percentage of HIV infections with an expected risk of infecting a negative partner if they have unprotected sex [7]. Recent studies have shown that there has been a shift in the way HIV is spread [7]. Previously, the virus was spread mainly in casual relationships; today a large proportion of new infections are found in people who are in long term stable relationships [8]. An incidence modeling revealed that of all new HIV infection in adults, 43% were among people in discordant monogamous relationships while 46% were among persons reporting multiple partnerships [9].

A higher infection burden was recorded in female in the study in an average of 60%. The biological or anatomical structure of the female genital is such that an HIV positive man can easily transmit HIV to the woman during unprotected sex, even just at first contact, while a woman who is positive may not transmit virus to the man [10]. The surface area of the vagina is wider and contains more body fluid. Thus, transmission rate is twice as high from a man to a woman as from a woman to a man. As a result, the positive wife might not easily transfer the virus to her husband even during several intercourse periods, if she

had been infected before or during marriage. Women are more vulnerable to HIV due to reasons ranging from biological to social economic, cultural and religious factors [11].

A seventy per cent risk was recorded among uncircumcised males in the study. Male circumcision is another factor that may prevent the man from the infection. Men who are circumcised are less likely to be infected than men who are not [12]. Circumcision plays a major role. Men who are circumcised have more difficulty contracting HIV through unprotected sex than men who are not. This discovery has led communities that don't circumcise their males to embark on circumcision as an HIV prevention strategy [13]. Thus, socio-cultural and religious settings may play a significant role in HIV transmission among couples.

Fifty- five per cent of the couple affected in the study has had sexually transmitted infections mainly within the previous one year. Young women are likely to have sexual relations with older men with more advanced sexual experience than their male counterparts, before marriage. As a result, by the time she decides to get married, she might have acquired the infection, unknown to her. Sexual experience of the woman at the time of marriage is another factor. Results from multinomial logistic regression analyses showed that factors associated with transmission from women to men in a couple differ from factors associated with transmission from men to women [13]. In both binomial and multinomial logistic regression models, couples in which neither member has had an STI in the past year are more likely to be

discordant than couples in which either member has had an STI [14].

Forty percent of the couples under study were less than 5 years old in marriage. An important factor to be considered in discordance is length of cohabitation as married couples. In most of the hospital case studies, the longest time of living together is so far 2 years [15,16]. It is unclear whether the longer the cohabitation period, the lesser the rate of discordance. However among a cohort of 20 discordant couples consecutively followed up, 80% of the couples were still seen and sero discordant three years after the initial discovery.

The limitation in the study included difficulty in the recruitment and retention of both partners; reluctance of individuals, particularly men to be tested for HIV; the reluctance of many couples in disclosure of their HIV status to their partners, and skepticism among counselors.

5. CONCLUSION

We conclude that there is a high HIV sero-discordance among heterosexual couples in this study and infection burden was higher in females. The study findings underscore the importance of premarital HIV counseling and testing for this population and the need for targeted interventions among prospective HIV sero-discordant couples to reduce transmission.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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