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RESEARCH ARTICLE

THE PREVALENCE OF HIV SERO DISCORDANCE AMONG COUPLES ATTENDING HIV CLINICS IN IMO STATE NIGERIA

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ABSTRACT

Background: In sub-Saharan Africa, serodiscordance is a growing source of HIV-transmissions. A Serodiscordant relationship, also known as magnetic or mixed-status, is one in which one partner is infected by HIV and the other is not. This contrasts with seroconcordant relationships, in which both partners are of the same HIV status. Research involving serodiscordant couples would offer insights into how the virus is passed and how individuals who are HIV positive may be able to reduce the risk of passing the virus to their partner.

Objective: This study aims to determine the prevalence of HIV serodiscordance among couples attending HIV clinics in Imo State.

Design: Retrospective

Methods: A four year retrospective descriptive study. With the aid of a pro forma, relevant data were extracted from the clinic folders of HIV couples from the two major HIV clinics in Imo State i.e. Imo State University Teaching Hospital and Holy Rosary Hospital Emekukwu.

Results: A total of 630 couples were studied out of whom 228 were HIV serodiscordant. Our study shows that the prevalence of HIV serodiscordance from 2009 to 2012, among the couples was 36.19%. Majority of HIV positive partners in serodiscondant relationships were women. The mean age of the affected patients was 40.5 years with majority of them being rural dwellers, traders and of low educational background. Mean duration of diagnosis was 3years.

Conclusion and recommendations: Early partner testing and notification can avert seroconversion, hence properly designed and mainstreamed interventions that target serodiscordant couples are essential.

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INTRODUCTION

Background

HIV serodiscordance is a major public health problem, because of the increased risk of HIV transmission to HIV-negative partners. Several studies have demonstrated the determinants of individual-level of HIV sexual risk behaviour, but very little research has been conducted to identify couple-level factors associated with unsafe sexual behaviour.[1] A Serodiscordant relationship, also known as magnetic or mixed-status, is one in which one partner is infected by HIV and the other is not. This contrasts with seroconcordant relationships, in which both partners are of the same HIV status.[1-,2] Serodiscordant couples face numerous issues not faced by seroconcordant couples, including decisions as to what level of sexual activity is comfortable for them, knowing that practicing safer sex reduces but does not eliminate the risk of transmission to the HIV-negative partner. There are also potential psychological issues arising out of taking care of a sick partner, and "survival guilt".[2] Financial strains may also be more accentuated as one partner becomes ill and potentially less able or unable to work.[3] Research involving serodiscordant couples has offered insights into how the virus is passed and how individuals who are HIV positive may be able to reduce the risk of passing the virus to their partner.[1] A couple is composed of two persons in a committed sexual or romantic relationship, usually over a significant period of time. Couples may be opposite-sex or same-sex, married or unmarried, monogamous or

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nonmonogamous, and cohabitating or living apart and may or may not have children.[1] In terms of HIV/AIDS, couples may be either HIV seroconcordant, with both members being either sero-positive or seronegative, or HIV serodiscordant, with the partners having different serostatuses. For most couples, HIV/AIDS raises two paramount concerns: the risk of HIV transmission and the likelihood of illness of one or both partners.[1-3]

Couples in which both partners believe themselves to be HIV-negative have it as their challenge to remain that way. Statistically, most couples worldwide are seroconcordant-seronegative, especially in populations and regions that do not have a high level of HIV seroprevalence. These couples may be the least likely to practice safer sex consistently with each other, particularly if they have agreed to be sexually monogamous or if they want children. Such couples may feel little incentive to put up with the more unpleasant demands of safer sex and, indeed, may find that issues involved with avoiding the exchange of bodily fluids damages the quality of their sexual and personal lives.[1] Shared HIV-negative status may also encourage a couple to remain together rather than face the risk of infection from partners of unknown status.[1] If both partners who believe themselves to be in a seroconcordant-seronegative relationship are indeed HIV-negative and remain so over time, then HIV/AIDS poses little direct risk to them. However, some people do not know their actual serostatus but simply presume themselves to be uninfected based on their personal histories or prior HIV test results. A lack of knowledge about HIV transmission and psychological denial may lead some people to underestimate their likelihood of infection. One member of the couple may become infected by sexual activity outside the relationship or by other routes, such as injecting drug use, blood transfusions, or occupational exposure. A member of a couple who becomes infected during the course of a relationship may unknowingly pass HIV along to his or her partner. Even if one-half of the couple knows him- or herself to be infected, he or she may find it difficult to suggest condom use, because this would be tantamount to admitting to sexual infidelity or unsafe drug use. Even couples with explicit agreements to discuss any risky behaviour outside their relationship may find it difficult to do so in practice.[1-2]

Couples in which both partners are seropositive face a different set of concerns. Such couples occur most frequently in certain risk groups, such as gay men and injecting drug users, or in geographic regions like sub-sahara Africa with high HIV seroprevalence. For these couples, transmission may seem to be a less pressing concern. However, such couples run the risk of reinfection, in which one partner infects the other with a different and potentially more virulent strain of HIV, some currently unknown cofactor that might worsen their condition, or a sexually transmitted disease.[1-3] Nonetheless, couples in which both partners are HIV-positive may be tempted to ignore safer-sex practices and or to share needles freely out of a sense that such activity poses little additional risk. Indeed, shared seropositivity may be a source of comfort and solidarity for some couples, although this may be less the case if one partner was the agent of infection for the other. Pregnancy, either accidental or intentional, is of particular concern for seroconcordant-seropositive heterosexual couples, given the risks of maternal transmission and premature death of the parents. Couples who already have children must take care to make provisions for these children, who may themselves be infected and who run a high risk of being orphaned.[1--7] Seroconcordant-seropositive couples face a high degree of uncertainty about the future, because both members must contend with the likelihood of future illness. Yet, the two partners may be at very different stages of disease progression; rather than growing sick and dying together, one partner may still be asymptomatic while the other has already progressed to AIDS. In these cases, the partner who is well may be faced with caregiving, either while healthy or while in declining health. The couple may need to deal with changes in mutual dependence, debilitating opportunistic infections, sexual dysfunction, cognitive impairment, anticipatory grief over the death of the sicker partner, and concern about the future health of the healthier partner.[1-2] Meanwhile, psychological and practical support is often less available for well caregivers than for their sick partners. In relationships that are not sanctioned by law, the well partner may also have to contend with difficulties regarding spousal insurance coverage, medical decision making, legal guardianship, inheritance, and unwelcome involvement by parents and other biological relatives.[1-3]

Serodiscordant couples raise the thorniest set of issues, because they must face major concerns about both transmission and caregiving. Although many HIV-negative individuals might not choose to become involved with someone who is HIV-positive, the seroprevalence rates in some communities are so high that such couplings are almost unavoidable. In other cases, partners may already be committed to one another before their serodiscordant status is discovered or discussed.[1-3] Out of concern about transmission, some serodiscordant couples become overly cautious and all but cease sexual relations. Others may become fatalistic about the inevitability of transmission and take unwise risks. Even if the partners find a level of sexual interaction with which they are both comfortable, accidental slipups and condom breaks do occur.[1] Thus, the prospect of infection is always present, causing the infected partner to worry about transmitting the virus, and the uninfected partner may experience "survivor guilt" to the point of wishing to become infected. [1]

Serodiscordant heterosexual couples who wish to have children must be concerned about sexual transmission between partners and about maternal transmission in the womb if the woman is the infected partner. Although a number of technologies have been explored to remove HIV from semen, attempting a pregnancy remains risky for serodiscordant couples. As a seropositive partner becomes ill, another set of issues arise around caregiving. Although the basic concerns are the same for serodiscordant couples as for seroconcordant-seropositive couples, the divide between the two serodiscordant partners can be greater, as the two do not share the same HIV status. "Survivor guilt" may become even more acute at this stage, impairing the ability of the seronegative partner to protect him- or herself as well as the seropositive partner. Alternatively, some seronegative partners may decide that they are unable or unwilling to help their partner deal with

severe illness and abandon the partner to care for him- or herself.[1]

METHODS

Study population: Study population included all HIV couples attending HIV clinics at the two hospitals of interest: Imo State University Teaching Hospital Orlu and Holy Rosary Emekukwu from 2009-2012.

Study design: A retrospective descriptive study

Sampling technique: Sampling frame, all couples attending HIV clinics in the two hospitals within the chosen time frame. Sample, all serodiscordant couples attending HIV clinic of : Imo State University Teaching Hospital and Holy Rosary Emekuku from 2009 -2012

Data collection: A pro forma was used to collect relevant data from the clinic records of all the serodiscordant couples.

Data analysis: Data was analyzed using computer software, SPSS 15.0 for windows (Inc., Chicago, USA, 2001), at a statistical significance level of 0.05.

Ethical consideration: Approval was obtained from the ethical committee of Imo State University Teaching Hospital, Orlu.

Competing interests: Authors have declared that there are no competing interests.

Authors' contributions: Merenu IA, Diwe KC and Emereole CO designed the study. Merenu IA wrote the manuscript and all the authors read and approved the final version of the manuscript.

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RESULTS

Of the 630 couples seen in the clinics over a period of 4years, 228 were serodiscordant giving a prevalence rate of 36.19%.
The socio-demographic data (Table 1) of the two studied hospitals in Imo State showed: age range 40 -49 years had the highest number of HIV serodiscordance with a frequency of 28.94% and the least was found in the age group 20-29years with a frequency of 19.73%. The mean age of patients was 40.5years.Serodiscordance was found to be commoner among females with a prevalence of 25.24% against male who had prevalence of 10.95%.The prevalence was statistically significantly higher in females with P value < 0.0001, Chi-square statistic (with Yates correction) = 69.482, Odds ratio= 5.310, 95% Confidence Interval: 3.561 to 7.919 (using the approximation of Woolf). No professionals were identified in the list but traders made up the highest with a frequency of 39.91%. A great number of the serodiscordant couples 172(75.44%) lived in the rural areas those who lived in urban areas were 56(24.56%). This was statistically significant finding P value < 0.0001, Chi-square statistic (with Yates correction) = 116.01, Odds ratio= 9.434, 95% Confidence Interval: 6.158 to 14.452 (using the approximation of Woolf.)
The majority of serodiscordant couples (54.82%) had only primary education. Only a few couples 3.95%. had tertiary education.

Table 1. Socio –Demographic Characteristic

Age (n=228)	Number	Percentage
20-29years	45	19.73
30-39years	59	25.88
40-49years	66	28.94
750years	58	25.43
Mean age	40.5	
-Sex	(n=228)	
Female	159	69.73
Male	69	30.26
-Occupation	(n=228)	
Trader	91	39.91
Farmer	35	15.35
Artisan	12	5.26
Teacher	14	6.14
Civil servant	15	6.57
Diver	17	7.45
House wife	44	19.29
Professionals	0	0%
-Place of domicile	(n=228)	
Rural	172	75.44
Urban	56	25.58
-Level of Education	(n=228)	
Primary	125	54.82
Secondary	94	41.23
Tertiary	9	3.95
No formal Education	0	0

Table 2. showing symptoms at presentation, duration of diagnosis, setting of diagnosis and method of diagnosis

Symptoms at presentation	Number	Frequency
Persistent fever	101	44.29
Severe weight loss	48	20.05
Body rash	11	4.82
Severe Diarrhea	17	7.45
Others	24	10.52
Multiple symptoms	27	11.84
Method of Diagnosis		
Rapid	210	88.15
Elisa	27	11.84
Western blot	0	0
DNA PCR	0	0
RNA PCR	0	0
-Duration of Diagnosis		
1-2years	83	36.40
3-4 years	80	35.08
5years	20	8.77
<5 years	45	19.73
Mean = 3 years		
-Where Diagnosis was made		
ANC	36-	15.78
Screening	47	20.61
Clinic attendance	120	52.63
Others	25	10.96

Table 2, shows symptoms at presentation, duration of diagnosis, where diagnosis was made and method of diagnosis. The commonest symptom at presentation was persistent fever 44.29%,) while the least common symptom was rash (20.05%). About 11.84% of the patients presented with more than one symptom. The commonest method of diagnosis was

rapid test kit (88.15%). A large number of patients (36.40%) were diagnosed 2 years prior to this study while fewer number of patients were diagnosed in the past 5 years (8.77%) Most of the diagnosis were made during visit to medical clinics (52.63%) while a few others (10.96%) were discovered as they presented for blood donations or during preparation for surgery. The prevalence of HIV serodiscordance by gender (Table 3), showed that females had the higher prevalence of serdiscordance (25.24%) than males, 10.95%. Prevalence of HIV Serdiscordance by Age (Table 4) showed highest prevalence of HIV serodiscordance among the age range 20-29 years (44.11%) while the lowest was in patients >50 years (34.52%).

symptom at presentation were persistent fever while few patients presented with combination of symptoms like fever, weight loss and headache. This may be the causes of late presentation and commencement of antiretroviral drugs as these symptoms can also be seen in many other systemic diseases. The pattern of presentation also explains where most of the patients were diagnosed as they presented for medical treatment in the general out patient departments (GOPD). Some other patients never had any symptom and were only discovered during routine antenatal tests and some others in the process of trying to donate blood. A great number of patients were diagnosed in the past 2 years probably due to increasing awareness of HIV infection in the population.

Table 3. Prevalence of HIV serodiscordance by Gender

Gender	Number of couples With HIV	Number of seroiscordants	% prevalence
Male	630	69	10.95%
Female	630	159	25.24
Total	630	228	36.19

Table 4. Prevalence of HIV Serdiscordance by Age

Age	Couples with HIV	Serdiscordant couples.	% Prevalence
20-29	102	45	44.11
30-39	170	59	34.71
40-49	190	66	34.74
>50	630	228	36.19

DISCUSSION

The socio-demographic data shows that most of the patients were of the age group of 40-49 years with a mean age of 40.5 years. This was not consistent with study by CI Akani et al[6] Where the age range was found to be 21-30years. This difference may be as a result of different methods used, the setting of study and the number of patients studied. Trading was found to have the highest prevalence as the occupation of patients (39.91%) while the lowest prevalence was in professionals, teachers and civil servants. This is not unexpected because of the fact that ignorance or low level of education and poverty can increase the chances of HIV infection. The highest level of education of most patients was primary school (54.82%) while the lowest was tertiary education (3.95%). Most of the patients lived in the rural areas where the risk of HIV infection as a result of ignorance and poverty is high.

The serodiscordace prevalence in this study was 36.19% whilst some researchers had 52%, [6] 38.7%,[7] 16%,[8] and 54.7%.[9] Serodiscordance was found to be higher among females 159/228(69.73%) compared to males 69/228 (30.26%). This is in keeping with the study by CI Akani et al[6] where females accounted for the highest infection burden 32/52 (61.5%) compared to males 20/52 (38.5%) among those HIV-infected in sero-discordant relationship This may be as a result of early sexual debut of women, low social status of women, inability to negotiate safe sex by women, poverty of women, extramarital affairs, alcoholism, viral subtype, age and duration of marriage were seen as independent behavioural and sexual risk factors for HIV infection among spouses that were infected in serodiscordant relationships[6]. The commonest

Conclusion and recommendations

Females are more vulnerable to infection among discordant couples. We recommend risk-reduction behavior, empowerment of vulnerable groups, effective life planning skills as well as behavioral change among couples. Early partner testing and notification can avert seroconversion, hence properly designed and mainstreamed interventions that target serodiscordant couples are essential. Religious leaders in churches and Mosques must advise their adherents on the virtue of premarital HIV tests to avoid the pain of HIVserodiscordance.

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