IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals

Human Journals
Research Article
June 2017 Vol.:6, Issue:4

Post-Diagnosis Sexual Orientation and Practices of HIV-Positive Adult Clients Accessing Antiretroviral Treatment in a Public Tertiary Hospital in Nigeria

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Submission: 7 June 2017
Accepted: 12 June 2017
Published: 25 June 2017

HUMAN JOURNALS
www.ijsrm.humanjournals.com

Keywords: HIV-positive adult clients, antiretroviral treatment, Nigeria, post-diagnosis, sexual orientation, and practices.

ABSTRACT

Background: Current advancements in management, as well as the effectiveness of health care provisions to HIV/AIDS clients, could weigh on their reproductive decisions and the sexual behaviors they adopt. **Objective:** To assess the post-diagnosis sexual orientation and practices of HIV-positive clients attending the adult retroviral disease clinic in a public tertiary hospital in Nigeria.**Materials and Methods:** This was a descriptive cross-sectional study of 326 HIV-positive clients, selected using multistage sampling technique. Data were collected with the interviewer-administered semi-structured questionnaire and analyzed using statistical package for social sciences version 22. Chi-square test was used to identify statistically significant associations between variables. A p-value of ≤ 0.05 was considered significant. **Results:** One hundred and sixty-seven (51.2%) respondents had sex post-diagnosis, 79(47.3%) had sex in the last 12months, 41(24.6%) had multiple sex partners, while 38 (22.8%) had sex with the same gender. Of these sexually active 167 (51.2%), 135 (80.8%) reported disclosure of their HIV status to at least one of their sex partners, 132(79%) had their sex partners disclose their HIV status to them. There were statistically significant associations between gender and the ever had sex post-diagnosis (p=0.023); number of sexual partners (p=0.000); had sex in$\leq$12 months (p=0.000); sexual orientation (p=0.000) and use of condoms (p=0.000).**Conclusions:** This study revealed post-diagnosis risky sexual behaviors among the clients as well as associations between gender and this sexual orientation and practices. We recommend that ongoing counselling and education be integrated into HIV management strategies.

1. INTRODUCTION

Sexual orientation refers to patterns of emotional, romantic, and sexual attraction and sense of personal and social identity based on those attractions (1). Three kinds of sexual orientation exist along a continuum, with an exclusive attraction to the opposite sex (heterosexuality) on one end of the continuum, exclusive attraction to the same sex (homosexuality) on the other and attraction to the either sex (bisexuality) (1,2). Sexual orientation involves a person's feelings and sense of identity; it may or may not be evident in the person's appearance or behavior. People may have attractions to people of the same or opposite sex but may elect not to act on these feelings (2). For example, a bisexual may choose to have a monogamous (one partner) relationship with one gender and, therefore, elect not to act on the attraction to the other gender.

Sexual practices with potential risks such as unplanned pregnancies and sexually transmitted infections (STIs) including HIV are referred to as sexual risk behaviors (3). These practices include multiple sexual partnerships, non-use and inconsistent use of condoms. Non-disclosure of serostatus to sexual partners with its attendant social and public health problems remains a concern (4,5). Several studies had reported that risky sexual act with non-disclosure of serostatus to at least specific sexual partners is a common practice among people living with HIV/AIDS (PLWHAs) (4,5,6,7). Moreover, non-disclosure of HIV serostatus is a major barrier to HIV prevention as it gives room to further unsafe sex practices (8,9). Thus, notification of HIV serostatus to and among HIV-affected partners is a necessary first step in preventing the secondary transmission of HIV (10,11,12,13).

In late 2012, the number of PLWHA worldwide was 35.3 million, of whom 71% were living in sub-Saharan Africa where 75% of all AIDS-related deaths occurred in the same year (8, 14,15). Thus HIV pandemic has been reported as the most challenging public health problem in this region (14,15). Nigeria, for instance, has an HIV prevalence of 3% and ranks the second highest in the number of PLWHA globally (15). The prevalence of HIV/AIDS is increasing annually, sustained and propagated by new cases of infection which primarily results in sexual transmission from infected persons to uninfected susceptible persons (16,17,18,19). On the other hand, HIV infection may affect sexuality via fear of transmitting the infection to sexual partner(s) and or unborn children, feelings of guilt and shame aggravated by HIV-related stigma, or emotional or psychological distress, reducing desire for or interest in sexual relations and the desire to have children among this special group (20).

Nonetheless, the optimism in HIV/AIDS clients driven by the effectiveness of improved health care services using anti-retroviral therapy (ART), opportunistic infection prophylaxis and other health care packages (16,21). This has drastically reduced the tendency for social and emotional depression and paradoxically raises urge and sexual functions in sexually inactive HIV-infected adult clients (22). In addition, this with a significant reduction in the viral load, improvement in the quality of life, functional status and life expectancy of HIV-positive clients (23,24,25) could enhance risky sexual orientation and practices among this group if not well managed (23,25). Interventions against these problems can be made when clients come for their ART and clinical care follow-up.

It has been reported that PLWHA plays a key role in HIV prevention if they adopt safer sexual behaviors (19). Therefore, understanding the post-diagnosis sexual orientation and practices of PLWHA can provide useful insights to guide efforts in preventing further HIV transmission (25).This study provides timely data that will hopefully serve as the evidence base for counseling of HIV-positive clients on their sexual behaviors and development of intervention programs and for program evaluation. The objective of this study was to assess the post-diagnosis sexual orientation and practices of HIV-positive clients attending the adult retroviral disease clinic in a public tertiary hospital in Nigeria.

2. MATERIALS AND METHODS

2.1 Study setting

This study was conducted among HIV-positive adult clients attending ART clinic in Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi, a tertiary health institution owned by the Federal Government of Nigeria. The Hospital is a multi-complex comprising the main site at Nnewi, Guinness Eye Centre Onitsha, Trauma Centre Oba, Staff annex at Awka and three Comprehensive Health Centers at Ukpo, Neni and Umunya. The catchment areas span through Anambra State and her neighboring states –Delta, Enugu, Ebonyi, and Kogi. The main hospital site and all the CHCs offer comprehensive HIV/AIDs services under the FHI360 Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS).

2.2 Study Design:

This was a descriptive cross-sectional study of HIV-positive clients presenting at the adult ART clinic of the Nnamdi Azikiwe University Teaching Hospital, Nnewi.

2.3 Study Population

All registered HIV positive clients accessing care at the Nnamdi Azikiwe University Teaching Hospital, Nnewi, at the commencement of this study.

2.3.1 Inclusion Criteria: Eligible respondents were: All clients who have been diagnosed as being HIV positive for at least 12 months prior to this study; all HIV positive clients who have accessed care at the ART Clinic NAUTF Nnewi on at least three occasions; clients who give written informed consent for the study.

2.32 Exclusion Criteria: The following were excluded: Clients who were younger than 18 years, because they were not able to give a fully informed consent without assent from their parents or guardians; terminally ill and clients with gross cognitive dysfunction, because they might not be able to respond to the questions.

2.4 Sample size determination:

The sample size was determined using the Leslie Kish's formula for single proportions which stated (26). $n = Z^2pq/d^2$ where, Z = standard normal deviate set at 1.96 which corresponds to 95% confidence interval; p= proportion of a target population with expected proportion in population based on previous study= 74.6% = 0.746; (27) q= complementary proportion (1-p) =1- 0.746 =0.254;d= level of precision usually set at 0.05

$$n = \frac{1.96 \times 1.96 \times 0.746 \times 0.254}{(0.05)^2} = 291$$

Adjusting for nonresponse using the formula, adjusted minimum sample size, nf =N / (1-f)

Where, n = calculated sample size = 291; and f = non-response rate = 8.2% (27)

nf = 291 / (1 - 0.082) = 317. However, a total of 326 HIV-positive adult clients attending the ART clinic in NAUTH, Nnewi were recruited into the study.

2.5 Sampling Technique

Systematic random sampling technique was used to select clients from the clinic attendance registers of the adult clients in NAUTH Nnewi, which served as the sampling frame. Based on preliminary investigations, it was ascertained that the average monthly attendance of clients who have attained a minimum of 3 visits at the clinic was 2100.

Data collection was done over a period of one month. Hence the number 2100 was used as the sampling frame. Therefore, the sampling interval "k" will be calculated thus: K = Sampling frame/ Sample size = 2100/3. K=6.6, hence sampling interval will be approximated to 7. Thus, on every clinic day, simple random sampling by balloting was used to select the first client to be administered the questionnaire from the list of clients in the clinic attendance register. After selecting the first client, every 7th client was selected. If any client did not meet the inclusion criteria, the next client was selected. This process was continued until the calculated minimum sample size was obtained.

2.6 Data Collection

Data collection in this study was carried out using pre-tested, self-administered, semi-structured questionnaires developed from the review of relevant literature. All questions were written in English language and pre-tested on the similar set of respondents at the CHC Neni, Nigeria. This was done, to check for the reliability, validity, appropriateness of format, wording and time needed to fill the questionnaire. Thereafter the instruments were reviewed by colleagues, necessary adjustments and corrections were effected before administering the questionnaire to the study participants.

Data were collected by four trained research assistants carefully recruited from Community health extension workers at the Center along with the researcher. Pre-data collection training was done by the researcher in both English and Igbo languages over a period of two days. It included the purpose of the study, the format of the questionnaire, eligibility, and selection of respondents. The training emphasized respect for patients' confidentiality and included the basic definition of terms. The trained research assistants then took part in the pre-testing to help assess the success of the training. Data quality was ensured by regular supervision, spot checking and reviewing the completeness of questionnaires during data collection. The main domains of the study tool include socio-demographic characteristics, sexual behaviors of PLWHA, disclosure and HIV status of sexual partners and ART status. The socio-demographic details include age, gender, marital status, education, and a number of children living. Sexual behaviors enlisted include: whether PLWHA ever had sex post-diagnosis, had sexual intercourse in the past 12 months, a number of sexual partners, gender of sex partners and condom use. Disclosure and HIV status questions asked were; whether sexual partners were aware of HIV status of respondents, whether PLWHA knew the HIV status of their

sexual partners, the HIV status of the sexual partner and whether assistance was needed to disclose.

2.7. Data management and analysis

The data were edited and entered into the computer. Data cleaning was done by carrying out range and consistency checks. Descriptive and analytical statistics of the data were carried out using statistical package for social sciences (SPSS) Windows version 22.0 (28). Tests of statistical significance were carried out using Chi-square tests for proportions. A p value of < 0.05 was considered significant. Descriptive data were presented as simple frequencies and percentages.

2.8 **Ethical Consideration**

Ethical approval for the study was granted by the NAUTH ethical committee through the Head of the Community Medicine Department before the study was carried out. Permission was obtained from the appropriate authorities in the studied institution. Informed written consent of the respondents was also solicited and obtained for the conduct and publication of this research study. All authors hereby declare that the Helsinki principles of voluntary participation were followed.

3. RESULTS

Table 1 shows the socio- demographic characteristics of respondents. A total of 326 respondents participated in the study. The response rate was 100%. The modal age group 137(42.0%), was 30-39 years. There were more females 210(64.4%) than males, while 163(50.0%) were currently married, 270(82.9%) attained at least secondary level of education while 244 (81.3%) of them had at least four siblings.

Table 2 shows post-diagnosis sexual orientation and practices of respondents. One hundred and sixty-seven (51.2%) respondents had sex post- diagnosis, 79(47.3%) had sex in the last 12months, 41(24.6%) had multiple sex partners, while 38 (22.8%) had sex with the same gender, 3(1.8%) had sex with either gender. Only 39(49.4%) of these 79(47.3%) respondents used the condom consistently. The primary reasons for non- use of the condom, include: 21 (38.2%) both positive, 17(29.3%) desire for children, 12(20.7%) reduces pleasure.

Table 3: Knowledge of HIV status, disclosure and counseling cum HAART uptake among the self-reported sexually active study respondents. Of the 167 (51.2%) that had sex post-diagnosis, 135 (80.8%) reported disclosure of their HIV status to at least one of their sex partners, 132(79%) had their sex partners disclose their HIV status to them and of this, 94 (56.3%) were HIV positive, while of the 65(38.9%) that needed assistance to disclose their status, 42(64.6%) needed the help of a health worker to disclose their status, 19(29.2) were assisted by a family member and 4(6.2%) were assisted by a friend. About 271(83.1%) are on HAART.

Table 4 shows a relationship between gender and sexual practices of respondents. There were statistically significant associations between gender and the following variables: ever had sex post-diagnosis ($\chi 2$= 5.274, p=0.023); number of sexual partners ($\chi 2$= 11.186, p=0.000); had sex in≤ 12 months ($\chi 2$= 27.196, p=0.000); gender of sex partner ($\chi 2$= 18.837, p=0.000) and use of condoms ($\chi 2$= 16.798, p=0.000).

4. DISCUSSION

This cross-sectional descriptive study assessed the post-diagnosis sexual orientation and practices of HIV-positive adult clients accessing antiretroviral treatment in a public tertiary hospital in Nigeria. The index study showed that slightly more than half of the respondents that have had sex post-diagnosis, (47.3%) had sex in the last 12months, Studies in Kampala, Uganda, and South Ethiopia reported that (60-77.9%) of participants had sex in the aforestated duration (29,30). These variations might be due to geographic and socio- cultural differences of the study population.

From our findings, about a quarter (24.6%) of those that had sex since diagnosis, had multiple recent concurrent sex partners, This finding is in keeping with that reported in a study conducted in Botswana, which revealed that multiple sexual partnerships, many of which are probably concurrent, is common among sexually active PLWHA (5,31). Our study findings are also supported by evidence from empirical studies that had reiterated the place of multiple and concurrent sex partners in boosting HIV transmission (4,32).

Our study revealed that about two in every ten of those that had sex since diagnosis were homosexuals, while (1.8%) and (75.4%), were bisexuals and heterosexuals respectively This finding is in tandem with previous research findings here and elsewhere, that heterosexual sexual act accounts for the majority of HIV transmissions in Nigeria (8,33,34,35,36).

From our study, about half (49.4%) of those (47.3%) respondents had sex in the last 12months used condom consistently. This self-reported poor practice agrees with the findings of an analytical study of 300 PLWHA in South Eastern Nigeria. (37). Primary reasons for non-use of a condom, include: both partners are positive, desire for children, reduces pleasure. This is similar to findings of a study done in India where the reported prevalence of inconsistent condom use was attributed to the beliefs that condoms were unnecessary in HIV-positive seroconcordant relationships; lack of sexual satisfaction with condoms; the desire to have children among others (38). Efforts should be made to educate affected persons about reinfection/cross infection. Also, they should be guided on ways to go about having children while reducing reinfection/cross infection and even infecting the unborn child (38).

The current study examined respondents' disclosure of their HIV status to at least one of their sex partners. The proportion of PLWHA who had disclosed their HIV status to their sexual partners was (80.8%) of the 167 (51.2%) that have had sex since diagnosis, while (79%) had their sex partners disclose their HIV status to them. Our findings are comparable to those reported by studies conducted in Sub-Saharan African countries: 50.9% in Uganda (39), 70% in Zimbabwe (40), 72.1% in West Africa (Mali and Burkina Faso) (41) and 85.7% in South Ethiopia (42). Despite this, with the exception of participants tested in a research context, many individuals living in poor resource settings are not aware of their own and their partner's statuses (43). Hence there is a need to strengthen the capacity of health care services to lead a majority of the PLWHA to disclose their HIV status to at least one person they rely on. From our study, more than eighty percent of respondents are on HAART. Similar findings have been reported in Ethiopia. (44)

The index study found statistically significant associations between gender and the following variables, ever had sex since diagnosis, a number of sexual partners; had sex in≤ 12 months, a gender of sex partner and use of condoms. This finding is consistent with that of studies that reported that more male respondents have been found to engage in risky sexual acts than the females (45,46). Gender has been associated with condom use and the number of sex partners, as 56.9% of male participants reported having more than one sex partner compared to 43.1% for females (P=0.030) (47). Explanations for these findings could be observed gender variations in social controls, such as parental supervision (47), and liberal attitude towards negative sexual outcomes (48). A study elsewhere had revealed that males are more expressive of sexual issues than their female counterparts (46).

5. LIMITATIONS AND STRENGTH OF THE STUDY: This study is based on self-reporting behaviors, and the data is therefore subject to reporting errors such as underreporting and overreporting. Secondly, sexual behaviors may be affected by recall bias. These biases, however, may have been minimized by the self-administered nature of the survey and the anonymity entrenched in data collection. A major strength of this study is the high response rate (100%) achieved.

6. CONCLUSIONS

Our study examined trends in risky sexual behavior among the respondents. There were associations between gender and ever had sex since diagnosis, a number of sexual partners; had sex in≤ 12 months, a gender of sex partner and use of condoms. We recommend that there is need for a sustained and improved multi- sectoral approach in reproductive health education through formal comprehensive sex education and gender targeted behavioral change counselling to improve knowledge of HIV and reinforce positive living.

Source of Support or Funding None.

Competing Interests The authors declare that they have no competing interests.

Authors' Contributions: Authors **CNO** and **IAM** were involved in the implementation of the study, **ASN** and **ROO** were involved in the design and editing of the main paper, while **CCN** was involved in the analysis of data, interpretation of results and write-up of this study. All authors read and approved the final manuscript.

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Tables

Table 1: Socio- demographic characteristics of HIV-positive adult clients accessing anti-retroviral treatment in a public tertiary hospital in Nigeria, 2016.

Characteristics	Frequency N=326	Percentage (%)
Age(years)		
18-19	29	8.9
20-29	26	8
30-39	137	42
40-49	65	19.9
≥50	69	21.2
Gender		
Male	116	35.6
Female	210	64.4
Marital status		
Never married	47	14.4
Currently married	163	50
Divorced/separated	55	16.9
Widowed	61	18.7
Highest educational attainment		
None	7	2.1
Primary	49	15
Secondary	202	62
Tertiary	68	20.9
Number of children living		
None	56	17.2
1-2	58	17.8
3-4	154	47.2
≥5	58	17.8

Table 2: Post-diagnosis sexual orientation and practices of HIV-positive adult clients accessing antiretroviral treatment in a public tertiary hospital in Nigeria, 2016.

Post-diagnosis Sexual orientation and practices	Frequency	Percentage (%)
Ever had sex since diagnosis, (n=326)		
Yes	167	51.2
No	159	48.8
Total	326	100
Had sex in≤ 12 months, (n=167)		
Yes	79	47.3
No.	88	52.7
Total	167	100
Number of recent concurrent sexual partners, (n=167)		
Single	126	75.4
Multiple	41	24.6
Total	167	100

Gender of recent sex partners, (n=167)		
Same	38	228
Opposite	126	75.4
Either	3	1.8
Use of condoms, (n=167)		
Yes	109	65.3
No	58	34.7
Total	167	100
Pattern of condom use in the last		
12 months, (n= 79)		
Consistently	39	49.4
Occasionally	34	43.0
No response	6	7.6
Total	79	100
Primary reason for non- use of		
condom, (n=58)		

We are both positive	21	36.2
Desire for children	17	29.3
Reduces pleasure	12	20.7
Partner preference	5	8.6
Can't get condom	3	5.2

Table 3: Awareness of HIV status, disclosure and counseling cum HAART uptake among HIV-positive adult clients accessing antiretroviral treatment in a public tertiary hospital in Nigeria, 2016.

Characteristics	Frequency	Percentage (%)
Had disclosed their HIV status to specific sex partners (n=167)		
Yes	135	18.8
No	30	18
Do not know	2	1.2
Total	167	100
Specific partners disclosed their HIV		

status to respondents (n=167)		
Yes	132	79
No.	35	21
Total	167	100
HIV status of respondents' sex		
partners, (n =132)		
Positive	94	71.2
Negative	38	28.8
Total	132	100
Needed assistance to disclose HIV		
status to sex partner, (n=167)		
Yes	65	38.9
No	102	61.1
Source of assistance before		
disclosure, (n=65)		
Health worker	42	64.6

Family	19	29.2
Friend	4	6.2
Total	65	100
Ever been counselled (HCT), (n=167)		
Yes	141	84.4
No	26	15.6
Total	167	100
Respondents on HARRT, (n=326)		
Yes	271	83.1
No	55	16.9
Total	326	100

Table 4: Relationship between gender and sexual practices of HIV-positive adult clients accessing antiretroviral treatment in a public tertiary hospital in Nigeria, 2016.

Gender					
Sexual practices	**Male (%)**	**Female (%)**	**Total (%)**	**Test statistic**	**p value**
χ^2					
Ever had sex since diagnosis, (n= 326)					
Yes	49 (15)	118 (36.2)	167 (51.2)		

No	67 (20.6)	92 (28.2)	159 (48.8)	5.274, df=1	0.023*
Total	116 (35.6)	210 (64.4)	326 (100)		
Number of recent concurrent sexual partners, (n=167)					
Single	28 (16.7)	98 (58.7)	126 (75.4)		
Multiple	21 (12.6)	20 (12)	41 (24.6)	11.186, df=1	0.0003*
Total	49 (29.3)	118 (70.7)	167 (100)		
Had sex in≤ 12 months, (n=167)					
Yes	39 (23.3)	40 (24)	79 (47.3)		
No	10 (6)	78 (46.7)	88 (52.7)	27.196, df=1	0.000*
Total	49 (29.3)	118 (70.7)	167 (100)		
Gender of recent sex partner, (n=167)					
Same	21 (12.6)	17 (10.2)	38 (22.8)		
Opposite	26 (15.5)	100 (59.9)	126 (75.4)	18.837, df=2	0.000*
Either	2 (1.2)	1 (0.6)	3 (1.8)		
Total	49 (29.3)	118 (70.7)	167 (100)		
Use of condoms, (n=167)					

Yes	20 (12)	89 (53.3)	109 (65.3)		
No	29 (17.3)	29 (17.3)	58 (34.7)	16.798, df=1	0.000*
Total	49 (29.3)	118 (70.7)	167 (100)		

* Statistically significant association = $p \leq 0.05$