

# Retention in HIV care and its predictors among HIV-infected men who have sex with men in Plateau state, North Central Nigeria

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## ABSTRACT

**Background:** Retention in HIV care is the constancy of engagement in HIV treatment, care and support services which is essential to reducing morbidity and mortality associated with the infection as well as halting the development of resistance to antiretroviral therapy (ART). In most African countries, Nigeria inclusive, men who have sex with men (MSM) are major contributors to HIV/AIDS burden. HIV-positive MSM are generally understudied and mostly underserved due to social, political and legislation factors resulting in limited characterization and documentation of the existing health disparities particularly with regards to retention in HIV care. It was against this backdrop that we conducted this study to assess the level of retention in HIV care and its predictors among MSM linked to HIV care. **Methods:** A cross-sectional study conducted among 114 HIV-positive MSM in 2019 using interviewer-administered questionnaire. Data analysis was carried out using version 7 of Epi Info statistical software version 7 and a probability value of less than 0.05 used as the cut-off for drawing statistically significant conclusion. **Results:** The average age in years of the respondents was  $26.0 \pm 5.4$  while 43 (37.7%) of the participants were adequately retained in HIV care. Adequate retention in HIV care was found to be predicted by awareness of regular male partner's HIV status (AOR = 11.2; 95% confidence interval [CI] = 1.924–65.167) and financial difficulty (AOR = 0.1; 95% CI = 0.022–0.840). **Conclusions:** A suboptimal level of retention in HIV care was demonstrated in the study with awareness of male partner's HIV status and financial buoyancy as its main predictors.

**Keywords:** Continuum of care, HIV infection, MSM, Nigeria, predictors, retention in care

## Introduction

The burden of HIV/AIDS in sub-Saharan African countries is high with findings from studies indicating that men who have sex with men (MSM) are disproportionately affected and contributing significantly to HIV/AIDS burden.<sup>[1-3]</sup> Additionally, the risk of HIV infection among the MSM population is high compared to the general population due to some biological,

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behavioural and structural vulnerabilities and if compounded by stigma, discrimination, violence and criminalization is likely to negatively impact retention and continuum of HIV care.<sup>[4-6]</sup> Retention in HIV care is the constancy of engagement in HIV treatment, care and support services which is essential to reducing morbidity and mortality associated with the infection as well as halting the development of resistance to antiretroviral therapy (ART).<sup>[7-10]</sup> It has been reported that only 60% of a cohort on ART across 13 African countries were retained in care after 2 years of enrolment.<sup>[11]</sup> This alarming rate of attrition underscores the importance of a good understanding of the concept and predictors of retention in HIV care in the general population but more importantly among the MSM.<sup>[10,12]</sup> In most African countries, Nigeria inclusive, HIV-positive MSM are understudied and mostly underserved due to social, political, legislation and health institutional related factors resulting in limited characterization and documentation of the existing health disparities particularly with regards to access and retention in HIV care.<sup>[8,9,13,14]</sup> It was against this backdrop that we conducted this study to assess the level of retention in HIV care and its predictors among MSM linked to HIV care in Plateau state with the view of providing relevant information significant enough to stimulate actions and drive home-grown policies.

## Methodology

### Study location

We conducted this study in Plateau state, Nigeria, with a population of 3.2 million people.<sup>[15,16]</sup> There is a well-established MSM network in the state with viable and functional smaller units as well as an HIV support group which is not health facility affiliated. The MSM network had an estimated membership of 150 persons living with HIV and linked to HIV care in health facilities within and outside the state. The HIV-infected MSM constitute the membership of non-facility-based HIV support group within the MSM network.

### Study participants

All HIV-positive MSM linked to HIV care in any health facility and affiliated to the existing non-health facility HIV support group constituted the study population.

### Design of the study

The design of this study was cross-sectional and conducted 2019 to assess the level of retention in HIV care and its predictors among HIV-positive MSM linked to care.

### Estimation of study sample size

The formula for a cross-sectional study was used to estimate the sample size with its component part consisting of the 95% confidence interval (CI) set at 1.96, level of accuracy at 0.05 and the proportion of MSM retained in HIV care from another study which was 82.3% (0.823).<sup>[17,18]</sup> A sample size of 224 was arrived but in view of the fact that the estimated population of HIV-infected MSM from support group documentation was less

than 10,000. Hence, correction for finite population was applied using the appropriate formula<sup>[19]</sup> giving a minimum sample size of 93 HIV-infected MSM linked to HIV care.

### Criteria for inclusion in the study

All HIV-infected MSM affiliated to the HIV support group within the MSM network in the state who were 18 years and above, linked to HIV care within the last 12 months preceding the study as documented in the support group register, were eligible for participation. However, excluded from the study comprised those who were either sick or out of town for the duration of the study.

### Technique of sampling of the participants

Respondent-driven sampling approach was employed in recruiting consenting eligible MSM into the study.<sup>[20]</sup> Eligible HIV-infected MSM were recruited into the study through the identified MSM network and HIV support group coordinators who were well regarded by their peers and influential within their networks. This was done in the course of their contacts with the HIV-infected members during meetings and social visits. A preliminary list of eligible HIV-infected MSM who had met inclusion criteria was compiled by these coordinators using the HIV support group documentation on diagnosis, drug pick and linkage to care. This list formed the frame from which the respondents were sampled and the process continued until a saturation point was reached, where all consenting eligible respondents had been sampled and no respondent was gotten for a 1-month period.

### Collection of data

Data were collected through an interviewer's administration approach using an adapted data collection instrument.<sup>[21]</sup> Three identified MSM network coordinators had training on the study protocol including the questionnaire for a day by the researcher in their designated location of choice. Proper translation and back translation of the questionnaire to Hausa were done by different persons competent and vast in language translation. The relevant component part of the questionnaire was pretested among HIV-infected persons accessing HIV care in one of the comprehensive HIV treatment sites in the state. This enabled estimation of the time of administration of the tool, correction of any ambiguity and assessment the face validity of the tool. Overall Cronbach alpha reliability assessment of the questionnaire was done using SPSS software with a Cronbach alpha score of 0.84 obtained. Prior to the administration of the questionnaire, informed consent was elicited and documented from all the respondents.

### Grading of responses

Explanatory variables in this study were categorized as demographic characteristics of the respondents, the sexual behaviours and enabling factors. The outcome measure of the study was the level of retention in HIV care categorized as adequate as well as non-adequate. Retention in HIV care was adjudged as adequate if the respondents consistently keep his

clinic appointments for six consecutive months prior to the time of study.<sup>[19,21,22]</sup>

### Analysis of data

Version 7 of Epi Info statistical software was used for the analysis of data. Descriptive statistical analysis was carried out on quantitative variables such as age of the respondent, age at first same and/or heterosexual experience with mean and standard deviation used as summary indices once the assumptions of normality had been fulfilled. Other explanatory variables such as marital status, sexual orientation, family history of same-sex orientation, smoking, alcohol and others substance use were presented in frequency table expressed in frequencies and percentages. The primary outcome variable expressed as adequate and non-adequate retention in HIV care was presented in frequency and percentage. A stepwise model approach to logistic regression used in determining the predictors of the outcome variable. Binary logistic regression was applied to each of the explanatory variables; any variable with a probability value of less than 0.50 was set aside and fed into the multiple logistic regression model. The 0.50 value was picked as a cut-off so as to allow for a significant number of variables to be available for sufficient interaction in the model. Factors were then fed into the model cumulatively but step-wisely with sociodemographic factors fed in first followed by the sexual behavioural factors and then the factors categorized as enabling factors allowing for the factors to be adjusted for one another. The effects of the explanatory variables on the outcome variable were quantifiable using odds ratio while a probability value of less than 0.05 used as the cut-off for drawing statistically significant conclusion.

### Ethical clearance

Ethical approval was obtained from the institutional review board of The Jos University Teaching Hospital for this study (JUTH/DCS/ADM/127/XXVIII/1180).

## Results

One hundred and fourteen HIV-infected MSM linked to HIV care participated in this study. Majority (81.6%) of the respondents were 30 years or less with an average age of  $26.0 \pm 5.4$  years. With regards to the marital status of the studied participants, 105 (92.1%) were single while the remaining 7 (6.1%), 2 (1.8%) were married and separated, respectively. Seventy-three (64.0%) of the respondents were strictly homosexuals while 41 (36.0%) were bisexuals. Furthermore, the average age at same-sex sexual debut was  $19.1 \pm 5.1$  years with 46 (40.4%) debuting same sex before the age of 18 years. Slightly above a third (35.1% and 36.8%) of the MSM had a family history of same sexual orientation and being employed in paid jobs, respectively [Table 1].

Slightly above two-thirds (77.2%) of the respondents had been diagnosed with HIV infection for a period of 5 years and less while less than a third (21.9%) of the study participants knew the HIV status of their regular male partners as well. Importantly,

71 (62.3%) were not adequately retained in HIV care. The odds of retention in HIV care among the respondents who were aware of their regular male partner's HIV status was 11.2 times compared to those who did not know (95% CI = 1.924–15.167) after adjusting for all other factors in the model. Furthermore, financial difficulty was also found to be a predictor of adequate HIV care retention as the odds of being retained in care among those with financial difficulties were 0.1 times compared to those without financial difficulties after holding all other factors in the model constant [Table 2].

## Discussion

The level of retention in HIV care among the respondents was poor with almost two-thirds not being adequately retained in care. The finding of this study shares similarities with what was obtained in another study conducted in the United States of America where less than half of the subjects studied were retained in HIV care.<sup>[23]</sup> This similarity further reiterates the fact that retention in HIV care could have more behavioural influence than geographical variation.

**Table 1: Respondents' characteristics and level of retention in care**

Variable	Frequency	Percentage n=114 Mean±standard deviation
Age (years)		
≤30	93	81.6
31 and above	21	18.4
Mean age		26.0±5.4 years
Marital status		
Single	105	92.1
Married	7	6.1
Separated	2	1.8
Sexual orientation		
Homosexual	73	64.0
Bisexual	41	36.0
Age at same-sex debut (years)		
<17	46	40.4
≥18	68	59.6
Mean age at same-sex debut		19.1±5.1 years
Family type		
Monogamy	41	36.0
Polygamy	73	64.0
Family history of same-sex orientation		
Absent	74	64.9
Present	40	35.1
Highest level of education attained		
Primary	8	7.0
Secondary	62	54.4
Tertiary	44	38.6
Employment status		
Employed in paid job	42	36.8
Not employed	72	63.2
Level of retention in HIV care		
Adequate	43	37.7
Nonadequate	71	62.3

**Table 2: Factors predicting retention in HIV care**

Factors	Odds ratio <sup>+</sup> (95% CI)		Odds ratio (95% CI)		
	Step 1	Step 2	Step 3	Step 4	
Characteristics frequency (%)					
Age (years 31 and above)					
93 (81.6)	0.2 (0.006-0.926)	0.2 (0.060-1.013)	0.2 (0.034-0.987)	0.1 (0.005-1.504)	
≤30 21 (18.4)	1	1	1	1	
Family type					
Monogamy 41 (36.0)	0.6 (0.265-1.529)	0.6 (0.257-1.603)	0.8 (0.292-2.153)	0.7 (0.160-2.848)	
Polygamy 73 (64.0)	1	1	1	1	
Sexual orientation					
Homosexual 73 (64.0)	1.9 (0.755-4.912)	1.7 (0.646-4.623)	1.2 (0.419-3.535)	1.1 (0.248-5.132)	
Bisexual 41 (36.0)	1	1	1	1	
Family history of same-sex orientation					
Absent 74 (64.9)	0.2 (0.095-0.657)	0.3 (0.092-0.807)	0.5 (0.156-1.673)	1.3 (0.173-9.832)	
Present 40 (35.1)					
Pattern of substance use					
Cigarette smoking					
Yes 42 (36.8)	-	0.9 (0.353-2.248)	0.9 (0.308-2.591)	1.3 (0.288-6.089)	
No 72 (63.2)		1	1	1	
Alcohol use					
Yes 24 (21.1)	-	0.5 (0.162-1.725)	0.5 (0.181-1.842)	1.2 (0.083-17.311)	
No 90 (78.9)		1	1	1	
Injection drugs use					
Yes 18 (15.8)	-	0.4 (0.078-2.457)	0.2 (0.017-1.706)	0.1 (0.002-1.679)	
No 96 (84.2)		1	1	1	
Sexual Behaviours					
Engagement in transactional sex					
Engaged 51 (44.7)	-	-	1.1 (0.378-3.108)	1.2 (0.273-1.602)	
Not engaged 63 (55.3)			1	1	
History of other STIs					
Positive 78 (68.4)	-	-	1.2 (0.424-3.352)	2.1 (0.426-10.168)	
Negative 36 (31.6)			1	1	
Number of same-sex sexual partners					
Two or more 97 (85.1)	-	-	0.3 (0.078-1.62)	0.2 (0.016-1.895)	
One 17 (14.9)			1	1	
Enabling factors					
Duration of HIV Diagnosis					
6 years and above 26 (22.8)	-	-	-	0.5 (0.049-5.983)	
≤5 years 88 (77.2)				1	
Awareness of regular male partner's HIV status					
Yes 25 (21.9)	-	-	-	11.2 (1.924-15.167)*	
No 89 (78.1)				1	
Perception of being healthy enough to discontinue HIV care					
Yes 26 (22.8)	-	-	-	1.0 (0.209-4.837)	
No 88 (77.2)				1	
Awareness of death of any HIV-infected MSM following discontinuation of HIV care					
Yes 56 (48.2)	-	-	-	0.1 (0.015-0.688)*	
No 58 (51.8)				1	
Discrimination by caregivers					
Yes 27 (23.7)	-	-	-	0.6 (0.081-4.200)	
No 87 (76.3)				1	
Financial difficulty					
Yes 18 (15.8)	-	-	-	0.1 (0.022-0.840)*	
No 96 (84.2)				1	
Fear of rejection					
Yes 14 (12.3)	-	-	-	0.4 (0.055-3.263)	
No 100 (87.7)				1	

Odds ratio=Adjusted odds ratio; CI=confidence interval; \*statistically significant. Odds ratio+ = Crude odds ratio

Similar studies conducted among MSM in the African continent, including Nigeria, found a much higher level of retention in HIV care when compared to ours in that regard.<sup>[8,18,24,25]</sup> This variation could be attributable to that fact HIV care and service delivery

system in Nigeria may not be MSM friendly particularly in the face of an existing legislation criminalizing same-sex act and low level of social acceptance. Also, the difference in the timeline employed in the assessment of constancy of care could also be adduced as a reason. Furthermore, these variations could also be attributable to the fact the structure of HIV treatment, care and support services for MSM vary between the study settings with the Nigerian settings not particularly structured to addressing the peculiar healthcare needs of HIV but structured for the general population.

Findings of other studies conducted in United States of America revealed better levels of retention in care than what was obtained in this study.<sup>[26-29]</sup> The discordance of findings between these studies could have cultural, healthcare system and gay right policy undertone as these important entities vary along the divides of the settings where the studies were conducted. More so in Nigeria, the negative impact of stigmatization and low level of acceptability of same-sex sexual orientation in retention in HIV care could be implicated. Furthermore, primary care represents the first level of healthcare accessible to the populace bring to light the utmost importance of the primary care physicians as key players in providing the needed information and treatment support to promoting retention in care particularly among the MSM and other key population, especially in settings where stigma and discrimination still exist towards the key affected population.

Awareness of male partners HIV status, financial buoyancy and awareness of death of a member of the MSM network who discontinued treatment were significant predictors of adequate retention in care. Others studies found a variety of predictors of HIV care retention such as access to relevant information on HIV, health insurance coverage, membership of HIV related organization, financial difficulty, availability social support, favourable experience with healthcare providers, younger age, receiving care at primary healthcare facility, World Health Organization stage of the disease, substance use, medication side effects, stigma and discrimination among others.<sup>[18,21,24,28-33]</sup>

The diversity of predictors of HIV care retention among MSM as highlighted in our study and other related studies further corroborates the need to contextualize interventions targeted at improving retention in care within the socio-cultural and political systems of the settings. Additionally, this study was conducted within the network of MSM in the community, thereby limiting its ability to assess the contributions of health institutional factors to retention in HIV care thereby paving way for other studies to incorporate both end users (MSM) and health institutional components. The study has brought to light that the level of retention in HIV care among the MSM is far from the expected in achieving positive treatment outcomes while predictors such as awareness of male partner's HIV status and financial buoyancy identified. Therefore, institutionalization of evidence-based interventions targeted at improving retention in HIV care among MSM in this setting and globally would require the use of setting specific identified predictors as pillars upon which home-grown interventions should be hinged on.

## Conclusions

A suboptimal level of retention in HIV care was demonstrated in the study with awareness of male partner's HIV status, financial buoyancy and awareness of demise of an HIV-infected member of the MSM network who discontinued treatment as its predictors.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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