

RESEARCH ARTICLE

Correlates of retention in HIV care among homosexual and heterosexual men: a comparative study

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Abstract

Background: Globally, men who have sex with men (MSM) have a disproportionately high HIV burden compared with heterosexual men. In Nigeria, the HIV seroprevalence rate among MSM has steadily increased, threatening progress towards ending the epidemic.

Objective: This study, therefore, determined and compared the correlates of retention in HIV care among MSM and heterosexual men in Ibadan, Nigeria.

Method: A prospective study of 650 HIV-positive men was conducted. Respondent-driven sampling was used to select 160 HIV-positive MSM, while convenience sampling was used to select 490 HIV-positive heterosexual men from antiretroviral treatment (ART) clinics in Ibadan. All respondents were over 18 years old and ART-naïve. Data were collected using a semi-structured, interviewer-administered questionnaire and a clinical pro forma to track retention over 24 months. Descriptive analysis and a binomial regression model were performed at $\alpha = 0.05$. Adjusted Risk Ratios (ARRs), defined as the ratio of outcome probabilities between groups after adjustment for confounders, were estimated from the regression model.

Result: The mean ages of heterosexual men and MSM were 43.1 ± 8.67 and 26.4 ± 5.82 years, respectively. Retention at 24 months was significantly higher among heterosexual men (87.6%) than MSM (68.1%) ($P < 0.001$). Heterosexual men were more likely to be retained if they had two or more wives (ARR): 1.19, 95% CI: 1.09–1.30), lived with a spouse (ARR): 1.23, 95% CI: 1.07–1.43), and had good knowledge of HIV (ARR): 1.16, 95% CI: 1.10–1.25). HIV-positive MSM who discussed HIV/AIDS with health workers/peer educators in the last 12 months ((ARR): 4.85, 95% CI: 4.17–5.63) and had a positive attitude to HIV (ARR): 6.14, 95% CI: 4.12–9.15) were more likely to be retained.

Conclusion: Having social relationships, good knowledge of HIV and a positive attitude to HIV influenced retention in care. HIV programmes need periodic outreach education to address HIV knowledge gaps deterring retention among heterosexual men, while integrating peer support and counselling is recommended to reduce internalised stigma and improve attitude among MSM.

Keywords: antiretroviral treatment; correlates; heterosexual men; men who have sex with men; retention in HIV care

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Men who have sex with men (MSM) and heterosexual men have been reported to have higher mortality rates from HIV due to delayed treatment initiation [1]. MSM refers to men who engage in sexual activity with other men, regardless of their sexual orientation or self-identification. This population is at increased risk of HIV and other sexually transmitted infections (STIs) [2]. Despite the high HIV burden among MSM, their treatment-seeking behaviour is poor [3]. Globally, studies have shown that it is difficult for MSM and heterosexual men to seek the

required healthcare and be retained in HIV care and treatment. This is because of multifaceted predictors, including stigma and poor treatment-seeking behaviour. The criminalisation of same-sex relations and societal disapproval negatively impact MSM's ability to access healthcare [3, 4].

In sub-Saharan Africa, heterosexual transmission remains the primary mode of HIV transmission, but there has been increasing recognition of the role of MSM in HIV transmission dynamics with risks of onward HIV transmission to both male and female sexual partners [5, 6].

Anal sex plays a significant role in the HIV transmission dynamics [7, 8]. Despite the expansion in HIV treatment and prevention programmes in Nigeria, MSM still do not have access to the testing and treatment services needed to reduce the spread of the HIV epidemic, which has been on the increase [9]. Different barriers to accessing HIV testing, linkage to care, and treatment retention are experienced by MSM and heterosexual men, which could lead to an increase in HIV transmission rates, higher mortality, and a greater burden on the already strained healthcare system [10]. Addressing these barriers experienced by MSM and heterosexual men is crucial to ensure equitable access to treatment and promote retention in treatment for all, which is also essential to achieve the UN 95-95-95 target and Sustainable Development Goals (SDGs) [11].

A comparative analysis is therefore essential to identify the barriers that need to be addressed, due to the dearth of data on HIV testing, timely linkage to care, and retention in HIV care in many low-income countries. This information is essential for viral suppression among both MSM and heterosexual men. Understanding the factors associated with retention in care will also inform the design and implementation of targeted interventions to improve HIV treatment outcomes, reduce HIV transmission, and ultimately contribute to the national goal of ending the AIDS epidemic in Nigeria. This study aims to determine and compare correlates of retention in HIV care among MSM and heterosexual men in Ibadan, Nigeria. It will also identify factors associated with the HIV care retention rate among both groups of men.

Methodology

Study area

Oyo State is an inland state in South-West Nigeria. Its capital is Ibadan, a major metropolitan centre with a large and diverse population [12]. Oyo State, particularly Ibadan, plays a pacesetter role in healthcare delivery in Nigeria, making it an appropriate setting for this study. Furthermore, MSM have been reported in the state since 2010 with a steady rise in HIV prevalence, putting it at 37%, which is the highest across states in Nigeria [9]. Presently, 1,791 facilities in the state offer different HIV services, including HIV Testing Services (HTS), Prevention of Mother to Child Transmission of HIV (PMTCT) and antiretroviral treatment (ART) [13].

Study design

This study employed a prospective design over a period of 24 months to assess retention in HIV care among HIV-positive MSM and heterosexual men in Ibadan, Nigeria.

Study population

The study population was divided into two categories: (1) HIV-positive heterosexual men and (2) HIV-positive MSM. For the HIV-positive heterosexual men, only men who were 18 years or older, who resided in Ibadan, could communicate in English, Pidgin, or Yoruba, and had never received antiretroviral (ARV) medication before, were included in the study. MSM were defined as men who had engaged in oral or anal sex with other men in the past 12 months preceding the study and possessed a recruitment coupon (three coupons were issued per participant; this helped prevent the emergence of 'super-recruiters' and maintain a broader recruitment base). Participants who were too ill to participate, or were already on ARV medication, or declined to consent were excluded. MSM who did not have a recruitment coupon were also excluded.

Sample size determination

The sample size was calculated using the formula for longitudinal studies with N time points to compare two proportions [14]. At 95% precision ($Z = 1.96$), power of study ($Z_{\beta} = 0.84$), 5% level of significance (α^2), $P = (0.55)$ using the proportion of ART (55.4%) retention by HIV-positive key population (KP) (including MSM) from a study in Benue State, Nigeria [15], and non-prevalence ($q = 0.59$), a minimum sample size of 160 respondents in each group was estimated. A total of 650 participants were included in the study, comprising 160 MSM and 490 heterosexual men. A ratio of about 1:3 was used to ensure population representativeness of the population, increase statistical power for within-group analyses, and ensure sufficient sample size throughout the longitudinal follow-up. It allowed for the capture of heterogeneity, accounting for a potentially greater diversity within the heterosexual men population.

One hundred and sixty HIV-positive MSM were selected using respondent-driven sampling (RDS), a chain-referral sampling technique effective in reaching hidden populations [16, 17]. While 490 HIV-positive heterosexual men were selected through convenience sampling from an ART facility in Ibadan, Nigeria. The study was conducted at a KP-friendly facility and an ART facility to ensure a diverse and representative sample.

Study instrument

The data-collection tool was a semi-structured interview-administered questionnaire adapted from the integrated bio-behavioural sentinel survey instrument of the Federal Ministry of Health, Nigeria [18]. The questionnaire obtained information on behavioural and biological factors that influenced retention in HIV treatment. Section A obtained information on the socio-demographic characteristics of respondents, including age,

sexual orientation, ethnicity, level of education, religious affiliation, length of stay in the community, employment status, monthly income, and social habits (alcohol use). Section B focused on the social relationships of the respondents, including their family structure. It had questions on their marital status, number of children, number of wives, and girlfriends. Section C obtained information on their sexual history. It explored age at sexual debut, age of partner at sexual debut, circumstances around sexual debut, condom use during sex, and types of sexual partners in the last 12 months. Section D assessed MSM behaviour, and we performed an RDS analysis. This section obtained information on RDS network analysis (how many MSM were known by the respondents, the number and types of sexual partners, and sexual risk behaviour). Section E elicited information on knowledge and attitudes on HIV/AIDS. The section addressed the mode of HIV transmission, prevention strategies, and perceptions of individuals living with HIV/AIDS. Section F contained questions on exposure to HIV interventions, such as contact with outreach workers/health-care providers, and interventions provided. A clinical proforma was used to track retention for 24 months.

Data collection

Data were collected using semi-structured questionnaires administered by trained interviewers to assess factors influencing retention in HIV care. The questionnaires were designed to capture behavioural and biological information (HIV testing and follow-up for 24 months). The data-collection process was conducted in a confidential, non-judgmental manner to ensure the accuracy and reliability of responses. A clinical proforma was used to

track retention over 24 months. The collection of behavioural (questionnaire) and biological (HIV testing) results, along with a 24-month follow-up period, was linked using unique identification numbers, enabling the examination of potential behavioural factors associated with retention in care.

Study variables

The study included both dependent and independent variables, which were categorized into different sections (Table 1).

Data analysis

Data analysis was conducted using Stata 17. Descriptive statistics were done to summarise the socio-demographic characteristics and other explanatory variables. The chi-square test was used to compare the proportion of participants retained in care at 24 months between HIV-positive heterosexual men and HIV-positive MSM. The chi-square test also tested for associations between different independent variables (socio-demographic characteristics, sexual behaviour) and the dependent variable (retention in care) among heterosexual men and MSM. A binomial regression model was used to determine predictors of retention in care among both groups. A *P*-value of ≤ 0.05 was considered standard for significance.

Ethical considerations

This study was conducted following the ethical principles outlined in the Helsinki Declaration and relevant national guidelines. Ethical approval for this research was obtained from the Oyo State Ethical Review Committee at the Ministry of Health (Reference Number:

Table 1. Study variables

Variable type	Sections	Variables/Measures
Independent	Socio-demographic	Age, Sexual orientation (bisexual, homosexual, heterosexual), Ethnicity (Yoruba, Igbo, Hausa), Educational attainment (none, primary, secondary, tertiary), Religious affiliation (Christian, Muslim, others), Marital status (single, married), Income (<₦20,000, ₦20,000–₦50,000, >₦50,000)
	Social habits	Frequency of alcohol use (every day, occasionally, never)
	Social relationships	Ever been married (yes/no), Marital status (single, married, divorced/separated/widowed), Number of wives (none, one, ≥ 2), Number of girlfriends (none, one, ≥ 2), Children (none, one, ≥ 2)
	Sexual behaviour	Age at sexual debut (<18, ≥ 18), Age difference at sexual debut (≥ 10 , <10, same age), Circumstances around sexual debut (consensual, raped), Use of condoms in the last 1 month (yes/no)
	MSM behaviours	Number of known MSM, Location of known MSM (RDS analysis), Age of known MSM (≥ 15 , <15), Transactional sex (yes/no), Paying and non-paying partnerships (yes/no), Partners' use of alcohol (yes/no), Sexual acts with other men (yes/no), Current number of sexual partners (<5, ≥ 5), Duration of knowing partner (1–6, 7–12, >12 months), Concurrent multiple sexual partnerships (yes/no)
	HIV/AIDS knowledge & attitudes	Exposure to intervention: Sources of HIV information from outreach workers/health care providers (yes/no)
Dependent	Retention in HIV Care	Treatment continuity measured by retention at 6, 12, 18, and 24 months post-ART initiation; determined by medication pickup dates and current treatment status (yes/no)

MSM: men who have sex with men; RDS: respondent-driven sampling; ART: antiretroviral treatment.

AD13/479/90/109^b). All potential participants were provided with a detailed explanation of the study's objectives, procedures, potential risks, benefits, and their rights as participants before inclusion in the study. This information was conveyed through written information sheets and verbal explanations by trained research assistants. Participants were allowed to ask questions and seek clarification before participation. Informed consent was voluntarily given by all participants before any data collection commenced. Participants were assured of the strict confidentiality of their responses. All data collected were anonymised by use of unique identification codes and stored securely on a password-protected database to protect their privacy.

Furthermore, participants were informed of their right to withdraw from the study at any time without any

consequences or prejudice to their access to healthcare services. The research team adhered strictly to the approved ethical protocols throughout the study to ensure the well-being and rights of all participants were protected.

Results

Profile of HIV-positive heterosexual men and HIV-positive MSM

A total of 662 respondents were HIV-positive, of which 490 were heterosexual men, while 160 were MSM. Of the HIV-positive MSM, 12 were excluded from the study as they were on ARV. Sixty-six per cent of homosexual men with HIV were under the age of 30 years, and 66.9% had tertiary education and above compared to 7.1 and 35.9% of heterosexual men, respectively (Table 2). Other

Table 2. Socio-demographic characteristics of HIV-positive heterosexual men and HIV-positive MSM

Variables	HIV positive heterosexual men (n = 490)	HIV positive MSM (n = 160)
	n (%)	n (%)
Age group (years)		
Less than 20	0 (0)	27 (16.9)
20–29	35 (7.1)	79 (49.4)
30–39	140 (28.6)	42 (26.3)
40–49	204 (41.6)	12 (7.5)
50+	111 (22.7)	0 (0.0)
Age mean (mean ± SD)	43.1 ± 8.67	26.4 ± 6.79
Ethnicity		
Yoruba	280 (57.2)	113 (70.6)
Igbo	104 (21.2)	40 (25.0)
Hausa	94 (19.2)	7 (4.4)
Others*	12 (2.4)	-
Level of education		
Below secondary education	147 (30.0)	8 (5.0)
Secondary education	167 (34.1)	45 (28.1)
Tertiary education and above	176 (35.9)	107 (66.9)
Average, monthly income (₦) Median (IQR)	30,000 (20,000, 45,000)	20,000 (10,000, 30,000)
Mean ± SD	38460.61 ± 26998.99	23643.75 ± 27784.51
Religion		
Christianity	280 (57.1)	133 (83.1)
Islam	210 (42.9)	27 (16.9)
Length of stay in the community (years)		
Median (IQR)	20 (14, 30)	19 (10, 22)
HIV knowledge score		
Good	276 (56.3)	105 (65.6)
Poor	214 (43.7)	55 (34.4)
Mean (SD)	19.7 ± 2.7	20.5 ± 3.6
HIV attitude score		
Positive attitude	169 (34.5)	135 (84.4)
Negative attitude	321 (65.5)	25 (15.6)
Mean (SD)	35.37 ± 3.64	38.46 ± 3.81

MSM: men who have sex with men.

Table 3. Social relationships among HIV-positive heterosexual men and HIV-positive MSM

Variables	HIV positive heterosexual men (n = 490)	HIV positive MSM (n = 160)
	n (%)	n (%)
Marital status		
Single	35 (7.1)	145 (90.6)
Currently married	383 (78.2)	12 (7.5)
Widowed/divorced/separated	72 (14.7)	3 (1.9)
Number of child (ren)		
None	54 (11.0)	142 (88.7)
One	89 (18.2)	-
2 or more	347 (70.8)	18 (11.3)
Living arrangement		
Parents	7 (1.4)	82 (51.2)
Spouse	361 (73.7)	12 (7.5)
Friend/Sexual partner	76 (15.5)	38 (23.8)
Alone	46 (9.4)	28 (17.5)
Number of wives		
None	65 (13.3)	144 (90.0)
One	289 (59.0)	16 (10.0)
Two and more	136 (27.7)	-
Number of girlfriends		
None	137 (28.0)	36 (22.5)
One	260 (53.0)	95 (59.4)
2 or more	93 (19.0)	29 (18.1)
Self-reported alcohol use frequency		
Everyday	22 (4.5)	-
At least once a week	129 (26.3)	10 (6.2)
Occasionally	277 (56.5)	55 (34.4)
Never	62 (12.7)	95 (59.4)
Health education in the last 12 months		
Yes	490 (100.0)	135 (84.4)
No	-	25 (15.6)

MSM: men who have sex with men.

comparative demography of both groups, including attitude to HIV, is shown in Table 2. Ninety per cent of HIV positive homosexual men were single, and 88.7% were childless compared to 7.1 and 11% of heterosexual HIV positive men, respectively (Table 3). Other social factors are presented in Table 3.

Distribution of sexual behaviour among HIV-positive heterosexual men and HIV-positive MSM

Twenty-nine per cent of HIV-positive heterosexual men had sex before the age of 18, and only 31.4% had used a condom in the previous year compared to 66.2 and 95.4% of homosexual men, respectively (Table 4). Of note, 90.6% of heterosexual men and 96.9% of homosexual men had had anal sex in the previous year (Table 4). Other comparative sexual behaviours are shown in Table 4.

Retention in HIV care among HIV-positive heterosexual men and HIV-positive MSM

The majority (82.9%) of HIV-positive respondents were retained in HIV care, but this was significantly higher in HIV-positive heterosexual men (429/490; 87.6%), compared to HIV-positive MSM (110/160; 68.8%) ($P < 0.001$).

Predictors of retention in HIV care among HIV-positive heterosexual men and HIV-positive MSM

The predictors of retention in HIV care among HIV-positive heterosexual men and HIV-positive MSM are reported in Tables 5 and 6. Heterosexual men were significantly less likely to be retained in HIV care if ≤ 25 years (ARR: 0.29, 95% CI: 0.23–0.35), from other ethnicities apart from Yoruba (ARR: 0.22, 95% CI: 0.10–0.45) and had never been married (ARR: 0.88, 95% CI: 0.80–0.97).

Table 4. Distribution of sexual behaviour among HIV-positive heterosexual men and HIV-positive MSM

Variable	HIV positive heterosexual men (n = 490)	HIV positive MSM (n = 160)
	n (%)	n (%)
Age at first sex		
Below 18	144 (29.4)	106 (66.2)
≥18	139 (28.4)	54 (33.8)
Don't remember	207 (42.2)	-
Age difference with first sexual partner		
≥ 10 years older	70 (14.4)	63 (39.3)
More than 10 years younger	102 (20.8)	38 (23.8)
Same age	159 (32.4)	59 (36.9)
Don't remember	159 (32.4)	-
Circumstances around first sex		
Consensual/experiment	485 (99.0)	149 (93.1)
Raped/forced/blackmailed/pressure	5 (1.0)	11 (6.9)
Ever had anal sex in the last 12 months	444 (90.6)	155 (96.9)
Used a male condom in the last 12 months	154 (31.4)	146 (95.4)
Used male condom in the last month	135 (27.6)	112 (70.0)
Transactional sex among other MSM	-	76 (47.5)
Concurrent sexual partnerships among other MSM	-	96 (60.0)
Use of social media/Internet to meet MSM	-	122 (76.3)
Visiting public locations	-	101 (63.1)
Duration of knowing current partner		
1–6 months	-	44 (27.5)
7 months to 1 year	-	19 (11.9)
>1–5 years	-	97 (60.6)

MSM: men who have sex with men.

Those with two or more wives (ARR: 1.19, 95% CI: 1.09–1.30), who lived with a spouse (ARR: 1.23, CI: 1.07–1.43) and had good knowledge of HIV (ARR: 1.16, 95% CI: 1.10–1.25) were significantly more likely to be retained in HIV care. HIV-positive MSM who discussed HIV/AIDS with a health worker/peer educator in the last 12 months (ARR: 4.85, 95% CI: 4.17–5.63) and had a positive attitude to HIV (ARR: 6.14, 95% CI: 4.12–9.15) were significantly more likely to be retained in HIV care (Tables 5 and 6).

Discussion

This study aimed to identify the correlates of retention in HIV care among HIV-positive heterosexual men and MSM in Ibadan, Nigeria. The findings revealed significant differences in retention rates between these two groups of men, with heterosexual men demonstrating better retention in care. A similar finding was also reported in studies by Li et al. [18], Nardell et al. [19], and Zhao et al. [20]. Socio-demographic (age, marital status, length of stay in community, ethnicity) and behavioural factors (number of girlfriends, living arrangement, knowledge of HIV, receiving education from healthcare providers, and

positive HIV attitude) were identified as predictors of retention in care, highlighting the complex interplay of factors influencing HIV treatment outcomes in men.

A generational difference in age was observed in HIV-positive heterosexual men who were considerably older than HIV-positive MSM. The finding of young MSM populations and low retention rates is concerning and has multifaceted dimensions. The finding of low retention in HIV care among young MSM necessitates a deeper understanding of the multifaceted factors contributing to this vulnerability. Young MSM are likely to prioritise education (which was reportedly higher than that of heterosexual men), career development, and identity formation, potentially over the consistent engagement required for managing a chronic condition like HIV. Furthermore, they may be more likely to engage in high-risk behaviours such as transactional sex, multiple partner exchange with large generational age difference, and substance use, which can further complicate retention in care. The high-risk behaviour is consistent with the MSM population [21–23]. The support systems for younger MSM are often less established, characterised by unemployment, inadequate finances, limited family support, and unstable living

Table 5. Predictors of retention in care, among HIV-positive heterosexual men

Variables	HIV-positive heterosexual men	
	ARR (95% CI)	P-value
Age group (years)		
≤25	0.29 (0.23–0.35)	<0.001*
26–40	0.90 (0.84–0.96)	0.002*
>40	I	
Ethnicity		
Yoruba	I	
Igbo	0.97 (0.71–1.31)	0.925
Others	0.22 (0.10–0.45)	0.006*
Length of stay in the community (years)		
<10 years	I	
10–30 years	0.53 (0.40–0.69)	<0.001*
>30 years	0.11 (0.05–0.25)	<0.001*
Ever been married		
Yes	I	
No	0.88 (0.80–0.97)	0.006*
Number of wives		
None	I	
One	1.07 (0.98–1.17)	0.106
2 or more	1.19 (1.09–1.30)	<0.001*
Number of girlfriends		
None	I	
One	0.95 (0.88–1.02)	0.192
2 or more	0.87 (0.78–0.98)	0.020*
Living arrangement		
Parents	I	
Spouse	1.23 (1.07–1.43)	0.003*
Friend/Sexual partner	1.08 (0.91–1.29)	0.348
Alone	1.33 (1.14–1.55)	<0.001*
Knowledge score		
Poor	I	
Good	1.16 (1.10–1.25)	0.001*

*Significant at $P < 0.05$.

HIV-positive MSM who discussed HIV/AIDS with a health worker/peer educator in the last 12 months (ARR: 4.85, 95% CI: 4.17–5.63) and had a positive attitude to HIV (ARR: 6.14, 95% CI: 4.12–9.15) were significantly more likely to be retained in HIV care.

situations [23, 24]. Compounding these challenges are the additional barriers posed by sexual orientation-based stigma, which can lead to a feeling of shame and fear, thereby preventing them from seeking and adhering to treatment [25–27]. Also, the criminalisation of same-sex relationships in Nigeria creates a hostile environment that deters MSM from seeking and maintaining HIV care [28].

The implications of this low retention are substantial. It directly contributes to suboptimal rates of viral suppression within this population, consequently elevating the risk of HIV transmission within the MSM community

and this potentially acts as a link transmitting infection to the general population, especially since about half of the MSM group in our study identified as bisexual. This finding aligns with previous research indicating a notable proportion of bisexual individuals within MSM populations due to the need for cultural acceptability and social pressure within their broader communities [9, 22, 29]. Unfortunately, this increases their potential role in HIV transmission dynamics.

Beyond transmission risks, inconsistent engagement in care by young MSM increases their likelihood of disease progression, opportunistic infections, and the development of drug resistance, ultimately leading to higher morbidity and mortality rates. Low retention in care also represents a missed opportunity for prevention counselling, STI screening, and education on safe sexual practices that retention in care would otherwise provide. Addressing this disparity is therefore important to achieve the UNAIDS 95-95-95 targets and mitigate the long-term burden of the HIV epidemic in Nigeria. Future research and targeted interventions should prioritise a comprehensive understanding of the specific barriers faced by young MSM, including those related to their developmental stage, risk behaviours, support systems, and experiences of stigma, to ensure equitable access to and sustained retention in HIV care for this vulnerable population.

The heterosexual men had a higher proportion of married men and larger families compared to MSM. Most heterosexual men lived with their spouses, while MSM were more likely to live with their parents or alone. This is expected as the heterosexual men were older and independent with socio-economic support. Furthermore, some heterosexual men had multiple wives compared to MSM. A high proportion of MSM and heterosexual men had multiple casual partners. This emphasises the importance of education on safe sex practices within multiple sexual relationships to prevent HIV transmission to seemingly stable relationships [25, 26, 30].

Network characteristics and risk behaviours of HIV-positive MSM showed a large number of HIV-positive MSM reported knowing more than five MSM personally, with a majority residing in Ibadan and others spread across Nigeria. This aligns with other studies in Nigeria that have reported dense social networks among HIV-positive MSM populations [29, 31]. These studies show variation in the number of multiple partnerships reported, with some reporting as high as 86% of MSM having more than five partners in the last 6 months [9, 31, 32].

The significantly higher retention rate among heterosexual men compared to MSM may be attributed to several factors. Firstly, the older age and higher marital rates among heterosexual men suggest a greater level of social stability and support, which are known to enhance utilisation of healthcare services [10, 33, 34]. Secondly,

Table 6. Predictors of retention in care, among HIV-positive heterosexual men and HIV-positive MSM

Variables	HIV-positive heterosexual men		HIV-positive MSM	
	ARR (95% CI)	P-value	ARR (95% CI)	P-value
Received health education				
Yes			4.85 (4.17–5.63)	0.001*
No				
Use the Internet/social media to meet other MSM				
Yes				
No			0.76 (0.56–1.03)	0.075
Engaged in transactional sex				
Yes				
No			0.84 (0.68–1.04)	0.105
HIV attitude score				
Negative				
Positive	1.06 (0.99–1.15)	0.061	6.14 (4.12–9.15)	0.0001*

MSM: men who have sex with men. *Significant at $P < 0.05$.

a higher proportion of heterosexual men were employed and had higher incomes, which will provide economic support for regular facility utilisation [26, 35, 36]. Also, a higher proportion of heterosexual men were self-employed and could adjust their work schedule for hospital visits with less influence of peer pressure. Thirdly, good knowledge of HIV among heterosexual men contributed to retention in care. This should allow frequent ART utilisation and retention as the implications of ill health and viral transmission will be well-understood [33, 37, 38]. It is recommended that HIV care programmes prioritise consistent outreach educational programs to address HIV knowledge gaps deterring retention among heterosexual men.

A high proportion of MSM reporting social media as a place to meet partners emphasises the importance of using these platforms for health interventions aimed at promoting retention in care [39–41]. Similarly, health interventions should factor in healthcare providers, outreach workers, or peer educators who have been identified as having a positive influence on retention in care among MSM. This identifies the fact that peer-led interventions and support systems are required to retain MSM in HIV care.

The strengths of the study lie in its focus on an understudied population in a high burden setting with a critical research gap due to a dearth of data on retention in HIV care among both MSM and heterosexual men in Nigeria. The study aims to fill this gap, which is a significant strength as it contributes new knowledge to an understudied area. The study’s comparison of retention in care between HIV-positive heterosexual men and HIV-positive MSM is a key strength, as this has not been studied before. This allows for the identification of both common and distinct factors influencing retention in these groups, including

socio-demographics, marriage and partnership, sexual history, MSM-specific behaviours, social habits, and exposure to HIV interventions, providing valuable insights for targeted interventions. The study was conducted in Ibadan, Nigeria, a setting with a high HIV prevalence, particularly among MSM, which makes the findings relevant to the local context and can inform public health strategies in a region where the epidemic is significant. The objective of determining factors associated with retention over a 24-month period is a strength for understanding the dynamics of retention over time, rather than just a snapshot. Focusing on retention highlights the study’s relevance to the global and national goals of ending the AIDS epidemic.

Limitations

It is important to acknowledge some limitations in this study. First, among heterosexual men, there may have been under-reporting of risky behaviours due to selection bias arising from the use of convenience sampling. This group may also show positive health-seeking behaviours and higher retention rates due to the use of this sampling method. Second, social desirability bias might have influenced responses, as participants who identified as MSM and living with HIV might have provided socially acceptable answers due to the stigma associated with their identities and health status.

Public health contribution to knowledge

This study provided valuable insights into the correlates of retention among HIV-positive heterosexual men and MSM in Ibadan, Nigeria, which is one of the first known studies comparing retention in care among the two groups. It provides a comprehensive breakdown of factors that influence retention in care, which is crucial in addressing the needs of each group and developing strategies to effectively address

them. Addressing the unique challenges faced by each group is crucial for improving HIV care outcomes and achieving the UNAIDS 95-95-95 targets. Future research should focus on developing and evaluating interventions to enhance retention in these populations. The study also documented the specific challenges experienced by heterosexual men and MSM, which need to be addressed using targeted strategies to facilitate retention in HIV care rates. It provides a comprehensive breakdown of factors that influence retention in care. This understanding is crucial to address the needs of each male group and to develop strategies to effectively address them. It emphasises the importance of personalised approaches in HIV care for the different groups of men living with HIV. The study identified the significant role of social determinants, such as age and social relationship support, that influence retention in care and emphasizes the value of community-based support systems in improving retention in HIV care.

Competing interests

The authors declare no competing interests.

Author contribution

O.O.A. and O.I.F. conceptualised the study; designed the study; O.O.A., A.J.A., and O.I. F. were involved in data retrieval, collection, collation, and analysis of the data; O.O.A., A.J.A., and O.I. F. were involved in manuscript development/writing; O.I.F. reviewed the manuscript. All the authors have agreed to the final manuscript.

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