

Research Article

Sociodemographic Profile and Recency of HIV Infections of Newly Diagnosed HIV-seropositives of a Rural Tertiary Hospital in South-south, Nigeria

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Abstract

HIV infection is still a leading global health concern. At the end of 2023, there were about 39.9 million PLHIV; 38.6 million adults of 15 years or older. Fifty-three percent of all these PLHIV were women and girls. About 5.4 million people did not know that they were living with HIV in 2023. Identifying and keeping track of new HIV infections is important in determining the effectiveness, efficiency and impact of HIV/AIDS control programs. This study aimed at determining the incidence of HIV and sociodemographically characterized the newly diagnosed in the study area. 190 new HIV positives were recruited. Excluded were known HIV positives. Recency test was done using limiting antigen avidity recency assay. Data were collected using laboratory records and a structured-questionnaire. 190 out of the 3982 tested (4.77%) were HIV positives. The modal age group was 21-30 years. 79.47% of positives were forty years and below. 138 (72.63%) were married. 113(59.47%) were females. 125(65.79%) were in low social class. 167(87.90%) had no knowledge of their partners' HIV-status; while 8(4.21%) and 15(7.90%) had concordant and discordant partners respectively. Majority were not willing to disclose their HIV-status to their partners. Recent HIV infection rate in the study area was 1.05%. Majority of newly diagnosed individuals have longstanding infection. They are predominantly married women of low social class. Unprotected sexual exposure and having multiple sexual partners are still the major driver of HIV infection among the study population.

Keywords

HIV, Recency, Newly-diagnosed, Sociodemographic, Nigeria

1. Introduction

After about 5 decades' emergence of Human Immunodeficiency Virus (HIV) / Acquired Immune Deficiency Syndrome (AIDS) pandemic, the disease is still a leading global health

concern. [1] This is not due only to its high morbidity and mortality, but partly because of its incurability and being a

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leading cause of immunosuppression in this era. [2, 3] Infection with HIV will ultimately leads to AIDS; though the rate of progression can be markedly reduced with the use of combined antiretroviral agents. With administration of combined antiretroviral therapy, life expectancy of People living with HIV (PLHIV) is increasing. [4] At the end of 2023, there were about 39.9 million PLHIV; 38.6 million adults of 15 years or older, while 1.4 million were children, age <15 years. Fifty-three percent of all these PLHIV were women and girls. About 5.4 million people did not know that they were living with HIV in 2023. [5] Global population of immunosuppressed increased and there is increased global susceptibility to all manners of infections, including opportunistic infections. [6]

Among other things, global HIV/AIDS control programs concertedly aimed at preventing new infections. [7] New HIV infections have been reduced by 60% since the peak in 1995. In 2025, an estimated 1.2 million people worldwide became newly infected with HIV, according to Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO), compared to 2.6 million to 4.2 million people in 1995. [8, 9] Women and girls accounted for 44% of all new infections in 2023 - 2025. [8, 9] Since 2010, new HIV infections have declined significantly. However, this falls far short of the target of below 370 000 by 2025. Similarly, since 2010, new HIV infections among children have declined by 69%, from 300 000 in 2010 to 120 000 in 2025. [8, 9] Progress in reducing new HIV infections is greatest among children; however, the progress has stalled in recent years. [8] UNAIDS reports that progress has stalled in recent years, with increases in new infections in several regions and 21 countries. [8, 9] Medical doctors have attributed the rise in new Human Immunodeficiency Virus infections in Nigeria to declining donor funding, worsening poverty, and reduced awareness campaigns around the infection. The cut in funding, poverty, and reduced awareness campaigns are threatening the country's progress in HIV prevention and control, and could reverse years of gains made in the fight against HIV. The reductions in donor funding have affected the availability of prevention programmes and testing services, while economic hardship has increased vulnerability to risky behaviours that fuel HIV transmission. [10]

Identifying and keeping track of new HIV infections are important in determining the effectiveness, efficiency and impact of HIV/AIDS control programs. [11] HIV-recency testing can differentiate between newly diagnosed PLHIV who had been infected for more than 6 months and those infected in less than 6 months. [12] Recency assays now make true HIV incidence trackable; unlike in the past, when false incidence of HIV was calculated based on being recently diagnosed of HIV, irrespective of how long the individuals was infected. [12] By determining recent infections among newly diagnosed PLHIV, one can identify the geographical area and population clusters where HIV transmission is occurring. [11, 12] Effective targeted efforts aimed at interrupting the transmission by evidence-based policies, channeling resources to right people and

places as well as measuring the impact of HIV prevention programmes are now possible.

There was no recency data for Edo state for about 2 years ago. Furthermore, there is no published study on incidence or new HIV infections in the state. [13] This study aimed at determining the incidence of HIV in the study area, which can be extrapolated for the state. In addition, the new cases were sociodemographically characterized to determine the pattern of transmission of new HIV infections in the area. The study is also an indirect assessment of effectiveness and impact of the HIV/AIDS control program in the study area. This will facilitate informed actions to mitigate further transmission and the data can serve as baseline for further studies.

2. Materials and Methodology

2.1. Study Design and Setting

This is a descriptive cross-sectional study conducted at the ART clinic of ISTH Irrua, Edo State, south-south geopolitical zone of Nigeria.

2.2. Study Population

The study population was suspected PLHIV referred to the Department of HIV/AIDS of Irrua Specialist Teaching Hospital (ISTH) Irrua, for voluntary counseling and testing from the beginning of August 2022 to the end of July 2023, equivalent of a year. A total of 3982 patients were tested within the period. One hundred and ninety participants who had no prior knowledge of their HIV status but tested and confirmed positive for HIV at study area were recruited for the study. Excluded from the study were those who had been diagnosed and confirmed to be living with HIV prior to presentation at the study center and those who are already in care at the center.

2.3. Sample Size and Sampling Technique

All consecutive newly diagnosed and confirmed PLHIV, who met the inclusion criteria and voluntarily granted informed consent to participate in the study, within the study period were recruited for the research. Recency test for all eligible participants was done using limiting antigen avidity recency assay. Viral load assay was done by realtime Polymerase chain method.

2.4. Data Collection

Data collection was done using a structured-questionnaire, administered on consenting PLHIV who met the inclusion criteria for the study. Additional information were obtained from the patients' casenotes and laboratory records. The questionnaire consisted of information regarding sociodemographic, clinical and laboratory features, such as age, sex (gender), marital status, social class, education level, CD4 cell-count,

HIV Viral load, Recency test result and WHO clinical stage of participants.

2.5. Statistical Analysis of Data

After appropriate verification and validation, the data were transferred into a master sheet and analyzed using IBM SPSS 20.0 software. Data collected from the study questionnaire were entered using numerical codes. Frequency distribution tables of variables were generated. Statistical comparison of variables was done using the Chi-squared test for categorical variables, and Students' 't' test (comparison of two means) and analysis of variance (comparison of more than 2 means) for continuous variables. A *p*-value of <0.05 was considered statistically significant.

2.6. Ethical Consideration

The study protocol was reviewed and approved by the Institutional Health Research Ethics Committee of Irrua Specialist Teaching [ISTH/REC/2015/OCTOBER/012]. To ensure strict confidentiality, all data were anonymized using identification numbers, and no personal identifiers were utilized during the analysis or reporting of findings. The study was conducted in accordance with the ethical standards of the Declaration of Helsinki.

3. Results

A total of 3982 clients of ISTH at risk of HIV infection were voluntary counselling and tested within the 12 months period of this study. 190 out of the 3982 (4.77%) were newly diagnosed of HIV infection.

The sociodemographic characteristics of the newly diagnosed are as shown in Table 1 below. The youngest client was 16years while the oldest was 59years. The modal age group was 21-30 years, while the least frequent age group was 51-60years. About 79.47% of the newly diagnosis HIV-positives were forty years and below (young adults).

Forty-one (21.58%) of the newly diagnosed were singles; majority, 138 (72.63%) were married; while 5(2.63%) and 6(3.16%) were widow/widower and divorcees respectively. One hundred and thirteen (59.47%) were females and the remaining 77 (40.53%) were males.

Concerning the highest educational attainment of the newly diagnosed, only 3 (1.57%) people had no formal education; 59(31.05%) and 91(47.90%) positives had up to primary and secondary school education respectively. The remaining 37 out of the 190 (19.47%) newly diagnosed HIV patients had tertiary education. 124 (65.26%) were Christians and 66(34.74%) were Muslims.

Majority, 125(65.79%) were in low social class while 63(33.16%) and 2(1.05%) were in the middle and upper social classes respectively.

On the HIV-status of their partners, 167(87.90%) had no

knowledge of the partners' HIV-status; while 8(4.21%) and 15(7.90%) had concordant and discordant partners respectively. Majority of positives were not willing to disclose their HIV-status to their partners., while the remaining 23 were ready to disclose their status.

From the Rapid Test Recent Infection (RTRI), 14(7.37%) were subjectively recently infected with HIV. The profile of the 14 Rapid Test Recent Infection positives are as shown in Table 2.

Using the viral load of the presumed recently infected patients, as expected in Recent Infection Test Algorithm (RITA), only 2 clients with viral load of <1000 copies/mL were truly recently infected. [12] Thus, Recency of HIV infection among the newly diagnosed in the study area at the period of the study was 1.05%.

Four factors had statistical significant association with HIV among the study population in the study area, namely the gender, social class, unprotected sexual exposure and having multiple sexual partners. Other factors like age, marital status, level of education, blood transfusion, tattooing, scarification marks, previous surgery and history of sexually transmitted infection had no significant effect on HIV infection among this study population. However, regression analysis revealing the strength of the associated factors revealed gender and social class as the main predisposing factors to HIV infection. The odd of a woman contracting HIV infection is three times that of a man. The risk of a low class individual contracting HIV is 5 times higher than that of people is higher social class. (Table 4)

4. Discussion

Positivity rate of newly-diagnosed HIV infection in this study is 4.77%. This is higher than the baseline general population HIV prevalence rate for Edo State, 1.8% based on the official National AIDS Indicator Survey (NAIS). It is higher than the predictive modelling studies estimated regional adult prevalence in the state of around 3.4%. [14, 15] This relatively higher positivity rate could be due to the study being hospital based, where individuals referred for confirmatory tests and those with high lifestyle risk of HIV infection are concentrated. Alternatively, the documented value may represent a tip of an iceberg, as many people still have aversion for HIV testing for fear of likely positivity and the stigma associated with HIV/AIDS. [16]. This study corroborates the documented facts in literature that women are at higher risk of HIV infection for reasons; ranging from the anatomy of female genital, receptive coital exposure, weaker socioeconomic strength leading to risky behavior and inability to negotiate sex, higher exposure to hospital acquired infections related to gynecologic and obstetrics' issues, and sociocultural practices. [8, 9, 17, 18] This study revealed 3 times risk of being HIV infected by woman than men. To close the gender gap, there is urgent need to empower women and strengthen men-targeted programs. The empowerment will increase the aware of women

and girls to their higher risk of infection and grant them capacity to reject endangering request from their male counterparts. The men-targeted program by reducing prevalence and viral load of HIV among men will invariably reduce HIV transmission; as sexual route is still the leading cause of HIV infection as seen in Africa. [17, 18] Unprotected sexual exposure and Multiple sexual partners were significant risk factors to HIV in this study (Table 3)

Although marital status is not significantly associated with HIV infection in this study, unlike findings in other studies (Table 3), over 70% of the newly diagnosed were married. This is worrisome because it appears that majority of new HIV transmission is occurring among married couples. [17, 19, 20] Of greater concerns were the unwillingness of most of the newly diagnosed to disclosure their status and very low knowledge of HIV-status of their partners. These pose major obstacles on possibility of achieving the vision of halting HIV in 2030.

With about two-third of newly diagnosed (Table 1) being in low social class and this class associated with 5 times higher risk of the infection than others (Table 4), it means HIV is a poverty-driven disease, just like many other tropical diseases. Poverty increases the risk of HIV/AIDS when it propels the unemployed into unskilled migratory labour pools in search of temporary and seasonal work, which increases their risk of HIV/AIDS. Poverty also drives girls and women to exchange sex for food, and to resort to sex work for survival when they are excluded from formal sector employment and all other work options are too low-paying to cover their basic needs. Abject poverty often leads to a casual, day-to-day existence dominated by survival needs, and at the extreme, poverty fosters a fatalistic attitude that manifests itself in indifference to high-risk sexual and other behaviours. In these circumstances, individuals are poorly motivated and poorly equipped to take the necessary steps to protect themselves from HIV. [21] Poverty alleviation couple with good and impactful national economy are essential for the control of HIV/AIDS in Nigeria and other low & middle incomes countries.

Recent HIV infection among the newly diagnosed in the study area at the period of the study was 1.05%. This finding generates two feelings: firstly, joy of low incidence of HIV in the area, indicating success of the HIV prevention and control program. Secondly, with almost all the newly diagnosed having longstanding infection, it's a failure of the control program. After decades of intensive efforts in cash and kind, to prevention, rapidly detect, treat and suppress HIV; majority of People Living with HIV/AIDS (PLHIV) didn't know their status and thus put others, especially spouses and wards at risk, being predominantly women of reproductive age group. (Tables 1 and 2). This late presentation to testing will continue to promote spread of HIV and push majority of PLHIV into advanced HIV stages. There is need to intensify outreach-testing program and social destigmatization of HIV/AIDS to rummage the hidden PLHIV in communities. Age, level of education, religion, blood transfusion, tattooing, scarification, previous hospitalization, surgery or sexually transmitted infection, and sharing of sharps are not significant risk factors for HIV transmission among the study population. This may be due to good adhere to safe injection, safe blood transfusion and other Infection Prevention and Control measures.

5. Conclusion

In conclusion, incidence of HIV infection in the study area is low. Majority of newly diagnosed individuals have longstanding infection. They are predominantly married women of low social class. Unprotected sexual exposure and having multiple sexual partners are still the major drivers of HIV infection among the study population. Most of people do not know their partner's HIV status and are unwilling to disclose their own status to their partners. Age, level of education, religion, blood transfusion, tattooing, scarification, previous hospitalization, surgery or sexually transmitted infection are not significant risk factors for HIV transmission among the study population.

Table 1. Sociodemographic characteristics and rapid test recency of newly diagnosed people living with HIV in ISTH.

Variables	Frequency (n=190)	Percentage (100%)
Age (in years)		
11-20	32	16.84
21-30	71	37.37
31-40	48	25.26
41-50	28	14.74
51-60	11	5.79
Marital status		
Single	41	21.58

Variables	Frequency (n=190)	Percentage (100%)
Married	138	72.63
Widow/widower	5	2.63
Divorcees	6	3.16
Gender		
Male	77	40.53
Female	113	59.47
Highest Educational level		
No formal education	3	1.58
Primary	59	31.05
Secondary	91	47.90
Tertiary	37	19.47
Religion		
Christian	124	65.26
Muslim	66	34.74
Social class		
Working (Low) Class	125	65.79
Middle class	63	33.16
Upper class	2	1.05
Partner's HIV status		
Positive	8	4.20
Negative	15	7.90
Not known	167	87.90
Propensity to status' disclosure		
Positive	23	12.10
Negative	167	87.90
RTRI		
Positive	14	7.37
Negative	176	92.63

Table 2. Profile of the rapid test recent infection positives.

Variables	Frequency (n=14)	Percentage (100%)
Age (in years)		
11-20	3	21.43
21-30	1	7.14
31-40	3	21.43
41-50	3	21.43
51-60	4	28.57

Variables	Frequency (n=14)	Percentage (100%)
Marital status		
Single	9	64.29
Married	3	21.43
Widow/widower	0	0.00
Divorcees	2	14.28
Gender		
Male	5	35.71
Female	9	64.29
Viral Load		
< 1000 copies/mL	2	14.29
≥ 1000 copies/mL	12	85.71

Table 3. Relationship between HIV-infection and some associated factors.

VARIABLES	N	X ²	P-value	Remark
Gender	190	1.052	0.007	Significant
Age	190	16.15	0.223	Not significant
Marital status	190	2.644	0.321	Not significant
Religion	190	2.084	0.364	Not significant
Previous Hospitalization	190	2.414	0.103	Not significant
Educational status	190	1.008	0.629	Not significant
Unprotected coital exposure	190	0.986	0.002	Significant
Social class	190	1.126	0.011	Significant
Blood Transfusion	190	40.06	0.070	Not significant
Scarification marks	190	1.463	0.226	Not significant
Tattooing	190	2.085	0.149	Not significant
Needle/sharps sharing	190	11.089	0.998	Not significant
Multiple sexual partners	190	5.273	0.022	Significant
History of sexually transmitted diseases	190	3.932	0.637	Not significant
History of surgery	190	6.984	0.786	Not significant

Table 4. Logistic regression for predictors of HIV infection among the participants.

VARIABLES	ODDS RATIO	95% CI	P-VALUE
Gender	3.231	0.0875 - 3.604	<0.05
Marital status	1.356	0.875 - 4.15	0.722
Multiple sexual Partner	1.665	0.147 - 3.314	0.563
Social class	5.44	3.908 - 21.87	<0.05

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
ISTH	Irrua Specialist Teaching Hospital
NAIS	National AIDS Indicator Survey
PLHIV	People Living with HIV
RITA	Recent Infection Test Algorithm
RTRI	Rapid Test Recent Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

Author Contributions

Gbolagade Morufu Adewuyi: Conceptualization, Data curation, Methodology, Resources, Writing – original draft

Bolanle Toyin Adewuyi: Data curation, Formal Analysis, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Paul M Sharp and Beatrice H Hahn. Origins of HIV and the AIDS Pandemic. *Cold Spring Harb Perspect Med*. 2011 sep; 1(1): a006841. <https://doi.org/10.1101/cshperspect.a006841>
- [2] CDC. Treating HIV. 2024 <https://cdc.gov/hiv/treatment/index.html> Accessed on 23/09/2026.
- [3] HIVinfo. NIH. gov. HIV Overview: The HIV Life Cycle. April 9, 2025. Accessed September 23, 2026.
- [4] Adewuyi B. T. and Adewuyi G. M. Quality of life of people living with HIV and AIDS attending Irrua Specialist Teaching Hospital, Edo State, Nigeria. *Afr. J. Clin. Exper. Microbiol*. 2023; 24 (1): 32-44 <https://dx.doi.org/10.4314/ajcem.v24i1.5>
- [5] WHO. HIV Statistics Fact Sheet. HIV statistics, globally and by WHO region, 2023 <https://www.who.int> accessed on 23/09/2026.
- [6] Fight Infection Foundation. The Population that has Immuno-deficiency has increased greatly in the last decade. 16/05/2024 <https://illuita.org> Accessed on 23/09/2026.
- [7] UNAIDS. HIV Prevention / UNAIDS June 2026. <https://www.unaids.org/en/topic/prevention> Accessed 23/09/2026.
- [8] UNICEF. HIV Statistics - Global and Regional Trends - UNICEF DATA <https://data.unicef.org/topic/hiv/aids/global-regional-trends>
- [9] HIV. gov Global Statistics / HIV. gov 2026 <https://hiv.gov/hiv-basics/overview/data-and-trends/global-statistics> Accessed 23/09/2026.
- [10] Idowu Abdullahi. Poverty responsible for new HIV infection - Doctors. Healthwise, Punch July 5, 2026. <https://punchng.com/poverty-responsible-for-new-hiv-infections-doctors/> Accessed 24/09/2026.
- [11] Rice B, Boule A, Baral S, Egger M, Mee P, Fearon E, Reniers G, Todd J, Schwarcz S, Weir S, Rutherford G, Hargreaves J. Strengthening Routine Data Systems to Track the HIV Epidemic and Guide the Response in Sub-Saharan Africa. *JMIR Public Health Surveill*. 2018 Apr 3; 4(2): e36. <https://doi.org/10.2196/publichealth.9344>
- [12] WHO. Using Recency Assays for HIV Surveillance: 2022 technical guidance. Geneva: Joint United Nations Programme on HIV/AIDS and the World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO <https://iris.who.int/server/api/core/bitstreams/6d0fb01c-fcf5-498e-bb4a-793d176d7037/content> Accessed 24/09/2026.
- [13] Nigeria National HIV Surveillance Report July to September 2024 Edition <https://www.phis3project.org.ng/wp-content/uploads/2024/11/NN-HIV-Surveillance-Report-Sept-2024.pdf> Accessed 24/09/2026.
- [14] Emmanue Igwenagu. 10 states with highest HIV/AIDS prevalence in Nigeria (2026) Nigeria informer https://nigerianinformer.com/states-with-highest-hiv-aids-prevalence-rate-in-nigeria/#google_vignette Accessed 24/09/26.
- [15] Onovo A, Adeyemi A, Onime D et al Estimation of HIV prevalence and burden in Nigeria: a Bayesian predictive modelling study. *eClinicalMedicine*, 2023; 62. <https://doi.org/10.1016/j.eclinm.2023.102098>
- [16] Obeagu, Emmanuel & Obeagu, Getrude & Musiimenta, Esther & Bot, Yakubu & Hassan, Abdulwasii. Factors contributing to low utilization of HIV counseling and testing services. *Int. J. Curr. Res. Med. Sci*. (2023). 9(2): 1-5. <https://doi.org/10.22192/ijcrms.2023.09.02.001>
- [17] Adewuyi GM and Adewuyi BT. Family characteristics and determinants of HIV-status disclosure of HIV-Clients in rural tertiary hospital in Southern Nigeria. *GAS Journal of Clinical Medicine and Medical Research (GASJCMMR)*, 2026: 3(5), 13-23. <https://doi.org/10.5281/zenodo.20152822>
- [18] Tegomoh, B., Titanji, B. K. Close the gender gap in Africa's HIV epidemic. *Nat Microbiol* 2024; 9, 8-10. <https://doi.org/10.1038/s41564-023-01535-3>
- [19] Ravikumar, BC & Balakrishna, Poornima. Discordant HIV couple: Analysis of the possible contributing factors. *Indian Journal of Dermatology*. 2013; 58. 405. <https://doi.org/10.4103/0019-5154.117304>

- [20] Atuhaire, Ritah & Extension, Kiu Publication. Evaluation of the Factors responsible for Increased HIV Infection in Married Couples attending ART Clinic at Ishaka Adventist Hospital, Bushenyi District. *IDOSR Journal of Biology, Chemistry and Pharmacy* 2023; 8. 47-63.
- [21] Shisana, O., Zungu, N., Pezi, S. (2009). Poverty and HIV and AIDS. In: Rohleder, P., Swartz, L., Kalichman, S., Simbayi, L. (eds) *HIV/AIDS in South Africa 25 Years On*. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-0306-8_7