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Original article

Prevalence of recent and long-term HIV infections among newly identified HIV positive clients in Kyenjojo District, Western Uganda. A cross-sectional study.

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Abstract

Background

The reduction in new HIV infections has been partly attributed to improved coverage of antiretroviral therapy (ART), early initiation of treatment, adherence, and retention in care. Therefore, this study aimed to assess the prevalence of recent and long-term HIV infections among newly identified HIV positive clients in Kyenjojo District, Western Uganda.

Methods: A cross-sectional study employing a quantitative approach. The collected data were analyzed using STATA. Data was presented in the form of text, tables, and graphs. Logistic regression was used to test for association, while an odds ratio was used as the measure of the association between the two variables, and data was presented in terms of text, tables, and pie-charts.

Results

A total of 211 respondents participated in the study; the majority of the respondents were aged 35 years and above (42.7%), with a mean age of 33.38 years (SD = 9.4). 127(60.2%) were female, married (52.6%), and had attained primary education as their highest level of education (61.6%). A significant portion were peasants by occupation (68.7%), Christians (91.5%), and resided in rural areas (84.4%). In terms of income, most respondents earned less than 100,000 Ugandan shillings per month (76.3%), and 194 (91.9%) were found to have long-term HIV infections, while 17 (8.1%) had recent HIV infections

Conclusion

The majority of the clients assessed (91.9%) were living with long-term HIV infections, while a small proportion (8.1%) had acquired the infection recently.

Recommendation

The Ministry of Health, in collaboration with health facility administrators, should implement a comprehensive, multi-sectoral strategy to address recent HIV infections by targeting high-risk populations.

Keywords: *Prevalence, Recent and Long-Term HIV Infections, Newly identified HIV positive clients, Kyenjojo District, Western Uganda.*
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Background of the study

Human Immunodeficiency Virus (HIV) remains one of the most significant global health challenges. UNAIDS estimated that about 39.9 million people worldwide were living with HIV, with Sub-Saharan Africa bearing the greatest burden. In this region, roughly 1 in 20 adults is HIV-positive, accounting for nearly two-thirds of the global HIV-positive population. Despite notable progress in expanding access to treatment and reducing new infections, HIV continues to threaten public health, particularly in low- and middle-income countries. Achieving the global goal of ending the HIV epidemic by 2030 will require sustained and targeted interventions.

Globally, the reduction in new HIV infections has been partly attributed to improved coverage of antiretroviral therapy (ART), early initiation of treatment, adherence and retention in care, and the reduction of viral load, which lowers transmission rates. UNAIDS and WHO estimated that in 2020, about 37.7 million people were living with HIV, of whom 36 million were adults and 1.7 million were children under 15 years. Women and girls constituted more than half of all cases. While progress has been made in HIV testing and awareness, 84% of people living with HIV were aware of their status in 2020; millions remained undiagnosed.

In Uganda, new HIV infections persist despite intensified prevention and testing initiatives. To strengthen epidemic monitoring, the Ministry of Health introduced HIV recency

testing in 2019. This tool identifies whether a person newly diagnosed with HIV (aged 15 years and above) acquired the infection within the past 12 months (recent infection) or has lived with it for longer than 12 months (long-term infection). Recency testing provides crucial insights for prevention programs, including identifying high-transmission areas, monitoring emerging clusters, and guiding epidemic control strategies for the most affected populations.

As Uganda strives to reduce new infections to zero by 2030, the persistence of both recent and long-term infections underscores the need for localized investigations. District-level assessments can highlight the prevalence and drivers of infection, thereby informing targeted interventions. In Western Uganda, Kyenjojo District has not been adequately studied in this regard, yet understanding the extent of recent versus long-term infections in this area is vital. Such knowledge can improve surveillance, guide resource allocation, and enhance prevention programs focused on populations at higher risk of acquiring HIV (Rwibasira et al., 2021).

Additionally, gaps remain in HIV testing coverage across certain populations. For example, older adults in Uganda often have limited knowledge and uptake of HIV testing services (Gage & Ali, 2015). National surveys such as the Demographic and Health Survey (DHS) typically restrict HIV testing data to individuals aged 15–54 years, excluding older populations who may still be at risk. Furthermore, previous studies on older adults in Uganda have largely focused on health challenges associated with ageing with HIV rather than on testing uptake or recent infections (Justice & Falutz, 2014; PHIA, 2018). Therefore, this study aimed to determine the Prevalence of Recent and Long-Term HIV Infections among Newly Identified HIV-positive clients in Kyenjojo District, Western Uganda.

Methodology

Study design

The study was a cross-sectional study design. Quantitative approach of data collection was used. This study design was used to collect data concerning the prevalence of recent & long-term HIV infections among newly identified HIV positive clients in Kyenjojo District, Western Uganda.

Study area

The study was conducted in selected health facilities in Kyenjojo district. Kyenjojo District is located in the Western Region of Uganda, bordered by Kibale District to the north, Kyegegwa District to the east, Kamwenge District to the south, and Kabarole District to the west. The district headquarters at the district are approximately 274 kilometers (170 mi), by road, west of Kampala, Uganda's capital and largest city. The coordinates of the district are 00 37N, 30 37E. It is divided into two counties: Mwenge North and Mwenge South. The study purposively selected the 9 health facilities (general hospital and the one health centre IV of Kyarusozi HC IV, and seven health centre IIIs) because of their high volume. The largest hospital in the district is Kyenjojo General Hospital, commonly known as Kyenjojo District Hospital or Kyenjojo Government Hospital. Located in the town of Kyenjojo in the Kyenjojo District, the hospital is accessible by the Mubende-Kyegegwa-Kyenjojo-Fort Portal Road. It is roughly fifty kilometers (31 miles) east of Fort Portal Regional Referral Hospital.

Study population

The study covered all newly tested HIV positive clients aged 15 years and above, seeking services at selected health facilities in Kyenjojo district; hence, the study looked at the clients who had been diagnosed from January 2024 to December 2024. The newly tested HIV positive clients included both recent HIV infection and long-term HIV infection. The recency test is a diagnostic tool used to determine whether an individual has recently acquired HIV infection (Within 12 months) or long-term infections (Beyond 12 months) or delayed diagnosis. The newly tested HIV positive clients are the clients who had just been diagnosed, irrespective of how long they had lived with the infection.

Target population

The study targeted all newly tested HIV positive clients aged 15 years and above. The newly tested HIV positive clients included both recent HIV infection and long-term HIV infection. The recency test is a diagnostic tool used to determine whether an individual has recently acquired HIV infection (Within 12 months) or long-term infections (Beyond 12 months) or delayed diagnosis. The newly tested HIV positive clients were the clients who had just been diagnosed, irrespective of how long they had lived with the infection.

Selection criteria

Inclusion criteria

The study included all newly tested HIV positive clients aged 15 years and above, who had sought HIV testing services from the selected health facilities, who consented to take part in the study.

Exclusion criteria

The study excluded all the HIV positive clients tested and diagnosed long ago who were critically sick and who were not available during the data collection period.

Sample size determination

The sample size was calculated using a formula by Kish Lesile (1965) owing to an unknown size of the population, the formula is as below; -
$n=Z^2P(1-P)/_d2$

Where n= sample size

z – Confidence level at 95% corresponding to 1.96
p- Proportion of the population affected by the problem. Taking HIV prevalence in Kabarole District, P=14.6% (0.146) (Uganda AIDS Commission report, 2020).
d-
The allowable error at 5% Therefore, substituting in the formula,
n=(1.96*1.96*0.146*(1-0.146))/ (0.05*0.05) n= (3.8416*0.146*0.854)/ 0.0025
n= 0.4789860544 / 0.0025

n = 191.59442176 ≈ 191.6
Adjusting for the non-response, an additional 10% of the sample size was considered.
n=191.6+(191.6*10/100)
n = 191.6 + 19.16, n ≈ 211. Therefore, the study enrolled 211 eligible participants.

Sampling procedure

The study purposively selected the general hospital and the one health centre IV of Kyarusozi HC IV and seven health centre IIIs because of their high volume. At the health facility level, simple random sampling was used at each facility, taking into consideration the proportion of the clients in each selected facility. Once the number for each facility was determined, the researcher wrote the patients' numbers for the facility and randomly picked the number required from the facility to participate using a piece of paper where the patients' numbers were written and picked randomly without replacement.
Formula for PPS Sampling:

ni=(Ni/Ntotal) ×ntotl Where
n_i = sample size for facility i
N_i = population of facility i
N_{total} = total population across all facilities
n_{total} = total desired sample size (in this case, 211) Step-by-Step Application (Example: Kyenjojo Hospital):
n_i=(4,084/13,278) ×211=0.3076×211≈65
Now applying the same formula to the rest:

The picked patients were then tracked in their subsequent ART clinic visits and briefed on the study and asked to participate.

Table 1: Sample size distribution per health facility

Health facility	Population	Sample size
Kyenjojo Hospital	4,084	65
Kyarusozi HCIV	1,590	25
Butiti HCIII	1,419	22
Katooke HCIII	1,662	26
Kisojo HCIII	1,132	18
Nyakarongo HCIII	815	13
Nyankwanzi HCIII	865	14
Bufunjo HCIII	841	13
Butunduzi HCIII	870	14
Total	13,278	211

Data collection instruments, quality control & data management

A structured questionnaire was the data collection method, and data abstraction was used to collect primary data and medical record extraction.

Data abstraction

Data on the dependent variables, infection status in this study, were collected using a standard data abstraction tool on a recency test. Data extraction is the process of obtaining raw data from a source and replicating that data somewhere else. This was obtained from the patient's register/recency testing log book.

Quality control

Reliability

Reliability is the extent to which data collection instruments can produce consistent results when administered to the same group of respondents under the same conditions. The internal consistency of the instrument was determined by the use of the Cronbach Alpha Coefficient method, and a value of p>0.70 was considered appropriate. The Cronbach Alpha Coefficient method of internal consistency was determined by the following formula.

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k}\sigma_y^2}{\sigma_x^2}\right)$$

Where: A=alpha coefficient

K-the number of items in the instrument

∑ins=summation of the values

SDi^2= Variance of individual items

Sdt^2 =Variance of all items in the instrument

The results from the pretest were then used to modify the instruments and their corresponding results. If the results provided values > 0.7, the instrument was considered reliable.

Validity

To ensure face validity of this instrument, copies of the instrument were given to experts for vetting before they were administered to the respondents in the field. Contributions from the above respondents were duly incorporated into the instrument. After which, a content validity index (C.V.I) was computed.

C.V.I = No. of items declared valid by experts
Total no. of items on the questionnaire

Data collection procedures

An introductory letter was obtained from the BSU to formally present her to the management of Kyenjojo district to allow her to proceed with data collection. Administrative approval was also obtained from all the participating health facilities as well as from the clinic in-charges, and upon obtaining permission for the next procedure, the study proceeded. During the administration of the questionnaire, primary data were obtained from the respondents, and secondary data were then abstracted from the patients' registers. The data was collected using the tested data collection tools, coding was done daily after field data collection, which involved grouping responses into categories, and this was facilitated by constructing code frames, and each response was entered by use of tally marks.

Data processing and analysis

Data was checked for completeness, correctness, and coded in the data room daily after field data collection; it involved grouping responses into categories. Data was entered in a Microsoft Excel 2010 data sheet for storage and was imported to STATA version 18 for analysis. Descriptive statistics were used to describe the prevalence of recent and long-term HIV infection. Chi-square, confidence intervals, and p-values were reported, and data were presented using tables and graphs.

Ethical considerations

Approval was sought from the Research Ethics Committee of Bishop Stuart University (BSU-REC-2025-470). Consent was sought before and during the interview; the individual was free to withdraw from the study for personal reasons or to postpone it to a later time, and the information collected remained only accessible to the researcher.

Results

Sociodemographic/individual characteristics of the study participants

Table 2: Descriptive analysis of the sociodemographic characteristics of the respondents

Variables	Frequency n	Percentage %
Age (mean=33.38, SD=9.4)		
18-24 years	39	18.5
25-34 years	82	38.9
≥35 years	90	42.7
Gender		
Female	127	60.2
Male	84	39.8
Marital status		
Single	59	28.0
Married	111	52.6
Divorced/separated/Widowed	41	19.4
Highest level of education		
None	38	18.0
Primary	130	61.6
Secondary and above	43	20.4
Occupation		
Peasant	145	68.7
Salaried/employed	36	17.1
Petty business	30	14.2
Religion		
Christians	193	91.5
Non-Christians	18	8.5
Place of residence		
Rural	178	84.4
Urban	33	15.6

The majority of the respondents were aged 35 years and above (42.7%), with a mean age of 33.38 years (SD = 9.4). Most were female (60.2%), married (52.6%), and had attained primary education as their highest level of education (61.6%). A significant portion were peasants by occupation (68.7%), Christians (91.5%), and resided in rural areas (84.4%). In terms of income, most respondents earned less than 100,000 Ugandan shillings per month (76.3%). Regarding sexual behavior, the majority had more than two sexual partners in the 12 months preceding HIV testing (45.5%) and had not been informed of their partners' HIV sero-status (53.1%). Community counselors were the most common first source of information on HIV testing services (46.9%), followed by health workers or media sources such as radio and TV (31.3%).

Prevalence of recent and long-term new HIV infections among newly identified HIV positive clients

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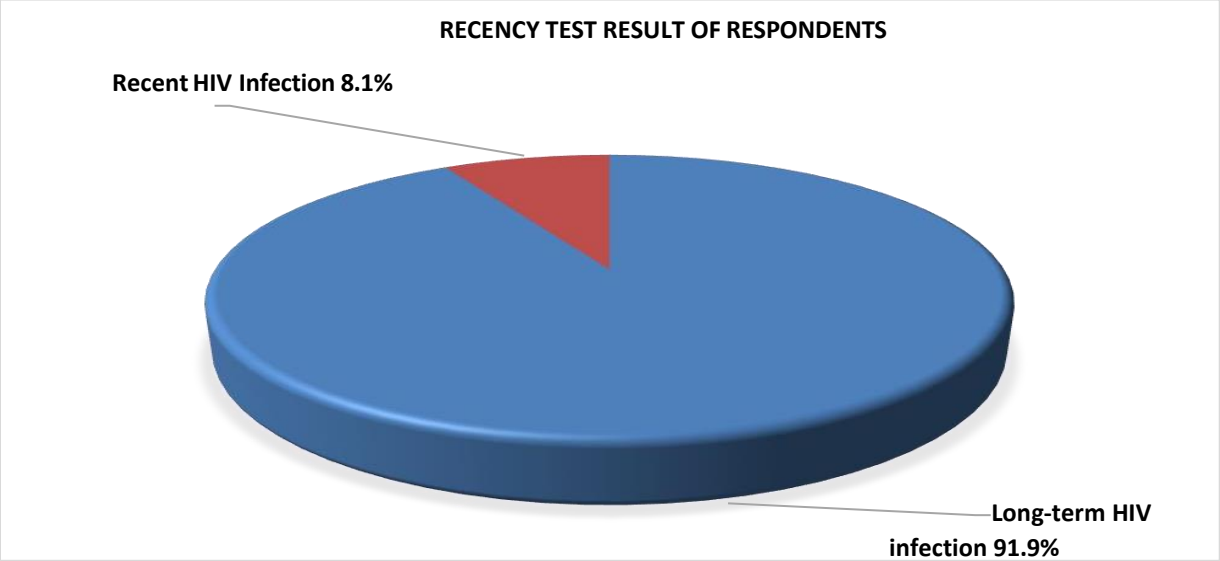
Figure 1: Prevalence of recent and long-term new HIV infections among newly identified HIV positive clients.



The pie chart presents data on the recent test results for a group of clients diagnosed with HIV. Out of a total of 211 clients, 194 (91.9%) were found to have long-term HIV infections, while 17 (8.1%) had recent HIV infections.

Discussion

Prevalence of recent and long-term HIV infections among newly identified HIV positive clients

The study found that the majority of the clients assessed (91.9%) were living with long-term HIV infections, while only a small proportion (8.1%) had acquired the infection recently. This is probably because the stigma and lack of prevention education contribute to delayed testing, causing individuals to live unknowingly with the virus for extended periods until advanced symptoms emerge or testing is done for other reasons. This is in line with previous findings that highlighted that over 75% of people live for years with HIV without knowing their status, especially in rural settings where routine testing is less common and where misconceptions about HIV persist Wibabara et al., 2021; Mohlabane et al.,2016). In addition, the dominance of long-term infections of over 88% of those infected is reported (Wibabara et al., 2021). This finding is higher than the earlier study by Rwibasira et al. (2021), which reported that long-term HIV was 68% of recent cases of HIV testing. This implies that the high prevalence of long-term infections in this study reflects systemic gaps in early diagnosis and underscores the urgent need to scale up community-based and targeted testing interventions in Kyenjojo to detect infections earlier, initiate timely treatment, and curb further transmission.

Conclusion

The majority of the clients assessed (91.9%) were living with long-term HIV infections, while a small proportion (8.1%) had acquired the infection recently.

Limitations

This study employed a cross-sectional research design; therefore, causal inferences about the relationships observed could not be established.

Recommendation

Strengthen early detection and prevention programs targeting populations at high risk of recent HIV infections, especially among low-income earners and Christians.

List of abbreviations

AIDS Acquired Immune Deficiency Syndrome
ARRA Asante HIV-1 Rapid Recency Assay
ART Antiretroviral Therapy

HC III Health Centre Three
HC IV Health Centre Four
HIV Human Immunodeficiency Virus
MOH Ministry of Health
PLWH People living with HIV
UN United Nations
UNAIDS United Nations Joint Program on HIV/AIDS
UNIPH Uganda National Institute of Public Health
UNPHS Uganda National Population and Housing Census
VL Viral Load
WHO World Health Organization

Source of funding

The study did not receive any funding or a grant.

Conflict of interest

The author declares no conflict of interest.

Author contributions

Mary Mugabekazi was the principal investigator.
Assoc. Prof. Francis Kazibwe supervised the research project.
Waswa Bright Laban supervised the research project.

Data availability

Data is available upon request.

Author biography

Mary Mugabekazi holds a degree of Master of Public Health degree from Bishop Stuart University
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Waswa Bright Laban is a lecturer at Bishop Stuart University

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