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HIV retesting among people living with HIV in Lesotho in 2022

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Abstract

Background: Despite widespread HIV testing in sub-Saharan Africa, regular testing among at-risk populations is crucial for effective prevention. However, reports increasingly indicate retesting among people living with HIV (PLHIV), a group that would not require additional testing since they would already have received a confirmed diagnosis. We describe the demographic characteristics of PLHIV retesters in Lesotho, report the average number of HIV tests post-diagnosis among PLHIV, and share motivations for retesting.

Methods: In August 2022, a nationally representative cohort in Lesotho participated in a cell phone survey about their HIV status and testing history. Study participants were recruited from a face-to-face survey conducted in 2020, Lesotho Population Based HIV Impact Assessment survey.

Results: Of the 1523 participants called, 1111 participants responded (72.9%) and 266 reported living with HIV. We found 18.8% of people living with HIV (PLHIV) reported retesting at least once for HIV, and 58% of PLHIV who reported retesting were likely or very likely to retest for HIV in the coming year. The main reason PLHIV reported retesting was because a health care worker offered the test (61.7%) followed by self-initiated testing to confirm their status (29.1%). Among male PLHIV who had a history of retesting, 92.0% were very likely or likely to retest, compared to only 30.6% of female PLHIV.

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Author contributions

ARG and SS conceived of the survey questions, and CAW and FA reviewed. SDP led the analysis with support from ARG. Once the manuscript was drafted by SDP and ARG, MT, CAW, FA, PR, EP and CS provided input.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Conclusion: We found almost a fifth of PLHIV in Lesotho reported a history of retesting for HIV, and 58% of PLHIV were likely or very likely to retest for HIV in the coming year. Educating providers and men living with HIV could reduce retesting among PLHIV.

Keywords

HIV; testing; sub-Saharan Africa; cell phone survey; surveillance; Lesotho

Introduction

Remarkable progress has been made towards UNAID's Fast Track HIV 95-95-95 goals worldwide, however, critical gaps still remain. Of the three goals, the first goal — 95% of all people living with HIV (PLHIV) will know their HIV status — has achieved the most success, with 86% of PLHIV worldwide knowing their status.¹ The success of this goal reflects widespread accessible testing, particularly in sub-Saharan Africa (SSA).²

As HIV testing in SSA has become more routine in clinical settings, there has been increased attention to retesting among PLHIV.³ Retesting among people who are HIV negative is encouraged to identify new cases early in their infection and rapidly link them to care, but retesting among PLHIV is a misuse of testing resources and can lead to overestimation of the number of PLHIV and bias testing-based estimates of awareness of HIV status. Some retesting of PLHIV can be attributed to the transfer of patients and the inability of the health care system to transfer medical records from one facility to the next. This results in PLHIV retesting in order to reenroll as new patients because national testing guidelines require documentation of test results.⁴ Other health care system factors contributing to retesting PLHIV are a lack of unique identifiers in the electronic health record, poor documentation of HIV status by health care workers, and limited communication and connectivity between facilities. Behavioral factors for retesting among PLHIV are largely unexplored.

However, it is critical to identify reasons for retesting in order to minimize the practice, not only to ensure that programs have accurate information on testing coverage, but also because retesting has been shown to be associated with delayed care. In a cohort study conducted in South Africa, 33.8% of the people who tested positive for HIV were retesters, and of the retesters who were eligible for antiretroviral therapy, over 50% declined treatment.³ In Ethiopia, the median length of time between an HIV-positive diagnosis and enrollment in treatment for PLHIV who retested was 12 months, compared to 1 month for single testers.⁵ Across SSA, certain demographic groups, specifically women,⁶ individuals with low socio-economic status,⁷ individuals who received care at multiple facilities, and individuals who were unwilling to accept the result of their previous test, were more likely to retest.⁸

This study adds to the evidence on prevalence of and motivations for retesting among a nationally representative sample in Lesotho. Specifically, we describe the demographic characteristics of retesters, report the average number of HIV tests post-diagnosis among PLHIV, and share motivations for retesting.

Methods

Study design

The Lesotho Cell Phone Population-based HIV Impact Assessment (LeCellPHIA) surveillance system was developed by calling consenting, eligible participants, ages 18 years and older, who spoke English or Sesotho, owned a cell phone, and participated and consented to being contacted for future research as part of the 2020 Lesotho Population-based HIV Impact Assessment (LePHIA 2020) survey. The LePHIA 2020 survey was a crosssectional nationally representative household-based survey conducted between December 2019 and March 2020 aiming to measure HIV incidence as well as prevalence of key HIV indicators.⁹ LeCellPHIA began 1 July, 2020, with interviewers calling participants weekly ($N = 1778$) to create estimates of influenza-like illness as a proxy for measuring COVID-19. In August 2021, 1287 participants were re-consented, and 1094 participants not called at baseline were contacted, to enroll an additional 495 participants. During re-consent and enrollment, interviewers obtained consent to participate in additional health questions beyond the original scope of the surveillance system. For this analysis, we are using data collected from an HIV testing module collected between 18–24 August, 2022. In total, 1111 participants responded of the 1523 called (72.9%). The questionnaire is available in Appendix A. Further details about the surveillance system design are explained elsewhere.^{10,11}

The Lesotho National Research Ethics Committee and Columbia University Institutional Review Board (IRB) approved LeCellPHIA with exemption from committee review. This activity was reviewed in accordance with CDC human research protection procedures and was determined to be a non-research public health program activity.

Measures

The sociodemographic variables (age, gender, district) for this analysis were collected during LePHIA 2020. All other variables for this analysis were collected during LeCellPHIA. HIV status (positive, negative, indeterminant, or did not receive results) was self-reported. The outcome of interest was a history of ever retesting for HIV among PLHIV. This was defined as those who during the phone survey ever reported testing positive for HIV and answered yes to the question “Since testing positive, have you ever gotten tested again for HIV?” PLHIV who reported retesting were asked to choose their main motivation for retesting among a list of eight reasons, which were collapsed into four groups: (1) healthcare worker offered test, (2) partner tested positive, (3) self-initiated testing to confirm their status (wanted to know HIV status, hoping they became negative), or (4) another reason (felt at risk or sick, pregnancy, new partner, other). All participants, regardless of retesting history, were asked, “How likely are you to get tested again before the end of the year (2022)?” Answer options included very likely, somewhat likely, somewhat unlikely or very unlikely.

For Table 1, we separate PLHIV into those who had not retested (single testers) and retesters, and in Table 2, PLHIV were separated in the same way, but also includes gender.

Statistical analysis

Only those who reported a positive HIV test were included in our analytic sample ($N=266$). To create weights, LePHIA 2020 household weights were used as the LeCellPHIA base weights which were then adjusted for unequal probability of selection, non-response, and potential under-coverage of the LeCellPHIA sampling frame. We first describe the population (PLHIV single testers vs retesters) by key socio-demographic characteristics. We then list reasons for retesting among retesters and describe the likelihood of retesting for HIV by retesting history. All results include a 95% confidence interval using Taylor series linearization method weighting. To compare retesting among HIV-positive persons, we conducted Rao & Scott chi-square tests on our weighted point estimates. A p -value of .05 or less was considered statistically significant. All analyses were conducted using R version 4.2.2 and the 'survey' package.

Results

A total of 266 LeCellPHIA participants reported living with HIV and answered the HIV retesting questions. Overall, 18.8% reported testing for HIV again since testing positive (see Table 1). The average number of repeat HIV tests was 2.2 tests (range: 1–10). Of PLHIV who had ever retested, 55.8% had re-tested only once, 18.9% twice and 25.3% more than twice.

The median age of the sample was 45 (interquartile range: 34–61) and was similar between single testers and retesters. Respondents over the age of 60 comprised 18.7% of the sample but 28.8% of re-testers. There were fewer retesters in the 30–39-year-old group (10.5%) compared to overall (28.1%). A similar percent of females (16.7%) and males (20.7%) retested for HIV. The distribution of phone survey participants by district reflects the population distribution of the country and there were no differences in HIV status or retesting by district.

The most commonly cited reason for retesting was health care personnel offering a test (61.7%), followed by self-initiated testing to confirm their HIV status (29.1%). Additionally, 2.0% retested because their partner tested positive and 6.1% retested for other reasons.

Among PLHIV retesters, most indicated an intent to retest (Table 2): 34.7% were very likely to retest, 23.0% were likely to retest, 13.8% were unlikely to retest, and 28.5% were very unlikely to retest. For PLHIV single testers, a smaller percentage of the participants were likely (14.3%) or very likely (9.0%) to retest, whereas 16.5% were unlikely and 60.2% very unlikely to retest. Intent to retest differed by retesting history with a p -value of less than .001. Among male PLHIV who had a history of retesting, 92.0% were very likely or likely to retest, compared to only 30.6% of female PLHIV. Among PLHIV with no retesting history, the likelihood of retesting did not differ by gender.

Discussion

About a fifth of PLHIV in Lesotho reported retesting, with minimal differences in retesting history by gender, location, and age. Almost two-thirds of retesters said they retested

because a health care worker offered the test, followed by self-initiated testing to confirm their status (29%). Most (58%) retesters reported being very or somewhat likely to retest in the next 12 months compared to only 25% of single testers and more specifically, three times as many male retesters (92%) reported intent to retest compared to female retesters (31%).

Lesotho has made great progress with the 95-95-95 goals, with 90% of people living with HIV knowing their status, 97% of those diagnosed with HIV receiving sustained antiretroviral therapy, and 92% being virally suppressed.⁹ However, our results indicate that over half of PLHIV who have a history of retesting intend to keep retesting, meaning that retesting will continue to bias any facility-based estimates of testing coverage in Lesotho.

Furthermore, reducing retesting by educating health care workers and improving electronic health records so a patient's positive status is known could avoid unnecessary retesting and potential delays in ART initiation. Given 61% of retesters indicated they retested due to a health care worker initiating the test, future studies could ask at which service point (e.g. antenatal, outpatient) the PLHIV was retested to identify whether certain services are engaging in retesting more than others to help target interventions to reduce retesting. Informing those being tested for HIV that a confirmation test is always necessary before confirming an HIV positive result could reduce mistrust of results and potential subsequent retesting.

Estimates of burden of retesting from throughout SSA vary by time and location: highest estimates were from Uganda, a facility-based survey that found 37% of people were retesting.⁷ More recently (2022) in Eswatini, 32.8% of PLHIV at a facility had ever retested.⁸ In South Africa, in HIV clinics in 2022, an estimated 33.8%³ had ever retested, and in general pharmacies and health centers, 11% had retested for HIV.¹² In Rwanda, 21.4% of participants in a facility-based study had retested.⁶ Across these studies, PLHIV who were retesting had delayed linkage to ART and worse health outcomes, mainly higher viral loads.

In contrast to existing PLHIV retesting studies that have used convenience samples — mainly facility-based - our study is among the first to describe the burden of retesting using probability sampling at a national level. As we move towards real-time surveillance of HIV via health records, having an estimate of repeat testing could help to adjust the true testing coverage rate. We also describe PLHIV motivations for retesting, which provide actionable results for the Ministry of Health and other stakeholders.

Not only is our study nationally representative, but we were also able to collect the data quickly and at a low cost by integrating the retesting questions into an existing cell phone-based surveillance system. While cell phone surveys can have limitations in representativeness mainly driven by coverage error (i.e. the difference between phone owners and non-owners), cell phone ownership is over 70% in Lesotho, indicating a non-concerning amount of coverage error. The LeCellPHIA-based point estimate of HIV prevalence (28.5%) was slightly outside the confidence interval of the LePHIA 2020 estimate (22.7%),⁹ but close enough to indicate that the LeCellPHIA sample was not grossly skewed.

A main limitation of this manuscript is the limited data available for analysis. We were unable to obtain permission to link LeCellPHIA to the rich data in LePHIA 2020, which would have allowed us to look at differences in HIV-related health outcomes among retesters and non-retesters, an important undertaking given that existing literature points to health differences in these two groups. Furthermore, we relied on self-report of HIV status whereas a link to LePHIA 2020 would have provided test-confirmed HIV test results. The generalizability of the results are limited to similar, high HIV-burden countries in Southern Africa, although Lesotho's context of high migration and transient work likely result in more transfers and loss to follow-up compared to neighboring countries.

Conclusion

We found almost a fifth of PLHIV in Lesotho reported a history of retesting for HIV, and 58% of PLHIV were likely or very likely to retest for HIV in the coming year, indicating that retesting has and will continue. With 61% of retests being provider-led, efforts to reduce health system-led retesting of PLHIV — by improving health records systems and retraining staff - could greatly reduce retesting among PLHIV. Given that three times as many men with a history of retesting intend to retest compared to their female counterparts, men with retesting history could be a high-impact group to sensitize about permanency of HIV test results.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1:

Socio-demographic characteristics of People Living with HIV in Lesotho by testing history in 2022; unweighted N, weighted point estimate

	Overall N, (%)	Single testers N, (%)	Retesters N, (%)
Overall	266 (100%)	216 (81.2%)	50 (18.8%)
Age (Median, IQR)	45 (34-61)	49 (40-62)	51.5 (32-61)
Age Group			
18-29	17 (23.9%)	12 (79.0%)	5 (21.0%)
30-39	43(28.1%)	37 (89.5%)	6 (10.5%)
40-49	72 (16.7%)	62 (82.5%)	10 (17.5%)
50-59	68 (12.6%)	55 (84.4%)	13 (15.6%)
> 60	66 (18.7%)	50 (71.2%)	16 (28.8%)
Gender			
Female	191 (56.3%)	157 (83.3%)	34 (16.7%)
Male	75 (43.7%)	59 (79.3%)	16 (20.7%)
District			
Botha-Bothe	22 (6.2%)	19 (87.5%)	3 (12.5%)
Leribe	40 (15.6%)	32 (81.7%)	8 (18.3%)
Berea	32 (13.9%)	27(77.6%)	5 (22.4%)
Maseru	76 (31.7%)	62 (82.0%)	14 (18.0%)
Mafeteng	27 (8.1%)	21 (84.7)	6 (15.3%)
Mohale's Nek	16(7.4%)	12 (78.9%)	4 (21.1%)
Quthing	15 (3.7%)	9 (65.6%)	6 (34.4%)
Qacha's Nek	11 (3.5%)	9 (81.6%)	2 (18.4%)
Mokhotlong	11 (4.9%)	11 (100.0%)	0 (0.0%)
Thaba-Tseka	16(4.9%)	14 (91.1%)	2 (8.9%)

Table 2:

Overall re-testing likelihood among PLHIV with and without retesting history, and by gender

	PLHIV: No retesting history	PLHIV: Retesting history	p-value		
Retest Likelihood*			p < 0.001		
Very likely	15 (9.0%)	14 (34.7%)			
Likely	28 (14.3%)	8 (23.0%)			
Unlikely	32 (16.5%)	7 (13.8%)			
Very unlikely	132 (60.2%)	17 (28.5%)			
Gender [‡]	Likely	Unlikely	Likely	Unlikely	p = 0.046
Male	14 (25.4%)	41 (74.8%)	13 (92.2%)	3 (7.9%)	
Female	29 (22.4%)	123 (77.6%)	9 (30.6%)	21 (69.4%)	

* Column percent shown for “Retest likelihood” estimates

[‡] Row percent shown for gender, by re-testing history