

Exploring HIV Self-Testing: Barriers and Facilitators among Undergraduate Students

Nicholas Muendo^{1,*}, Joseph Thigiti², Osborn Tembu³

¹Department of Family Medicine, Kenyatta University.

²Faculty of Medicine, Kenyatta University

³P.o Box 28198-00200,Nairobi,Kenya

Abstract

Introduction: Globally, 36.7 million individuals live with HIV/AIDS, with 2.5 million new cases annually. Youth (14-25 years) account for 45% of these new infections. Those aged 15-24 years are less likely to be aware of their HIV status and engage in HIV care compared to older adults. This study explores the use of HIV self-testing to improve access to HIV care among Kenyatta University undergraduates.

Objective: To identify barriers and facilitators to HIV self-testing in this group.

Methodology: Employing multistage cluster sampling, 398 students were surveyed using a self-administered questionnaire.

Results: Of the participants (median age 21 years, 1:1.03 male-to-female ratio), 91.7% understood HIV's seriousness, with sexual intercourse as the primary transmission mode. Self-testing usage was 28.8%. Key barriers included fear of partner reaction, stigma, and lack of confidence. Significant facilitators were being female, knowledgeable about HIV, and sexually active.

Conclusion: Only 24% had prior HIV testing experience. The study highlights the importance of addressing fears and misconceptions while leveraging knowledge and sexual activity awareness to promote HIV self-testing.

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Corresponding author:

Nicholas Muendo, Department of Family Medicine, Kenyatta University.

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Introduction

Globally, 36.7 million people live with HIV/AIDS, and annually, 2.5 million new infections are reported. Notably, 45% of these infections are among youth aged 14 to 25, with university students at high risk due to behaviour's like cross-generational sexual relationships, escalating the spread of HIV/AIDS and other sexually transmitted diseases^{1,2}. HIV self-testing (HIVST) offers a private means for individuals, particularly university students, to test for HIV, thus enhancing testing access for high-risk groups³. This method detects HIV-1 p24 antigen or HIV-1/2 antibodies, requiring healthcare confirmation for positive results and has a specificity of 99.9%⁴. In Kenya, HIV/AIDS prevalence is noteworthy, with a 3.7% rate among adults aged 15 to 49, emphasizing the virus's significant impact, especially on the young population. This highlights the need for continued research and interventions⁵. Despite the importance, HIV testing

and linkage to care among adolescents and young adults are low, hindering epidemic control³. Insufficient awareness of HIV status and late treatment initiation among youth are leading to more infections⁶. HIVST could bridge testing gaps and foster preventive practices⁷. This study investigates the obstacles to HIV testing among a demographic highly susceptible to the disease.

Materials and Methods

The study, a cross-sectional descriptive analysis, was conducted at Kenyatta University's main campus in Nairobi, Kenya. This campus was selected for its diverse student population.

A multi-stage cluster sampling method was used, selecting random clusters within faculties or schools. This approach was chosen to effectively represent the university's large and dispersed undergraduate population. The sample size, determined using Fischer's formula, was set at 398, accounting for a 95% confidence level, a 55% target characteristic proportion, and a 5% precision degree.

Participants included undergraduates aged 18-25 years at the main campus, excluding those who were HIV positive and on treatment or taking end-of-semester/year exams. Data collection involved self-administered questionnaires with both open and closed questions, piloted at the Parklands campus. Data analysis was quantitative, focusing on descriptive analysis and quantitative methods to explore variable relationships^{8,9}. Ethical approval was obtained from the Kenyatta University ethics committee, and participant confidentiality was ensured.

Results

The average age of the participants was 21.1 years, with a majority being single, female, Christian, full-time students majoring in Education, and living off-campus (Table 1).

Table 1. Socio-Demographic Characteristics of the Study Participants

| Socio-Demographic Characteristics | Frequency, <i>n</i> =398 | Percent% |
|-----------------------------------|--------------------------|----------|
| Age (Years) | | |
| 18 – 21 | 257 | 64.6 |
| 22 – 25 | 141 | 35.4 |
| Gender | | |
| Male | 196 | 49.2 |
| Female | 202 | 50.8 |
| Marital status | | |
| Single | 390 | 98.0 |
| Married | 8 | 2.0 |
| Religion | | |
| Christian | 373 | 93.7 |
| Muslim | 25 | 6.3 |
| Mode of study | | |
| Full time | 391 | 98.2 |
| Part time | 7 | 1.8 |

| | | |
|--|-----|------|
| Residency status | | |
| In school | 137 | 34.4 |
| Out of school | 261 | 65.6 |
| School | | |
| Environmental Sciences | 7 | 1.8 |
| Business | 71 | 17.8 |
| Hospitality and Tourism | 17 | 4.3 |
| Nursing Sciences | 6 | 1.5 |
| Education | 122 | 30.7 |
| Engineering and Technology | 6 | 1.5 |
| Economics | 29 | 7.3 |
| Agriculture & Enterprise Development | 6 | 1.5 |
| Public Health and Applied Human Sciences | 24 | 6.0 |
| Pure and Applied Sciences | 32 | 8.0 |
| Medicine | 7 | 1.8 |
| Humanities and Social Sciences | 40 | 10.1 |
| Architecture | 6 | 1.5 |
| Creative, Film and Media Studies | 17 | 4.3 |
| Law | 8 | 2.0 |

Barriers to the use of HIV self-testing

Participants demonstrated substantial knowledge about HIV, recognizing it as a serious disease primarily transmitted through sexual contact. Nearly half were informed about HIV pre-exposure prophylaxis, the lack of a definitive cure, and the possibility of living a normal life with Highly Active Antiretroviral Therapy (HAART), as detailed in (Table 2). Participants had a favorable view of HIV self-testing; most had been tested within the past three months, including through self-test kits. While

Table 2. Knowledge about HIV (HIV as a Serious Disease)

| HIV/AIDS is a serious disease | Frequency, <i>n</i>=398 | Percent % |
|--|--------------------------------|------------------|
| Yes | 364 | 91.5 |
| No | 18 | 4.5 |
| Unsure | 16 | 4.0 |
| How HIV is spread | | |
| Sexually | 390 | 98.0 |
| Mother to Child | 349 | 87.7 |
| Blood Transfusion | 327 | 82.2 |
| Intravenous Drug Abuse | 180 | 45.2 |
| Aware of Pre-exposure prophylaxis | | |

| | | |
|------------------------------------|-----|------|
| Yes | 190 | 47.7 |
| No | 160 | 40.2 |
| Unsure | 48 | 12.1 |
| HIV has a cure | | |
| Yes | 20 | 5.0 |
| No | 341 | 85.7 |
| Unsure | 37 | 9.3 |
| Live normal life with HAART | | |
| Yes | 316 | 79.4 |
| No | 28 | 7.0 |
| Unsure | 54 | 13.6 |

facility-based testing (VCT) was prevalent, a significant portion preferred the OraQuick self-test kit (Table 3). Among the 97 participants who used HIV self-testing, routine use and protecting loved ones were primary motivations. The predominant reason for avoiding testing was the fear of a positive result (Figure 1), while fear of stigmatization was the main obstacle to facility-based testing (Figure 2).

Table 3. HIV Testing Acceptance

| Ever tested for HIV | Frequency, <i>n</i> =398 | Percent% |
|---------------------------------------|--------------------------|-----------|
| Yes | 260 | 65.3 |
| No | 138 | 34.7 |
| Ever used HIV self-test kit | | |
| Yes | 97 | 24.4 |
| No | 301 | 75.6 |
| Last time tested for HIV | Frequency, <i>n</i> =260 | Percent% |
| Last 3 months | 69 | 26.5 |
| Last 6 months | 75 | 28.8 |
| More than 1 year ago | 116 | 44.6 |
| Type of test done at that time | | |
| Facility test (VCT) | 185 | 71.2 |
| HIV self-testing | 75 | 28.8 |
| HIV self-test used | Frequency, <i>n</i> =97 | Percent % |
| INSTI | 25 | 25.8 |
| OraQuick | 59 | 60.8 |
| Atomo HIV self-test | 13 | 13.4 |

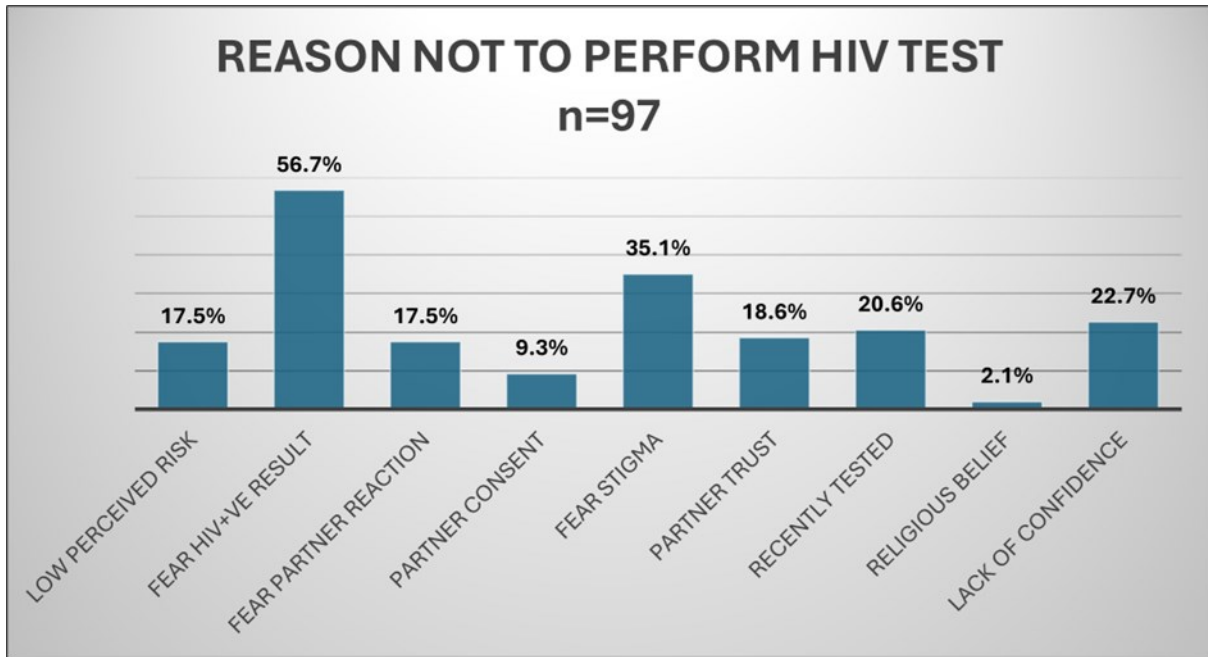


Figure 1. HIV Testing Acceptance (Reason not to perform HIV test)

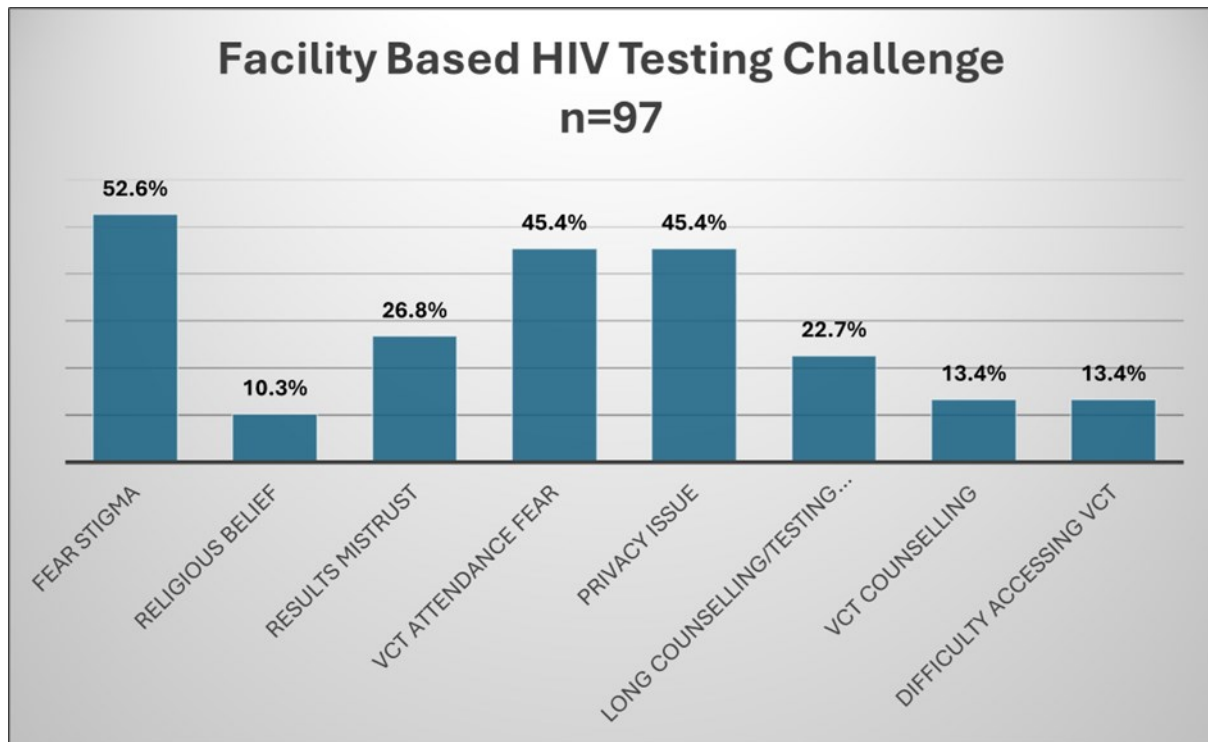


Figure 2 . HIV Testing Acceptance (Facility Based HIV Testing Challenge)

Facilitators to the use of HIV self-testing

Participants recognizing HIV/AIDS as serious and informed about pre-exposure prophylaxis, as well as those identifying as sexually active, were more inclined to use HIV self-testing (Table 4).

Media exposure, notably the "Chukua Selfie" campaign, correlated with higher usage of HIV self-testing. Participants generally favored self-testing and would recommend it to others (Table 5).

Table 4. Sexual behaviour factors

| Ever had sex | Frequency, n=398 | Percent% |
|--------------------------------------|------------------|----------|
| Yes | 278 | 69.8 |
| No | 120 | 30.2 |
| Consider self sexually active | | |
| Yes | 228 | 57.3 |
| No | 50 | 12.6 |
| Never had sex | 120 | 30.2 |

Table 5. Recommendation of HIVST and knowledge about “Chukua Selfie” HIVST Campaign

| Know about campaign dubbed “ChukuaSelfie” | Frequency, n=398 | Percent % |
|---|------------------|-----------|
| Yes | 189 | 47.5 |
| No | 209 | 52.5 |
| Recommend HIV self-testing | | |
| Yes | 97 | 100.0 |

Comparing barriers with facilitators in the uptake of HIV self-testing

Comparing barriers and facilitators for HIV self-testing among undergraduates, most participants hadn't used it, and no significant statistical link was found between demographic factors (age, gender, marital status) and self-testing usage (Table 6). However, several facilitators, such as knowledge about HIV/AIDS, awareness of pre-exposure prophylaxis, and considering oneself sexually active, were identified (Table 7)

Table 6. Barriers to the use of the HIV self-testing

| Barriers to the use of theHIV self-testing | Ever used, n=97 | Never used, n=301 | OR (95% CI) | p-value |
|--|-----------------|-------------------|------------------|---------|
| Age (Years) | | | | |
| 18 – 21 | 60 (61.9) | 197 (65.4) | Reference | |
| 22 – 25 | 37 (38.1) | 104 (34.6) | 1.2 (0.7 – 1.9) | 0.520 |
| Gender | | | | |
| Male | 40 (41.2) | 156 (51.8) | Reference | |
| Female | 57 (58.8) | 145 (48.2) | 1.5 (1.0 – 2.4) | 0.071 |
| Marital status | | | | |
| Single | 94 (96.9) | 296 (98.3) | Reference | |
| Married | 3 (3.1) | 5 (1.7) | 1.9 (0.4 – 8.1) | 0.390 |

Table 7. Facilitators to the use of the HIV self-testing

| | Ever used, <i>n</i> =97 | Never used, <i>n</i> =301 | OR (95% CI) | p-value |
|--|----------------------------|------------------------------|-----------------|---------|
| Knowledge about HIV | | | | |
| HIV/AIDS is a serious disease | | | | |
| Yes | 93 (95.9) | 271 (90.0) | 1.2 (0.4 – 3.7) | 0.752 |
| No | 4 (4.1) | 14 (4.7) | Reference | |
| Unsure | 0 (0.0) | 16 (5.3) | - | |
| Aware of HIV Pre-exposure prophylaxis | | | | |
| Yes | 64 (66.0) | 126 (41.9) | 3.4 (1.9 – 5.8) | <0.001 |
| No | 21 (21.6) | 139 (46.2) | Reference | |
| Unsure | 12 (12.4) | 36 (12.0) | 2.2 (1.0 – 4.9) | 0.052 |
| HIV has a cure | | | | |
| Yes | 3 (3.1) | 17 (5.6) | 0.5 (0.1 – 1.7) | 0.288 |
| No | 88 (90.7) | 253 (84.1) | Reference | |
| Unsure | 6 (6.2) | 31 (10.3) | 0.6 (0.2 – 1.4) | 0.205 |

Discussion

The study, mainly involving undergraduate students aged 18-21, may best represent this demographic. With almost equal gender representation, findings could apply to both males and females, echoing Hatzold et al.'s discovery of first-time testers among 16-24-year-olds¹⁰. The high number of single, predominantly Christian participants indicates a focus on sexual activity and underlines the need for tailored HIV testing and prevention interventions, as also noted in studies by Buldeo et al. and others¹¹. The participants' status as full-time students suggests school-based interventions might effectively promote HIV testing and prevention, supported by evidence from relevant meta-analysis and systematic reviews¹². The dependence on family financial support, versus government or employment funding, underscores the importance of family in HIV prevention and aligns with findings from¹³ Basset et al., stressing the need to address financial barriers in healthcare access.

Barriers to the use of HIV self-testing

The study revealed satisfactory HIV/AIDS knowledge among participants, contrasting a Malaysian study showing limited understanding of non-HIV STDs and alarming risky behaviors¹⁴. This aligns with a Sudanese study where sexually active students showed willingness to engage in safe sex practices¹⁵. A significant number had undergone HIV testing, reflecting a positive testing attitude, similar to S. Marks et al.'s findings on HIV self-testing preferences among young men¹⁶. Major barriers identified were fear of positive results and access to self-test kits, paralleling Y. Qin et al.'s study, which found HIVST reduced stigma¹⁷. Risky sexual behavior among some participants highlighted the need for enhanced safe sex promotion. Stigma was a barrier, resonating with Clifton et al.'s study on HIV risk perception and testing behavior in the British population, revealing a disconnect between perceived risk and testing behavior¹⁸.

Facilitators to the use of HIV self-testing

The study found participants generally had positive attitudes towards those living with HIV, though

some harbored fears and misconceptions. Media, especially social media, effectively raised HIV self-testing (HIVST) awareness, echoing Birdthistle et al.'s findings on the impact of a multimedia campaign in South Africa¹⁹. Participants valued the privacy and ease of interpreting self-test results at home. Accessibility and affordability of self-test kits were key, aligning with Y. Qin et al.'s research on reducing stigma through HIVST¹⁴. Repeat usage willingness was high among past self-test users, similar to the "4 Youth by Youth" Nigerian study by Iwelunmor et al. emphasizing youth engagement in HIV prevention²⁰. Facilitators like HIV prevention education, routine testing, and protecting loved ones were also noted, supported by a study among African-American youths in North Carolina, highlighting these factors as enablers for self-testing²¹.

Barriers compared with facilitators in the uptake of HIV self-testing services

The study showed 24% of participants had used HIV self-test kits, a moderate uptake akin to findings in Malawi and Zimbabwe among young people²². Female students' usage of self-testing was higher but not statistically significant, contrasting with Kenya AIDS Indicator Survey's higher reported testing in adolescent girls and young women²³. Sexually active individuals were more inclined to use self-test kits, paralleling Izizag. B et al.'s findings on high acceptability among university students²⁴. A tendency emerged where those with negative attitudes towards HIV-positive people were less likely to self-test, diverging from Kumwenda et al.'s study, which highlighted fears of relationship strain due to HIV-discordant results in couples²⁵.

Conclusion

The study highlighted barriers and facilitators to HIV self-testing among Kenyatta University undergraduates, offering insights for interventions to boost self-testing uptake and enhance HIV prevention and care. Key barriers included fear of positive results, access challenges, and HIV stigma, while positive attitudes and media exposure were facilitators. Strategies should focus on reducing stigma, increasing self-test kit accessibility and affordability, improving counseling services, and addressing gender disparities in testing. HIV self-testing is advised as a supplementary approach to facility-based testing, with a need to monitor its long-term effects on prevention and treatment.

Disclosure

No author expressed any potential of conflict of interest.

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