

Social contextual factors associated with lifetime HIV testing among the Tushirikiane urban refugee youth cohort in Kampala, Uganda: Cross-sectional findings

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Abstract

Background: Urban refugee youth may live in social contexts characterized by structural drivers of HIV such as poverty and violence. Knowledge gaps remain regarding HIV testing practices among urban refugee youth, despite the increasing trend toward refugee settlement in urban contexts. This study examined social contextual factors associated with lifetime HIV testing among urban refugee youth in Kampala, Uganda.

Methods: We conducted a community-based study with a peer-recruited cohort of urban refugee youth aged 16–24 years living in Kampala’s informal settlements, and present baseline cross-sectional findings. We conducted descriptive statistics and logistic regression to examine socio-demographic (e.g., gender and age), material (e.g., income insecurity and education), relational (e.g., social support), and symbolic contexts (e.g., HIV-related stigma and intimate partner violence (IPV)) associated with lifetime HIV testing.

Results: Participants ($n = 450$) had a mean age of 20.4 years (standard deviation: 2.4 years), most lived in Uganda for 1–5 years (53.2%), and less than half reported lifetime HIV testing (43.4%). In multivariable analyses, odds of lifetime HIV testing were higher among youth with secondary school education or higher (adjusted odds ratio (aOR): 2.30, 95% confidence interval (CI): 1.27–4.17), currently employed (aOR: 1.79, 95% CI: 1.03–3.10), and reporting IPV (aOR: 3.61, 95% CI: 1.43–9.10). Having children was marginally associated with HIV testing (aOR: 2.17, 95% CI: 0.98–4.81, $p = 0.052$).

Conclusions: Findings demonstrate suboptimal HIV testing and the importance of tailored strategies to reach urban refugee youth who are unemployed and have limited formal education. There is a need to meaningfully engage urban refugee youth to create enabling environments for sexual health.

Keywords

HIV testing, refugee, youth, adolescents, urban, Uganda, violence

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Introduction

There is an urgent need to address HIV testing and prevention needs among the more than 79.5 million forcibly displaced persons globally.¹ The United Nations High Commissioner for Refugees reported that in 2019 two thirds of globally internally displaced persons and 13% of refugees resided in urban or semi-urban settings.¹ Due to greater opportunities for education and employment, there is an increasing trend toward refugee settlement in urban contexts.²⁻⁵ In Uganda, which hosts more than 1.4 million refugees, nearly one-quarter (24%) are youth and over 90,000 (6%) live within Kampala's urban areas.⁶ Although urban areas in Uganda provide better education and healthcare access options for refugees,⁷ they can also pose challenges. For instance, in urban contexts such as Kampala, refugees largely live in informal settlements, including slums, where social environments are shaped by economic insecurity, overcrowding, and elevated violence.⁸ There is a paucity of research on HIV testing practices among refugee youth in urban settings such as Kampala, and advancing this understanding can inform targeted HIV testing initiatives.⁹

Socio-contextual theoretical approaches that consider health enabling environments for HIV prevention engagement^{10,11} may be particularly relevant for understanding HIV testing barriers and facilitators with refugee youth. This approach considers three dimensions of context: *material context*, such as economic opportunities and resource access; *relational context*, including relationships with families, peers, and communities; and *symbolic contexts*, such as social norms and worldviews that shape access to power and recognize or elide worth, respect, and dignity.^{10,11} For instance, material contexts of economic insecurity may pose barriers to HIV testing among urban refugee youth.^{12,13} A qualitative study with urban refugee youth in Kampala documented that due to widespread poverty and unemployment, transportation costs were a barrier to accessing free HIV testing offered at public clinics.¹⁴ Similarly, research in Nakivale refugee settlement in Uganda identified the importance of addressing daily priorities (e.g., economic security) and transport costs to increase HIV testing among adult refugees.¹⁵

Socio-economic factors, such as education and employment, may also influence HIV testing engagement. Employment and formal secondary or post-secondary education were associated with HIV testing practices among adolescent men and women in Nigeria,¹⁶ South Africa,^{17,18} and Uganda.¹⁹ Higher educational levels were also associated with increased awareness about HIV testing services among young women refugees in Kampala.²⁰ This aligns with research on HIV testing predictors among youth in Sub-Saharan African countries, including Uganda, that found comprehensive HIV knowledge was linked with testing uptake.²¹

Relational contexts, comprised of social relationships between persons, intimate partners, families, and external actors (e.g., service providers), shape access to power, agency, and resources.^{10,11} Parenting and social support are relational contexts that may be linked with youths' HIV testing practices. Sub-Saharan Africa has the highest global adolescent pregnancy and birth rates.²² A scoping review of adolescent mothers in Sub-Saharan Africa reported that they may be less likely to engage in health services including HIV testing²³ and may experience challenges to autonomy and consent when testing.^{24,25} Antenatal care may, however, serve as young women's entry point to HIV testing,^{23,25,26} particularly in Uganda where HIV testing is mandated for pregnant women. For instance, among girls living in urban slums in Kenya, pregnancy was an initiating factor for HIV testing.²⁷ Thus, young mothers may experience pregnancy as a relational context that increases access to HIV testing resources.

Social support may facilitate youth engagement in HIV testing.^{28,29} Social support is a complex construct, including different sources³⁰ (e.g., family and peers) and dimensions (e.g., informational support that provides advice and information, and emotional support that offers caring and empathy).³¹ Refugee youth in Kampala described preferring peer educators as sources of support over friends and family to engage in HIV self-testing.¹² A study with settlement-based refugee adults in Uganda identified informational dimensions of social support as important in facilitating HIV testing engagement.³²

Symbolic contexts, shaped by social norms and values,^{10,11} can influence access to resources; stigma and gender-based violence are examples of symbolic contexts that devalue persons and reduce opportunities for accessing equitable healthcare. For instance, qualitative work with urban refugee youth in Kampala has identified stigma in health systems and communities toward refugees, HIV, and sex workers as barriers to HIV testing.¹² Stigma toward adolescent sexual activity and sexual and reproductive health (SRH) care engagement have also been associated with reduced HIV testing among young refugee women in Kampala.²⁰ Literature on the associations between gender-based violence and HIV testing uptake is underexplored among refugee youth in Sub-Saharan Africa. However, intimate partner violence (IPV) has been found to be associated with sexually transmitted infections, HIV testing and HIV seropositivity.^{33,34} This relationship is bidirectional, where IPV may be a risk factor for HIV infection,³³ as well as an outcome of HIV infection.^{35,36} Among adolescent girls and young women, not only is IPV a risk factor for HIV acquisition but it can also reduce young women's autonomy and uptake of HIV prevention strategies.^{37,38} Yet little is known of linkages between IPV experiences and HIV testing

among urban refugee youth, and this could inform youth-focused IPV and HIV prevention strategies.³⁷

In summary, there are knowledge gaps regarding social contextual factors linked with HIV testing among urban refugee youth in Uganda. To understand and address HIV testing gaps among urban refugee youth, the Tushirikiane (Supporting each other) study was developed to explore uptake across HIV testing strategies among refugee youth in Kampala, Uganda.³⁹ The objectives of this paper are to examine factors associated with baseline HIV testing among urban refugee youth in Kampala and present a profile of participants enrolled in the Tushirikiane study. Specifically, we examine socio-demographic factors and *material* (employment, income security, education), *relational* (having children, relationship status, social support), and *symbolic* (sexual relationship power, condom use efficacy, IPV, HIV-related stigma, adolescent SRH stigma) contextual factors associated with lifetime HIV testing.

Materials and methods

Data collection

This study uses data collected as part of the Tushirikiane cluster-randomized control trial in Kampala, Uganda, for which detailed methods have been described elsewhere.³⁹ In brief, three urban settlement clusters were randomized in a 1:1:1 method to receive either HIV self-testing kits, HIV self-testing kits combined with a 2-way supportive SMS m-Health intervention, or local standard of care (i.e., clinic-based HIV testing). Clusters were defined by grouping five informal settlements into three sites based on proximity to one another; these are grouped as 1) Kabalagala and Kansanga, 2) Katwe and Nsambye, and 3) Rubaga. These communities were selected owing to similarities in countries of origin, socio-economic status and living conditions, healthcare access, and shared languages. Displaced and refugee adolescent youth aged 16–24 years, were eligible for inclusion if they lived in one of three clustered informal settlements, spoke one of the study languages (English, French, Swahili, Luganda, Kinyarwanda, Kirundi), and had access to a mobile phone. Between February and March 2020, 450 refugee and displaced youth were enrolled into the study. Participants were followed up for approximately 1 year, with data collected at the three time-points: baseline enrollment into the trial, at 8-months after enrollment, and at 12-months after enrollment. Here, we report on participant data collected at baseline enrollment.

Within each cluster, participants were recruited using purposive sampling methods with the support of peer navigators, who are a group of respected, self-identified refugee youth aged 18–24 years with experience working in the study communities as health or as peer educators. At enrollment, data collectors and peer navigators visited participants at their home or at a local community health

center. Data regarding demographics, HIV testing knowledge and frequency, and SRH outcomes were collected using a structured questionnaire. Lifetime HIV testing was measured as self-reported response to the question “*Have you ever tested for HIV infection?*” Specific topics and scales covered in the questionnaire included the Condom Use Self-Efficacy Scale,^{40,41} to measure comfort with using and discussing condoms with partners, the Sexual and Reproductive Power Scale—Relationship Control Subscale,⁴² to assess intimate relationship power dynamics, the Steward et al.⁴³ felt normative HIV stigma subscale to measure perceived cultural norms surrounding HIV, the Ugandan version of the Adolescent SRH Stigma Scale,^{20,44} to measure stigma regarding adolescent sexual activity, contraception use and pregnancy, and the 24-item Social Provisions Scale,⁴⁵ to measure social support and interpersonal connections. Income security was measured using the single-item question “*Is your income enough to pay for your household’s bills each month (e.g., rent and transportation)?*” Interviews were conducted in English, French, Swahili, Luganda, Kinyarwanda and Kirundi, and data were recorded directly on tablets using QuickTap-Survey (Formstack, Toronto, Canada).

This study was approved by the Research Ethics Boards of the University of Toronto (Protocol Number: 37,496), Mildmay Uganda Research Ethics Committee (Ref: 0806–2019), and Uganda National Council for Science & Technology (Ref: HS2716). The trial is registered at [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT04504097) (NCT04504097). All participants provided written informed consent with the support for a peer navigator prior to study enrollment.

Data analysis

Baseline characteristics of the study population were evaluated using descriptive statistics including proportions and means with standard deviations (SD) as appropriate, stratified by gender. Individuals identifying as transgender ($n = 3$) were excluded due to small sample size and concerns about participant anonymity. Baseline differences between groups were examined using chi-square tests or Fisher’s exact tests for categorical variables and t-tests or ANOVAs for continuous variables. Due to data collection issues leading to differential item non-response by cluster, the Condom Use Self-Efficacy, Adolescent SRH Stigma, and Sexual Relationship Power Scale were slightly modified to use only questions asked to all participants. Cronbach’s alpha measures were calculated to examine the internal consistency of each scale in the current study sample, with values >0.6 deemed acceptable.⁴⁶ The scale reliability scores for this study were high: Condom Use Self-Efficacy (we used six out of eight original items): Cronbach’s $\alpha = 0.90$; Adolescent SRH Stigma (we used 12 out of 14 original items): $\alpha = 0.86$; HIV-Related Stigma Scale: $\alpha = 0.83$; Social Provisions Scale: $\alpha = 0.79$; and Sexual

Relationship Power Scale (we used 14 out of 15 original items): $\alpha = 0.89$.

Following this, a series of chi-square tests were conducted to explore associations between socio-demographic, *material* (employment, income security, education), *relational* (having children, relationship status, social support), and *symbolic* (sexual relationship power, condom use efficacy, IPV, HIV-related stigma, adolescent (SRH) stigma) contextual factors associated with prevalence of lifetime HIV testing. Baseline odds ratios (ORs) were calculated for lifetime HIV testing by each factor using logistic regression, controlling for settlement a priori to account for clustering. In a multivariable model, settlement (to account for clustering) and gender, which were determined a priori, as well as all baseline factors significantly associated with HIV testing were carried forward as confounders to obtain adjusted ORs with 95% confidence intervals (CIs). Statistical significance was set at $\alpha = 0.05$ for all analyses. All analyses were conducted in Stata 16.1 (StataCorp, College Station, TX, USA).

Results

Between February and March 2020, 450 refugee and displaced youth were enrolled into the study with 157 (34.8%) in the Rubaga site, 152 (33.7%) in the Katwe/Nsambye site, and 141 (31.3%) in the Kabalagala/Kansanga site. The mean age of participants was 20 years (SD: 2.4 years) with most having some secondary education ($n = 154$, 40.3%). Just over half the participants identified as cisgender men ($n = 228$, 50.7%), and half as cisgender women ($n = 219$, 48.7%), with a small proportion identifying as transgender ($n = 3$, 0.7%). Most participants were from the Democratic Republic of Congo (DRC) ($n = 315$, 70.5%) and had been living in Uganda for between 1 and 5 years ($n = 238$, 53.3%). Slightly under half of participants reported ever having had an HIV test ($n = 194$, 43.4%) (Table 1).

Sample demographics were largely similar between men and women, with those identifying as transgender not compared due to small numbers (Table 1). However, significant differences included men being slightly older than women on average (20.5 years for men, 19.5 years for women, $p < 0.001$) and having a higher secondary education level (men: $n = 87$, 38.7%, women: $n = 65$, 30.0%, $p = 0.010$). Overall, most participants reported not having children ($n = 403$, 90.2%) and never being income secure ($n = 208$, 46.5%), with these proportions significantly greater amongst men. Young men reported significantly higher condom use self-efficacy (mean: 15.4, sd: 4.8) compared to young women (mean: 13.2, sd: 5.2) ($p < 0.001$), while young women reported significantly higher adolescent SRH stigma (mean: 9.8, sd: 2.9) than young men (mean: 8.6, sd: 3.4) ($p < 0.001$).

In baseline analyses, there were statistically significant associations between lifetime HIV testing and socio-

demographic factors (age), material (employment status, educational level), relational (having children, dating one partner/married), as well as symbolic (condom use efficacy, ever experiencing physical IPV) contextual factors (Table 2). After adjusting for each of these factors, as well as informal settlement and gender in multivariable models, secondary school education or higher was associated with 2.30 (95% CI: 1.27–4.17, $p < 0.001$) times higher odds of lifetime HIV testing than those with less than secondary school education. Employed participants were almost twice as likely to have a lifetime HIV test (aOR: 1.79, 95% CI: 1.03–3.10, $p < 0.001$) as compared to unemployed youth. Those reporting physical IPV histories had more than three-fold (aOR: 3.61, 95% CI: 1.43–9.10, $p = 0.005$) higher odds of ever HIV testing. While statistically significant in baseline analyses, in adjusted analyses having children was marginally significantly associated with lifetime HIV testing odds (aOR: 2.17, 95% CI: 0.98–4.81, $p = 0.052$).

Discussion

Our study revealed suboptimal HIV testing coverage among participating urban refugee youth in Kampala, with less than half (43.4%) ever testing. Given that the majority of participants reported dating or being in a relationship (56.8%), there is an urgent need to identify strategies to increase HIV testing coverage with this population. Testing uptake in this sample is similar to that among Ugandan host national youth, where it is reported that 54% of young women, and 44% of young men, aged 15–19 have ever tested for HIV,⁴⁷ and lower than a prior survey with urban refugee youth in Kampala where 54.7% of young women, and 60.7% of young men, had ever tested for HIV.²⁰ Innovative, contextually tailored strategies with urban refugee youth in Kampala are required to meet the UNAIDS goal of 95% of persons knowing their status to achieve an AIDS Free Generation.⁴⁸

Corroborating prior research, we found that material contexts of higher education levels and employment were linked with HIV testing uptake. It is possible that persons with secondary school and higher education were more aware of HIV and had higher treatment literacy, therefore, less fear and misinformation that present barriers to HIV testing.¹² This aligns with prior research that identified associations between higher education level and awareness of community-based HIV testing locations among urban refugee young women in Kampala.²⁰ While not explicitly explored, it could be that education level is linked with literacy, a facilitator of HIV testing identified in qualitative research with urban refugee youth in this context.¹⁴ This also maps onto research with youth in Sub-Saharan Africa at large, not refugee-specific, that identify associations between comprehensive HIV knowledge and testing.²¹ The implications of this finding are to identify and engage with urban refugee youth in Kampala who have not completed

Table 1. Baseline demographic characteristics of refugee and displaced youth aged 16–24 years recruited for the Tushirikiane Trial in Kampala, Uganda stratified by gender (n = 447).

	Total	Young men	Young women	p-value
	N (%), or mean (SD.)	N (%), or mean (SD.)	N (%), or mean (SD.)	
Total	n = 447	n = 228	n = 219	
Socio-demographic variables				
Age, years	20.0 (2.4)	20.5 (2.5)	19.5 (2.3)	<0.001 0.103
Place of birth ^a				
Democratic Republic of Congo	315 (70.5)	149 (65.6)	166 (76.2)	
Burundi	66 (14.8)	39 (17.2)	27 (12.4)	
Sudan/South Sudan	20 (4.5)	13 (5.7)	7 (3.2)	
Others ^b	44 (9.8)	26 (11.5)	18 (8.3)	
Length of time in Uganda				0.082
<1 year	16 (3.6)	11 (4.8)	5 (2.3)	
1–5 years	238 (53.2)	126 (55.3)	112 (51.1)	
6–10 years	132 (29.5)	68 (29.8)	64 (29.2)	
>10 years	61 (13.7)	23 (10.1)	38 (17.4)	
Material context				
Employment status ^a				0.143
No employment	159 (35.6)	75 (33.3)	84 (39.3)	
Student	159 (35.6)	79 (35.1)	80 (37.4)	
Employed (paid/unpaid)	121 (27.1)	71 (31.6)	50 (23.4)	0.002
Income security ^a				
Never	208 (46.5)	121 (53.3)	87 (39.9)	
Sometimes	174 (38.9)	85 (37.4)	89 (40.8)	
Always	63 (14.0)	21 (9.3)	42 (19.3)	
Highest level of education ^a				0.010
Less than secondary	110 (24.6)	62 (27.6)	48 (22.1)	
Some secondary	180 (40.3)	76 (33.8)	104 (47.9)	
Secondary +	152 (34.0)	87 (38.7)	65 (30.0)	
Food insecurity ^a				0.619
Never	153 (34.2)	73 (32.3)	80 (36.7)	
Sometimes	262 (58.6)	138 (61.1)	124 (56.9)	
Always	29 (6.5)	15 (6.6)	14 (6.4)	
Relational context				0.003
Children				
No	403 (90.2)	215 (94.3)	188 (85.8)	
Yes	44 (9.8)	13 (5.7)	31 (14.2)	

(continued)

Table 1. (continued)

	Total	Young men	Young women	p-value
	N (%), or mean (SD.)	N (%), or mean (SD.)	N (%), or mean (SD.)	
Relationship status ^a				0.075
No current partner	189 (42.3)	92 (40.7)	97 (44.7)	
Dating one partner/married	183 (40.9)	89 (39.4)	94 (43.3)	
Casual dating/multiple partners	71 (15.9)	45 (19.9)	26 (12.0)	
Social Provisions Scale ^a	66.5 (6.0)	66.4 (5.9)	66.6 (6.2)	0.734
Symbolic context				
Sexual Relationship Power Scale ^a	42.0 (9.0)	42.0 (9.2)	42.0 (8.8)	0.996
Condom Use Self-Efficacy	14.3 (5.1)	15.4 (4.8)	13.2 (5.2)	<0.001
Experienced physical IPV				0.145
Never	418 (93.5)	217 (95.2)	201 (91.8)	
Ever	29 (6.5)	11 (4.8)	18 (8.2)	
Experienced sexual IPV				0.710
Never	408 (91.3)	207 (90.8)	201 (91.8)	
Ever	39 (8.7)	21 (9.2)	18 (8.2)	
HIV-Related Stigma Scale ^a	21.2 (5.6)	21.0 (5.4)	21.4 (5.9)	0.448
Adolescent SRH stigma ^a	9.1 (3.2)	8.6 (3.4)	9.8 (2.9)	<0.001
Outcome				
Lifetime HIV testing				0.875
Never	252 (56.4)	128 (56.1)	124 (56.9)	
Ever	194 (43.4)	100 (43.9)	94 (43.1)	

Note: SD, standard deviation; IPV, intimate partner violence; SRH, sexual and reproductive health. Participants identifying as transgender (n = 3) are excluded due to small numbers.

^aMissing values for place of birth n = 2 (0.5%); employment n = 8 (1.8%); income security n = 2 (0.5%); education n = 5 (1.1%); food insecurity n = 3 (0.7%); relationship status n = 4 (0.9%); social provisions n = 18 (4.0%); sexual relationship power n = 12 (2.7%); condom use self-efficacy n = 1 (0.2%); HIV stigma n = 8 (1.8%); SRH stigma n = 12 (2.7%); HIV testing n = 1 (0.2%).

^bOther includes Uganda, Kenya, Rwanda, and Somalia.

Table 2. Distribution of HIV testing and baseline and adjusted logistic regression models for ever having an HIV test among refugee and displaced youth aged 16–24 years recruited for the Tushirikiane trial in Kampala, Uganda ($n = 446$).

	Never had HIV test		Ever had HIV test		Baseline model ^a		Adjusted model ^b	
	N (%)	or mean (SD)	N (%)	or mean (SD)	OR (95% CI)	p-value ^c	OR (95% CI)	p-value ^c
Total	$n = 252$		$n = 194$					
Socio-demographic variables								
Age, years	19.6 (2.3)		20.5 (2.5)		1.17 (1.08–1.27)	<0.001	1.00 (0.90–1.11)	0.956
Gender						0.668		0.884
Cisgender man	128 (50.8)		100 (51.6)		Ref		Ref	—
Cisgender woman	124 (49.2)		94 (48.4)		0.92 (0.63–1.35)	0.521	0.97 (0.61–1.52)	—
Length of time in Uganda								
<1 year	9 (3.6)		7 (3.6)		Ref		—	—
1–5 years	136 (54.0)		102 (52.6)		1.05 (0.37–2.94)		—	—
6–10 years	78 (31.0)		53 (27.3)		0.96 (0.33–2.76)		—	—
>10 years	29 (11.5)		32 (16.5)		1.52 (0.50–4.65)		—	—
Material context								
Employment status								
No employment	93 (37.7)		65 (34.0)		Ref	<0.001	Ref	<0.001
Student	104 (42.1)		55 (28.8)		0.59 (0.36–0.97)		0.60 (0.35–1.03)	—
Employed (paid/unpaid)	50 (20.2)		71 (37.2)		1.88 (1.14–3.08)		1.79 (1.03–3.10)	—
Income security								
Never	129 (51.4)		79 (40.9)		Ref	0.246	—	—
Sometimes	95 (37.9)		79 (40.9)		1.15 (0.73–1.83)		—	—
Always	27 (10.8)		35 (18.1)		1.70 (0.99–3.19)		—	—
Highest level of education								
Less than secondary	65 (26.2)		45 (23.3)		Ref	0.002	Ref	<0.001
Some secondary	114 (46.0)		66 (34.2)		0.89 (0.54–1.45)		0.88 (0.51–1.52)	—
Secondary +	69 (27.8)		82 (42.5)		1.89 (1.34–3.13)		2.30 (1.27–4.17)	—
Relational context								
Children								
No	238 (94.4)		164 (84.5)		Ref	<0.001	Ref	0.052
Yes	14 (5.6)		30 (15.5)		3.19 (1.62–6.28)		2.17 (0.98–4.81)	—
Relationship status								
No current partner	122 (48.6)		67 (35.1)		Ref	0.044	Ref	0.333
Dating one partner/married	93 (37.1)		89 (46.6)		1.64 (1.07–2.50)		1.34 (0.84–2.13)	—
Casual dating/multiple partners	36 (14.3)		35 (18.3)		1.68 (0.96–2.93)		1.49 (0.80–2.78)	—

(continued)

Table 2. (continued)

	Never had HIV test		Ever had HIV test		Baseline model ^a		Adjusted model ^b	
	N (%)	or mean (SD)	N (%)	or mean (SD)	OR (95% CI)	p-value ^c	OR (95% CI)	p-value ^c
Social Provisions Scale	66.2 (5.8)		66.9 (6.3)		1.01 (0.98–1.04)	0.615		—
Symbolic context								
Sexual Relationship Power Scale	41.8 (9.3)		42.4 (8.7)		1.00 (0.98–1.02)	0.998		—
Condom Use Self-Efficacy	13.9 (5.5)		14.7 (4.6)		1.04 (1.00–1.08)	0.043	1.01 (0.96–1.05)	0.738
Experienced physical IPV								0.005
Never	244 (96.8)		173 (89.2)		Ref		Ref	—
Ever	8 (3.2)		21 (10.8)		4.52 (1.92–10.7)	0.083	3.61 (1.43–9.10)	—
Experienced sexual IPV								—
Never	235 (93.3)		172 (88.7)		Ref		Ref	—
Ever	17 (6.8)		22 (11.3)		1.80 (0.92–3.52)		—	—
HIV-related Stigma Scale	21.0 (5.7)		21.3 (5.6)		1.00 (0.97–1.04)	0.886	—	—
Adolescent SRH stigma	9.0 (3.4)		9.3 (3.0)		1.00 (0.94–1.07)	0.902	—	—

Note: SD, standard deviation; OR, odds ratio; ref, reference; IPV, intimate partner violence; SRH, sexual and reproductive health. Participants identifying as transgender (n = 3) are excluded due to small numbers.

^aBaseline model conducted using logistic regression controlling for settlement as an a priori covariate to control for clustering.

^bAdjusted model conducted using logistic regression controlling for settlement and gender a priori and all significant baseline model variables.

^cP-values calculated from likelihood ratio test.

secondary school, and who may have both literacy and language barriers to accessing HIV testing and information.¹⁴

Our finding that employed urban refugee youth were more likely to have tested for HIV signals the importance of being able to address financial needs and circumvent potential barriers such as transport to clinics.¹⁴ O’Laughlin and colleagues,¹⁵ conceptualized the tension between competing priorities and HIV testing with adult refugees in Nakivale refugee settlement, describing how daily priorities of food, shelter and safety took precedence over HIV testing and care engagement.¹⁵ It has been recommended that testing interventions with refugees provide education campaigns, food and other survival needs, and reduce access barriers such as transport.¹⁵

Out of the relational variables we assessed, having children was associated with a greater likelihood of HIV testing. This aligns with prior research on entry points for young women’s testing via antenatal care.^{23,25,26} Toska et al.²³’s scoping review of HIV and adolescent motherhood note that “adolescent mothers risk falling between the gaps in both adolescent HIV prevention and adult focused PMTCT support.” Further research needs to explore integrated HIV and parenting support for urban refugee youth, particularly as 10% of our sample had children. Social support was not significantly associated with testing. Our measure did not differentiate sources of social support which may be important for testing; for instance, qualitative findings with refugee youth in Kampala described wanting support from peer educators over friends to engage in HIV self-testing.¹² Indeed, a study in Kenya reported social support was a barrier to youth accessing HIV testing, suggesting source of social support is important to consider.⁴⁹

With regards to symbolic factors, we found physical IPV was associated with increased HIV testing. It is plausible that refugee youth experiencing IPV have awareness of related HIV vulnerabilities, such as constrained access to sexual health services, limited sexual negotiation power, and increased alcohol use,³⁷ and may mitigate these risks by engaging in HIV testing. Youth facing physical IPV may also be more likely to seek medical care and receive an HIV test as a part of their medical evaluation. Due to the bidirectional nature of HIV vulnerability and IPV,^{33,35,36} there is the possibility that by engaging in HIV testing young refugees may experience negative and violent reactions from partners. In qualitative findings, young urban refugee women in Kampala noted fears of negative repercussions or coercion in contexts of HIV testing with intimate partners.¹² Surprisingly, neither HIV-related stigma nor adolescent SRH stigma were associated with HIV testing. It could be that urban refugee youth who enrolled in an HIV testing study had less stigma, or that the measures did not adequately reflect experiences of stigma. In prior research, the adolescent

SRH scale we used was only associated with HIV testing among young women refugees, not young men.²⁰ Notably we did not assess other intersecting stigma identified by urban refugee youth in this context as a barrier to HIV testing, such as refugee stigma and sex work stigma.¹² Sexual relationship power was not associated with HIV testing, nor was condom self-efficacy in multivariable analyses. These findings suggest that other than IPV, the most significant correlates of testing are socio-economic—employment and education.

There are several study limitations. The data reported is cross-sectional; hence, causality cannot be inferred. This community-based study involved non-random sampling methods, largely through peer referral and word of mouth, as there is no sampling frame of urban refugee youth. This limits generalizability of findings. HIV testing history was self-reported so may have been underreported due to stigma or discomfort. Measuring intersectional stigma¹² and further measures of agency in sexual relationships, may have allowed us to further identify relational contexts of HIV testing. Despite limitations, to our knowledge this study is unique in including such a large sample of urban refugee youth, including young men, and identified significant gaps in testing coverage within this population.

Conclusions

Together, these findings demonstrate the salience of a social contextual approach^{11,50} to creating enabling environments for HIV testing among urban refugee youth in Kampala. Strategies can nurture HIV treatment literacy and informational support³²—and aim to reach urban refugee youth with limited formal education and those who are unemployed. IPV and HIV prevention interventions have failed young women in Southern Africa, and there are calls for new approaches that meaningfully engage young people, focus on agency versus risk, and address dynamic and shifting gender norms.³⁷ Similarly, solutions can be developed with young urban refugees to address the root causes of IPV⁵¹ and increase agency and access to HIV prevention and testing to optimize sexual health.

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