Sexually transmitted infection testing awareness, uptake and diagnosis among urban refugee and displaced youth living in informal settlements in Kampala, Uganda: a cross-sectional study

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ABSTRACT

Background Sexually transmitted infection (STI) prevention needs among urban refugee and displaced youth are understudied. The study objective was to explore factors associated with the STI prevention cascade (STI services awareness, testing, diagnosis) among urban refugee and displaced youth in Kampala, Uganda.

Methods We implemented a cross-sectional survey with youth aged 16–24 years in informal settlements in Kampala. We conducted bivariate and multivariable logistic regression analyses to identify social ecological (intrapersonal, interpersonal, community) level factors associated with STI testing services awareness, lifetime STI testing, and lifetime STI diagnosis.

Results Participants (n=445; mean age 19.3, SD 2.6, years) included young women (n=333, 74.8%) and young men (n=112, 25.2%). Less than half (43.8%) were aware of community STI services. One-quarter (26.1%) reported lifetime STI testing. Of these, 39.5% reported a lifetime STI diagnosis. In multivariable analyses among young women, age, lifetime sex partners, and lower adolescent sexual and reproductive health (SRH)-related stigma were associated with STI services awareness; and age, lower adolescent SRH-related stigma, and food security were associated with STI testing. Among young men, time in Uganda and lower HIV-related stigma were associated with STI services awareness; and age, condom self-efficacy, and increased adolescent SRH-related stigma were associated with testing. Lifetime sex partners, lower condom self-efficacy, and lower adolescent SRH-related stigma were associated with lifetime STI diagnosis.

Conclusions Social ecological factors including stigma (adolescent SRH-related, HIV-related) were associated with STI testing and diagnosis among young urban refugees. Gender, age and stigma-tailored strategies can advance the STI prevention cascade among urban young refugees.

Key messages

- Sexually transmitted infection (STI) testing is suboptimal among urban refugee youth, which is of concern on account of the high rates of transactional sex and forced sex in this sample.
- Adolescent sexual and reproductive health-related stigma was associated with lower STI services awareness, lower STI testing uptake and lower STI diagnosis among urban refugee young women in Kampala.
- Condom use self-efficacy emerged as a protective factor associated with lower likelihood of a STI diagnosis history; this can inform behavioural STI prevention interventions.

INTRODUCTION

Over half of the 70 million forcibly displaced people globally (52%) are aged under 18 years.[1] Humanitarian crises may increase youths' vulnerability to HIV and other sexually transmitted infections (STIs) due to increased exposure to sexual violence and limited access to sexual and

reproductive health (SRH) services and supplies.[2 3] Most forcibly displaced persons are hosted in low- and middle-income countries with overburdened healthcare systems.[1] The SRH needs of adolescents and young people in humanitarian settings remain largely unmet.[4] A 2015 systematic review[3] of 36 studies reported a dearth of SRH services in humanitarian settings targeting young people. Conflict-affected youth inadequately access SRH services in part due to the lack of quality SRH services and poor attitudes of healthcare providers towards youth.[5]

Limited access and utilisation of STI testing may have deleterious and long-term effects on young people's health.[4 6] Consequences of untreated or diagnosed STIs may include infertility, pelvic inflammatory disease, cervical cancer, ectopic pregnancy, miscarriage, fetal death, or congenital infections.[7] STIs are a critical global health problem.[6] Uganda relies on the UNAIDS' Global AIDS Response Progress Reporting system (GARPR)[8] to acquire STI prevalence information. The GARPR monitors only syphilis and gonorrhoea among adults, leaving knowledge gaps of STI testing and prevention needs among Ugandan youth.[9] This is particularly true among refugee youth in Uganda, host to 1.3 million forcibly displaced persons[10] of whom 27% are girls aged under 18 years.[11]

Social ecological contexts[12] including poverty, breakdown of social networks, stigma, and sexual and gender-based violence increase STI exposure among forcibly displaced persons.[13] Urban refugee and displaced youth are a key population left behind in STI prevention interventions. Most displaced people settle among host communities, often in urban areas.[1] Kampala, Uganda has a population of 1.4 million people and hosts over 73 00 refugees who live predominantly in informal settlements ('slums').[10] A recent cross-sectional study with youth (n=1134) living in Kampala's slums found that 42.4% self-reported an STI diagnosis.[14] STI testing and treatment services are offered in government hospitals to all Ugandans and refugees. Though the World Health Organization (WHO) recommends regular screening for STIs and HIV as an important entry point for treatment and prevention programmes, urban refugees living in informal settlements may face unique and complex challenges to accessing testing and prevention services. Factors including language barriers and poverty may limit refugee and displaced youth's access to, and utilisation of, SRH services. Adolescents and youth diagnosed with STIs may face stigma that can present a significant barrier to accessing care and other SRH services.[7] Understanding social ecological factors associated with STI vulnerabilities and testing among urban refugee and displaced youth can inform STI prevention and testing efforts.

Limited research has focused on STIs among urban refugee and displaced youth in Uganda, resulting in knowledge gaps regarding their STI prevention and testing needs.[15] The current study aimed to fill this knowledge gap by exploring factors associated with the STI prevention cascade – STI testing services awareness, STI testing uptake, STI diagnosis – among urban refugee and displaced youth in Kampala. Specifically, this study explored the prevalence and factors associated with (a) awareness of STI testing in one's community, (b) lifetime uptake of STI testing, and (c) lifetime STI diagnosis among urban refugee and displaced youth aged 16–24 years living in Kampala's informal settlements.

METHODS

In this community-based study we conducted a tablet-based cross-sectional survey with a sample of refugee and displaced youth aged 16–24 years recruited using convenient and respondent-driven sampling[16] methods at five informal settlements across Kampala (Kabalagala, Rubaga, Kansanga, Katwe, Nsambya) between January and March 2018. We recruited 12 peer research assistants (PRAs) (n=12; four young men and eight young women) recommended by community partners on account of their wide social networks. The PRAs were aged 18–24 years, self-identified as refugees or displaced persons, and received training from the research team in research methods and ethics, survey administration, and confidentiality. The PRAs recruited participants by word-of-mouth and administered the tablet-based survey. Eligibility criteria for participants included young women and men aged 16–24 years who self-identified: as a refugee or displaced person or having refugee/displaced parents; living in Kabalagala, Rubaga, Kansanga, Katwe or Nsambya; and able to provide informed consent. The PRAs gave each participant a study 'coupon' with their contact information and invited them to recruit a maximum of five refugee/displaced youth from their social networks to participate in the study. Prior to the survey, participants provided informed consent via the tablet. The PRAs used English, French or Swahili (the most common spoken language for refugees from the Democratic Republic of the Congo (DRC), Rwanda and Burundi) to administer the tablet-based survey at a location of the participant's choice (eg, community centre, football pitch, community agency). Participants were provided with the option of completing sensitive questions (eg, sexual practices) on the tablet privately. The survey duration was approximately 35–45 min and each participant received an honararium of 12 500 Ugandan shillings (UGX) (roughly equivalent to US$3.74). We aimed to recruit 450 participants, calculated using G*Power 3.1,[17] where the recommended sample size for logistic regression is 403 (OR 1.4, $p<0.05$, power 0.85). The study protocol was approved by the University of Toronto, Canada Research Ethics Board (#35405) and the Uganda Ministry of Health (ADM: 105/261/01).

Table 1 Sociodemographic characteristics of refugee and displaced youth by sexually transmitted infection (STI) testing services awareness and lifetime STI testing uptake in informal settlements in Kampala, Uganda (n=445)

Variables	Full sample (n (%) or mean (SD, range)) (n=445)	Aware of community STI testing services (n (%) or mean (SD, range))(n=195)	Not aware of community STI testing services (n (%) or mean (SD, range)) (n=250)	P value	Lifetime STI testing (ever) (n (%) or mean (SD, range)) (n=116)	Lifetime STI testing (never) (n (%) or mean (SD, range)) (n=329)	P value
Sociodemographic factors							
Gender				0.986			0.005
Women	333 (74.8)	146 (74.9)	187 (74.8)		98 (84.5)	235 (71.4)	
Men	112 (25.2)	49 (25.1)	63 (25.2)		18 (16.1)	94 (28.6)	
Age (years)	19.31 (2.56, 16–24)	20.43 (2.66, 16–24)	18.94 (2.35, 16–24)	0.000	20.02 (2.49, 16–24)	18.45 (2.39, 16–24)	0.000
Education				0.068			0.052
Less than secondary school	234 (52.6)	93 (47.7)	141 (56.4)		52 (44.8)	182 (55.3)	
Post-secondary education	211 (47.4)	102 (52.3)	109 (43.6)		64 (55.2)	147 (44.7)	
Place of birth				0.738			0.219
South Sudan	35 (7.9)	18 (9.2)	17 (6.8)		10 (28.6)	25 (7.6)	
Burundi	115 (25.8)	48 (24.6)	67 (26.8)		22 (19.1)	93 (28.3)	
DRC	249 (56.0)	106 (54.4)	143 (57.2)		74 (29.7)	175 (53.2)	
Rwanda	19 (4.3)	10 (5.1)	9 (3.6)		3 (15.8)	16 (4.9)	
Other	27 (6.1)	23 (6.7)	14 (5.6)		7 (57.9)	20 (6.1)	
Time in Uganda (years)				0.019			0.004
>1	35 (7.9)	8 (4.1)	27 (10.8)		7 (6.0)	28 (8.5)	
1–5	265 (59.6)	126 (64.6)	139 (55.6)		84 (72.4)	181 (55.0)	
<5	145 (32.6)	61 (31.3)	87 (33.6)		25 (21.6)	120 (36.5)	
Immigration status (n=442)				0.106			0.441
Refugees	391 (88.5)	177 (91.2)	214 (86.3)		104 (90.4)	287 (87.8)	
Asylum-seeking	51 (11.5)	17 (8.8)	34 (13.7)		11 (9.6)	40 (12.2)	
Relationship status				0.002			0.014
No current partner	187 (42.0)	70 (36.3)	117 (51.1)		39 (34.2)	148 (48.1)	
Dating one partner/married	185 (41.6)	91 (47.2)	94 (41.0)		63 (55.3)	122 (39.6)	
Casual dating/multiple partners	50 (11.2)	32 (16.6)	18 (7.9)		12 (10.5)	38 (12.3)	
Employment (n=428)				0.000			0.000
Unemployed	176 (38.6)	93 (49.7)	83 (34.4)		65 (56.5)	111 (35.5)	
Student	190 (42.7)	52 (27.8)	138 (57.3)		34 (29.6)	156 (49.8)	
Employed	62 (13.9)	42 (22.5)	20 (8.3)		16 (13.9)	46 (14.7)	
STI outcomes							
Lifetime STI testing							
No	329 (73.9)						
Yes	116 (26.1)						
STI diagnosis history (n=114)							
Gonorrhoea	10 (8.8)						
Syphilis	7 (6.1)						
Herpes	17 (14.9)						
More than two STIs	11 (9.6)						
I do not know	18 (15.8)						
None	51 (44.7)						
Intrapersonal factors							
Transactional sex in past 12 months (n=412)				0.960			0.849
No	284 (68.9)	125 (69.1)	159 (68.8)		78 (69.6)	206 (68.7)	
Yes	128 (31.1)	56 (30.9)	72 (31.2)		34 (30.4)	94 (31.4)	
Lifetime multiple sexual partners (n=251)				0.000			0.004
No	258 (58.0)	89 (45.6)	169 (67.6)		54 (46.6)	204 (62.0)	

Continued

Table 1 Continued

Variables	Full sample (n (%) or mean (SD, range)) (n=445)	Aware of community STI testing services (n (%) or mean (SD, range))(n=195)	Not aware of community STI testing services (n (%) or mean (SD, range)) (n=250)	P value	Lifetime STI testing (ever) (n (%) or mean (SD, range)) (n=116)	Lifetime STI testing (never) (n (%) or mean (SD, range)) (n=329)	P value
Yes	187 (42.0)	106 (54.4)	81 (32.4)		62 (53.4)	125 (38.0)	
Ever used drugs/alcohol while having sex (n=251)				0.009			0.683
No	182 (72.5)	88 (48.4)	94 (51.6)		22 (31.9)	47 (68.1)	
Yes	69 (27.5)	46 (66.7)	23 (33.3)		63 (34.6)	119 (65.4)	
Interpersonal factors							
Lifetime forced sex				0.092			0.006
No	354 (79.6)	148 (75.9)	206 (82.4)		82 (70.7)	272 (82.7)	
Yes	91 (20.4)	47 (24.1)	44 (17.6)		34 (29.3)	57 (17.3)	
Condom use self-efficacy	19.33 (7.83, 7–35)	19.74 (7.51, 7–35)	19.01 (8.07, 7–35)	0.326	20.75 (7.79, 7–35)	18.83 (7.80, 7–35)	0.023
Community factors							
Adolescent SRH stigma subscales							
Sexual activity and pregnancy stigma subscale	5.55 (1.94, 0–7)	5.08 (2,23, 0-7)	5.91 (1.59, 0–7)	0.000	5.05 (2.49, 0–7)	5.72 (1.68, 0–7)	0.001
Modern family planning and abortion stigma subscale	5.37 (1.68, 0–6)	5.08 (1.74, 0–7)	5.59 (1.59, 0–7)	0.020	5.14 (1.85,0–7)	5.45 (1.61, 0–7)	0.088
HIV-related stigma	31.48 (6.05, 10–40)	30.56 (5.62, 10–40)	32.19 (5.62, 13–40)	0.005	30.93 (5.69, 10–40)	31.67 (5.68, 10–40)	0.267
Food insecurity				0.310			0.001
No	125 (28.1)	50 (25.6)	75 (30.0)		19 (16.4)	106 (32.2)	
Yes	320 (71.9)	145 (74.4)	175 (70.0)		97 (83.6)	223 (67.8)	

Higher condom use self-efficacy scores indicated higher confidence in using condoms.
* p<0.050, ** p<0.010, *** p<0.001
DRC, Democratic Republic of Congo; STI, sexually transmitted infection.

Study outcomes included self-reported awareness of STI testing services in one's community using a dichotomous question: "*Are you aware of where to get an STI test near where you live*?" and lifetime STI testing, assessed with the dichotomous question: "*I have had an STI test (not including HIV) in my lifetime*". The secondary outcome was self-reported lifetime STI diagnosis assessed among participants who stated they had received an STI test in their lifetime. We also collected sociodemographic information on age, education level, employment status, and relationship status. We assessed *forced sex history* ("*During your childhood, did an adult sexually force themselves on you or force you to have sex?*").

Condom use self-efficacy was assessed with the seven-item Condom Efficacy scale[18] (*eg, I feel confident in my ability to put a condom on myself or my partner)* (Cronbach's α=0.95, range 7–35). Each item was measured on a five-point response scale asking respondents to rate their level of confidence in their ability to correctly use, and negotiate the use of, condoms. The items were summed to create a cumulative condom use self-efficacy score, with higher scores representing higher levels of condom use self-efficacy.

We assessed adolescent SRH-related stigma[19] using two subscales validated with a sample of urban refugee youth in Uganda: *sexual activity and pregnancy stigma (eg, People behave differently toward a young person whom they know has had sex*) (Cronbach's α: full sample=0.82, women=0.84, men=0.74); and *modern family and abortion stigma* (eg, *Modern family planning is not acceptable for unmarried women*) (Cronbach's α: full sample=0.68, women=0.73, men=0.51).[20] Response options used a three-point Likert scale (disagree, neutral, agree). We assessed HIV-related stigma with Steward *et al*.'s 10-item perceived stigma subscale (awareness of negative community values and attitudes toward HIV).[21] A higher score indicates higher HIV-related stigma (score range: 0–100; full sample: Cronbach α=0.87, women: Cronbach α=0.89, men: Cronbach α=0.72).

Food insecurity was assessed using a single item asking how often participants went to sleep hungry because they did not have enough food to eat (responses were dichotomised for those who indicated rarely or always [1] or never [0]). Food insecurity is an indicator of poverty and has been assessed among youth with this single item in prior research.[22 23]

We conducted independent *t*-tests and chi-square analyses to compare sociodemographic and social ecological factors associated with differences across primary outcomes (awareness of STI testing services and lifetime STI testing). We conducted bivariate logistic regression followed by multivariable logistic regression controlling for factors correlated at p<0.05 to identify factors associated with awareness of STI testing services, lifetime STI testing and lifetime STI diagnosis. We report the unadjusted odds ratios (ORs) and adjusted odds ratios (aORs)

Table 2 Factors associated with the odds of sexually transmitted infection (STI) testing services awareness and lifetime STI testing uptake among refugee and displaced young women in informal settlements in Kampala, Uganda (n=333)

	Awareness of STI services		Lifetime STI testing	
Indicators	**OR (95% CI)**	**aOR (95% CI)**	**OR (95% CI)**	**aOR (95% CI)**
Sociodemographic factors				
Age	1.29 (1.18 to 1.42)***	1.22 (1.10 to 1.36)***	1.19 (1.10 to 1.30)***	1.15 (1.03 to 1.28)*
Education (<secondary school=0)	1.24 (0.800 to 1.92)		1.52 (0.99 to 2.33)	
Time in Uganda (years) (<1 year=0)				
1–5	0.47 (0.18 to 1.30)		1.20 (0.47 to 3.05)	2.17 (0.72 to 6.50)
>5	1.18 (0.75 to 1.86)		2.23 (1.35 to 3.68) **	0.86 (0.27 to 2.78)
Relationship status (single=0)				
Dating one partner/married	1.96 (1.23 to 3.12)**	1.05 (0.60 to 1.82)	0.83 (0.40 to 1.75)	
Casual dating/multiple partners	1.19 (0.57 to 2.51)	1.38 (0.57 to 3.35)	1.64 (0.79 to 3.35)	
Intrapersonal factor				
Lifetime multiple sexual partners (No=0)	0.40 (0.27 to 0.59)***	1.27 (0.74 to 2.18)	0.53 (0.35 to 0.82)**	1.08 (0.57 to 2.02)
Interpersonal factors				
Condom use self-efficacy	1.01 (0.98 to 1.04)		1.03 (1.00 to 106)*	1.03 (0.99 to 1.07)
Lifetime forced sex (No=0)	0.67 (0.42 to 1.07)		0.50 (0.31 to 0.83)**	1.41 (0.74 to 2.66)
Community factors				
Sexual activity and pregnancy stigma	0.62 (0.67 to 0.86)***	0.78 (0.66 to 0.92)**	0.79 (0.71 to 0.89)***	0.81 (0.69 to 0.94)***
Modern family planning and abortion stigma	0.79 (0.69 to 0.90)***	0.95 (0.80 to 1.13)	0.88 (0.78 to 0.99)*	1.05 (0.86 to 1.28)
Food insecurity (No=0)	0.81 (0.53 to 1.23)		0.41 (0.24 to 0.71)***	0.33 (0.17 to 0.66)**
Model fit indices				
N	333	333	333	333
Predicted correctly		70.0		70.9
Nagelkerke R square		0.21		0.23

*p<0.050, **p<0.010, ***p<0.001.
aOR, adjusted odds ratio; CI, confidence interval; OR, unadjusted odds ratio; STI, sexually transmitted infection.

and 95% confidence intervals (CIs), highlighting those significant at the 0.05 level. We stratify our analysis and results by gender. Missing responses were excluded from the analyses; the number of complete responses were reported for each variable. All statistical analyses were performed using IBM's Statistical Package for Social Sciences 25.[24]

Patient and public involvement

We collaborated with refugee-led and serving agencies, the Ugandan Ministry of Health and the Office of the Prime Minister, who contributed to the research question development, and provided feedback into the outcome measures. The questions were pilot tested with urban refugee PRAs who were proficient in Swahili, French and/or English and trained as peer health workers.

RESULTS

As illustrated in table 1, of 445 study participants, three-quarters (74.8%, n=333) were young women and one-quarter (25.2%, n=112) young men. The mean age was 19.31 (SD 2.56) years. Less than half (n=195, 43.8%) were aware of STI services in their community. One-quarter (26.1%, n=116) of participants reported lifetime STI testing. Of these, 45 participants (39.5%) reported a lifetime STI diagnosis.

Factors associated with awareness of STI services

We conducted bivariable and multivariable analyses for young women (table 2) and young men (table 3). Among young women, the final multivariable model showed that older age and lower sexual activity and pregnancy stigma were associated with awareness of STI services in one's community. Among young men, the final multivariable model revealed that living in Uganda between 1–5 years versus less than a year and lower HIV-related stigma were associated with awareness of community STI services.

Factors associated with lifetime STI testing

We conducted bivariable and multivariable analyses for young women (table 2) and young men (table 3). Among young women, the final multivariable model showed that higher age, lower sexual activity and pregnancy stigma, and lower food insecurity were associated with increased odds of lifetime STI testing. Among young men, in the final multivariable model increased age, higher condom use self-efficacy, and increased sexual activity and pregnancy stigma were associated with increased odds of lifetime STI testing.

Factors associated with lifetime STI diagnosis

In the final multivariable model (table 4) we examined factors associated with lifetime STI diagnosis across

Table 3 Factors associated with the odds of sexually transmitted infection (STI) testing services awareness and lifetime STI testing uptake among refugee and displaced young men in informal settlements in Kampala, Uganda (n=112)

	Awareness of STI services		Lifetime STI testing	
Indicators	**OR (95% CI)**	**aOR (95% CI)**	**OR (95% CI)**	**aOR (95% CI)**
Sociodemographic factors				
Age	1.22 (1.04 to 1.43)*	1.13 (0.91 to 1.40)	1.56 (1.19 to 2.04)***	1.56 (1.17 to 2.08)**
Education (<secondary school=0)	2.27 (1.03 to 5.02)*	0.67 (0.24 to 1.85)	2.59 (0.79 to 8.47)	
Time in Uganda (years) (<1 year=0)				
1–5	4.87 (1.00 to 23.68)*	6.84 (1.27 to 36.93)*	0.89 (0.17 to 4.61)	
>5	3.08 (0.53 to 17.79)	4.70 (0.72 to 30.74)	2.23 (1.35 to 3.68)	
Relationship status (single=0)				
Dating one partner/married	1.58 (0.68 to 3.54)		1.03 (0.35 to 3.03)	
Casual dating/multiple partners	1.19 (0.57 to 2.51)		0.94 (0.17 to 5.17)	
Intrapersonal factor				
Lifetime multiple sexual partners (No=0)	0.43 (0.20 to 0.93) *	0.64 (0.06 to 6.46)	0.62 (0.22 to 1.71)	
Interpersonal factors				
Lifetime forced sex (No=0)	0.75 (0.22 to 2.50)		2.25 (0.27 to 18.63)	
Condom use self-efficacy	1.05 (0.98 to 1.13)		1.20 (1.06 to 1.36)**	1.19 (1.03 to 1.36)*
Community factors				
Sexual activity and pregnancy stigma	0.90 (0.73 to 1.10)		1.19 (0.87 to 1.64)	1.40 (1.00 to 1.95)*
Modern family planning and abortion stigma	1.05 (0.81 to 1.35)		1.02 (0.72 to 1.51)	
HIV-related stigma	0.90 (0.83 to 0.98)*	0.90 (0.82 to 0.98)*	1.03 (0.93 to 1.15)	
Food insecurity (No=0)	1.49 (0.63 to 3.53)		0.75 (0.23 to 2.48)	
Model fit indices				
N	112	61	112	112
Predicted correctly		72.1		84.8
Nagelkerke R square		0.22		0.38

*p<0.050, **p<0.010, ***p<0.001.
aOR, adjusted odds ratio; CI, confidence interval; OR, unadjusted odds ratio; STI, sexually transmitted infection.

participants who reported being tested and receiving results. We found that lifetime sex partners, lower condom use self-efficacy, and lower sexual activity and pregnancy stigma were associated with increased odds of a lifetime STI diagnosis.

DISCUSSION

Less than half of urban refugee and displaced youth participants in this study were aware of STI testing services in their community and only one-quarter had ever been tested for STIs. There was a high self-reported prevalence of STIs (39.5%) among those who had been tested. Social ecological factors[12] spanning intrapersonal, interpersonal and community levels were associated with STI testing awareness and uptake. STI testing awareness and uptake was suboptimal among this sample of refugee and displaced youth who reported STI vulnerabilities, including past 12-month transactional sex (31.1%), lifetime multiple sex partners (42.0%) and histories of forced sex (20.4%). Low STI services awareness among participants might contribute to this low STI testing uptake. Findings point to an urgent need for increased awareness and access to STI testing for urban refugee and displaced youth in Kampala.

Young women who reported greater adolescent SRH-related stigma were less likely to both know about STI testing services and to have been tested for STI. This finding builds on Hall's[19] work that demonstrated adolescent SRH-related stigma was associated with reduced contraceptive use among young women in Ghana, to suggest the importance of recognising adolescent SRH-related stigma as a barrier to STI testing and awareness. Stigma associated with premarital sex and pregnancy may be reproduced within social contexts and affect young women's access and use of SRH services.[25] Finally, food insecurity was associated with young women's reduced STI testing uptake. This aligns with research that describes poorer healthcare utilisation among food insecure persons in Uganda due to competing food and healthcare priorities,[26] and research in Jamaica that reported associations between food insecurity and delayed STI testing.[27] Food insecurity has been conceptualised as a risk factor for HIV,

Table 4 Factors associated with the odds of a sexually transmitted infection diagnosis among refugee and displaced youth in informal settlements in Kampala, Uganda (n=114)

	Lifetime STI diagnosis	
Indicators	**OR (95% CI)**	**aOR (95% CI)**
Sociodemographic factors		
Age	0.99 (0.86 to 1.15)	
Education (<secondary school=0)	0.48 (0.23 to 1.04)	
Relationship status (single=0)		
Dating one partner/married	1.69 (0.73 to 3.89)	
Casual dating/multiple partners	0.64 (0.15 to 2.78)	
Intrapersonal factor		
Lifetime multiple sexual partners (No=0)	0.25 (0.11 to 0.56)***	3.80 (1.46 to 9.92)**
Interpersonal factors		
Condom use self-efficacy	0.93 (0.88 to 0.98)**	0.91 (0.85 to 0.97)**
Lifetime forced sex (No=0)	1.29 (0.56 to 2.96)	
Community factors		
Sexual activity and pregnancy stigma	0.71 (0.59 to 0.84)*	0.75 (0.61 to 0.93)*
Modern family planning and abortion stigma	0.93 (0.76 to 1.14)	
Model fit indices		
N	114	114
Predicted correctly		72.8
Nagelkerke R square		0.33

*p<0.050, **p<0.010, ***p<0.001.
aOR, adjusted odds ratio; CI, confidence interval; OR, unadjusted odds ratio; STI, sexually transmitted infection.

particularly among young women, as it reduces access to SRH services while elevating practices that can increase STI exposure (eg, transactional sex).[28]

Among young men, HIV-related stigma was associated with lower STI testing awareness, and higher adolescent SRH-related stigma was associated with STI testing uptake. This points to the need for assessing *both* HIV-related and SRH-related stigma and the ways they shape STI testing practices. HIV-related stigma was a STI testing barrier, building on research documenting its role in constraining HIV testing practices.[13] Adolescent SRH-related stigma was higher among young men who had tested for STI, corroborating research with sexually diverse men in Jamaica that noted associations between sexual stigma and STI testing.[27] It is plausible that in seeking STI testing, urban refugee young men experienced SRH-related stigma from healthcare providers.

A lifetime STI diagnosis was associated with multiple lifetime sex partners, lower sexual activity and pregnancy stigma, and lower condom use self-efficacy. These findings build on a study with youth in Uganda's informal settlements that also reported multiple sex partners were associated with a self-reported STI history.[14] Condom self-efficacy – knowledge, relationship dynamics and condom access[22 23] – was a protective factor associated with reduced odds of STI diagnosis. In prior research with youth in Jamaica, condom self-efficacy was associated with STI testing,[27] and among youth in Canada it was associated with increased condom use.[22] Condom use self-efficacy may be an important protective factor to address in behavioural STI preventions with this population.

This study has limitations, including a convenience sample that limits our ability to generalise findings to other urban refugee and displaced youth. The use of cross-sectional data means that we cannot infer causality. Self-reported STI testing and diagnosis measures might lead to underreporting due to social desirability bias and a lack of STI status awareness. We may have had insufficient power to detect significant outcomes due to gender-stratified analyses that led to smaller sample sizes in each group. Future studies may consider using longitudinal designs and serologic data to ascertain the prevalence of STIs among urban displaced and refugee youth in Kampala.

Despite these limitations, our study provides evidence regarding social ecological factors[12] spanning intrapersonal (eg, lifetime sex partners), interpersonal (eg, condom use self-efficacy) and community (eg, adolescent SRH stigma) levels associated with STI testing practices and diagnosis among urban refugee and displaced youth. These multilevel factors can be integrated into STI testing interventions. For instance, health facilities can implement training and policies to reduce adolescent SRH-related stigma[19] to improve service quality for refugee and displaced youth.[5] Community-level interventions[12] such as social marketing campaigns and social media influencers can address HIV-related and adolescent SRH-related stigma in Kampala's informal settlements. The WHO recognises the potential of such digital health approaches for improving services access for marginalised populations.[29] Youth-tailored strategies such as peer health educators can build condom negotiation skills. Structural interventions such as economic empowerment of youth and their families can tackle food insecurity, in turn improving SRH outcomes. Gender-tailored, multilevel approaches can advance STI prevention and testing among Uganda's urban refugee and displaced youth,[10] with implications for advancing youths' SRH in urban humanitarian contexts more broadly.[4]

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