

FACTORS ASSOCIATED WITH HIV TESTING AMONG ATLANTA’S HOMELESS YOUTH

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Homeless youth experience increased risk of contracting HIV, making HIV testing imperative in this population. We analyzed factors associated with HIV testing among homeless youth in Atlanta, Georgia using data from the 2015 Atlanta Youth Count and Needs Assessment. The analysis included 693 homeless youth aged 14–25 years, of whom 88.4% reported ever being tested for HIV, and 74.6% reported being tested within the previous year. Prevalence of ever testing for HIV was significantly higher among youth who reported risk factors for HIV (sexually active, transactional sex, or ever having an STI). Higher prevalence of testing within the last year was significantly associated with experiencing physical abuse or transactional sex. However, reporting ≥ 4 sexual partners or not using condoms were not associated with higher testing. Although testing prevalence among homeless youth was high, homeless youth engaging in certain high risk behaviors could benefit from further promotion of HIV testing.

Keywords: homeless youth, Atlanta, Georgia, human immunodeficiency virus, adolescent, risk factors

In metropolitan Atlanta, Georgia, an estimated 3,374 homeless and runaway youth (aged < 25 years) are living on the streets, in shelters, or in other unstable housing situations (Wright et al., 2016). Unstable housing and poverty can negatively affect the health of youth (Farrow, Deisher, Brown, Kulig, & Kipke, 1992), particularly homeless youth (Beharry, 2012; Edidin, Ganim, Hunter, & Karnik, 2012). In particular, homeless youth are at an increased risk for sexually transmitted infections (STIs) and HIV specifically (Caccamo, Kachur, & Williams, 2017; Carmona,

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Slesnick, Guo, & Letcher, 2014; Ferguson, Bender, Thompson, Xie, & Pollio, 2011; Marshall, Kerr, Shoveller, Montaner, & Wood, 2009; Martino et al., 2011; Mastro, Cunningham, Medrano, & van Dam, 2012; Tucker, Hu, et al., 2012). For homeless youth, increased exposure to drugs, early sexual debut, being a sexual minority (lesbian, gay, bisexual, transgender, or other), having multiple sex partners, engaging in high-risk survival behaviors (e.g., exchanging sex for food, drugs, shelter, or money) to secure resources, and being at an increased risk for sexual exploitation, can all contribute to an increased risk for HIV (Cochran et al., 2002; Ferguson et al., 2011; Martino et al., 2011; Mastro et al., 2012; Tucker, Hu, et al., 2012; Tyler, 2013).

During 2016, youth aged 13–24 years accounted for 21% of all new HIV diagnoses (Centers for Disease Control and Prevention [CDC], 2018a), but true prevalence of HIV among homeless youth is difficult to determine because it is difficult to conduct health research in this population. Some studies have estimated that HIV prevalence among homeless youth is 2–12 times higher than their stably-housed peers (Hsu et al., 2018; Pfeifer & Oliver, 1997; Roteram-Borus et al., 2003; Santa Maria et al., 2018; Stricof, Kennedy, Nattell, Weisfuse, & Novick, 1991; Young & Rice, 2011). Atlanta's homeless youth, in particular, are at an increased risk for infection, given the concentrated rates of HIV in the area. Among metropolitan statistical areas in the United States and Puerto Rico during 2016, Atlanta ranked fourth in rates of new diagnoses of HIV infection (CDC, 2017). Therefore, HIV testing is important for this population to ensure that they are aware of their status and linked to care and treatment (Lally et al., 2018). Additionally, the CDC recommends that everyone between the ages of 13 and 64 should get tested for HIV at least once, but people at higher risk (men who have sex with men, people who exchange sex for drugs or money, people who inject drugs and share needles and works) should get tested more often (CDC, 2019); some homeless youth should be tested annually based on their level of risk.

According to the CDC's Youth Risk Behavior Survey (YRBS), prevalence of ever having been tested for HIV was 9.3% during 2017 among a nationally representative sample of students enrolled in high school (Kann et al., 2018). The prevalence of HIV testing among youth who are unstably housed can vary by location, but often is higher than the HIV testing prevalence among their high school peers. In three Midwestern cities in the United States, 67% of homeless youth reported testing for HIV (Tyler & Melander, 2010), and 85% of sexually active homeless youth in a Los Angeles study had ever been tested for HIV (Ober, Martino, Ewing, & Tucker, 2012). Research demonstrates that if offered an HIV test, homeless youth are likely to take the test (Ober et al., 2012). Homeless youth with a high likelihood of HIV testing include females, older youth, Black or mixed race youth, gay or bisexual males, and youth who have a history of pregnancy or of fathering a child (Solorio, Milburn, Weiss, & Batterham, 2006). Nevertheless, certain homeless youth have reported confidentiality concerns and a lack of trust of adults as barriers to HIV testing (Tyler, Akinymi, & Kort-Butler, 2012).

Given the high rates of HIV diagnosis in the South, overall, and among youth aged 13–24 (CDC, 2016, 2018b), it is important to focus efforts among youth in the South, Atlanta in particular (Camacho-Gonzalez et al., 2016). Therefore, understanding factors associated with HIV testing among homeless youth in Atlanta is critical to devise strategies to increase testing and prevent new infections in this vulnerable population. We conducted a study to examine demographic and other relevant factors (sexual- and violence-related) associated with HIV testing among homeless youth in metropolitan Atlanta.

METHODS

POPULATION SAMPLE AND SETTING

We used data from the Atlanta Youth Count and Needs Assessment (AYCNA) conducted in 2015. The 2015 AYCNA was designed to quantify the number, and assess the state, of homeless, precariously housed, and runaway youth in Atlanta, Georgia. AYCNA surveyed homeless and runaway youth aged 14–25 years, who reported not having a permanent residence of their own, and who were living independently without consistent parental and family support (Wright et al., 2016). The study design used capture–recapture field-based sampling methods, and participants were recruited by outreach and service workers who conducted sweeps of shelters and community locations where homeless youth spend time and reside (Wright et al., 2016). Participants were invited to complete a 15-minute, face-to-face interview and to answer questions about their personal and social background, health status, and contact with health and social service systems. In addition, youth were asked about current and past experiences with homelessness and factors that led to their being homeless. All data were collected anonymously, and no information was collected that could be used to identify or trace participants. Verbal consent was obtained from participants by trained researchers. The study was approved by the Institutional Review Board at Georgia State University (Wright et al., 2016).

MEASURES

Demographic Variables. In the 2015 AYCNA, age was measured through a free-response question with responses ranging from 15 to 25 years. Age was coded into two groups, 15–19 and 20–25 years. Sex was measured by the question, “What sex were you assigned at birth?” Response options were Male/Man, Female/Woman, and Something Else (Specify). Only responses indicating Male or Female were included in this analysis; the one response received of Something Else was excluded from analyses that included the sex variable. Race and ethnicity were measured through two questions: (1) “Do you consider yourself to be Hispanic or Latino?” with response options Yes or No; and (2) “What race do you consider yourself? (Please check at least one and all that apply)” with response options White, Black or African American, Asian, Native American/Alaska Native, Pacific Islander, Multiracial, or Other (Specify). For this analysis, the variable race was categorized into Non-Hispanic Black (Black), Non-Hispanic White (White), Hispanic, or Non-Hispanic Other (Other).

Sexual orientation was measured by the question, “Which of the following labels best describes your sexual orientation?” The response options were Straight, Heterosexual, Gay or Lesbian, Bisexual, Something Else, or Still Undecided/Questioning. Responses were coded as heterosexual, sexual minority (lesbian, gay, bisexual), and other (something else or still undecided/questioning).

HIV Testing. HIV testing behavior was measured by two questions: (1) “Have you ever been tested for HIV/AIDS?” with response options Yes, No, or Don’t Know; and (2) “Approximately, when did you take your last test?” with an open response option for the test date. For this analysis, the variable for ever having been tested for HIV was dichotomized so that Yes was coded as tested, and No and Don’t Know were coded as not tested. The variable for HIV testing within the previous year

was calculated by subtracting the interview date from the indicated test date, and dichotomized into a variable indicating whether they were tested or not tested in the previous year. Additionally, participants were asked, "Have you ever experienced the following health problem?" in which a list of problems included A Sexually Transmitted Infection (STI) Other Than HIV, with response options of Yes or No.

Sexual Risk Factors. Questions related to sexual risk factors included having had sex during the previous year, condom use during the previous year, and number of sex partners during the previous year. To examine having had sex during the previous year and condom use, participants were asked, "Have you had sex with anyone in the past year?" and "Have you had vaginal or anal sex without a condom in the past year?" Response options were Yes or No for both questions. To assess the number of sex partners during the previous year, participants were asked, "In the past year, with how many different partners have you had any sex with?" and the open response answers were coded into fewer than four partners or four or more partners.

Experiences of Violence. The violence factors included three questions related to sexual abuse or assault. The overarching question was phrased, "I would like to know if the situation happened to you when you were 17 years old or younger, (or if over 18) since you turned 18, and during the time you have been homeless this time." The response options for each period were Yes or No, and the situations were as follows: (1) "been in a sexual relationship in which you were physically abused?"; (2) "been in a sexual relationship in which you were sexually abused?"; and (3) "been sexually assaulted or raped?" If a participant indicated *Yes* to any period (aged < 17 years, ≥ 18 years, or while homeless), the response was coded as yes for ever having experienced the corresponding situation.

Transactional Sex. Four questions were related to exchanging sex for money or favors. Again, the overarching question was phrased, "I would like to know if the situation happened to you when you were 17 years old or younger, (or if over 18) since you turned 18, and during the time you have been homeless this time." The response options for each period were *Yes* or *No*, and the transactional sex scenarios were as follows: (1) "had sex with someone to get money or cash?"; (2) "had sex for drugs, food, a ride, or a place to stay?"; (3) "had a friend, mentor, or family member who was involved with your having sex for money?"; and (4) "had a 'street daddy,' 'boyfriend,' or 'pimp' who was involved in your having sex for money?" If a participant indicated *Yes* to any period (aged < 17 years, ≥ 18 years, or while homeless), the response was coded as yes for ever having experienced the corresponding situation.

ANALYSIS

Cross-tabulations were conducted for having ever been tested for HIV and for HIV testing within the past year stratified by each of the demographic and other factors. Pearson's chi-square (χ^2) tests were used to determine statistically significant differences in HIV testing by each variable of interest at the $p < .05$ level. All analyses were conducted by using IBM SPSS Statistics 21 (SPSS Incorporated, Chicago, IL).

RESULTS

OVERALL PREVALENCE OF STUDY VARIABLES

A total of 693 youth participated in the 2015 AYCNA. The majority of AYCNA participants were male (66.5%), aged 20–25 years (70.9%), heterosexual (73.1%), and Black (70.0%). Participants had varying degrees of sexual risk as indicated in Table 1, including 85.0% having been sexually active within the previous year, 63.0% having had vaginal or anal sex without a condom during the previous year, and 38.4% having had four or more sex partners during their lifetime. Additionally, at the time of the survey, 8.5% had ever had an STI (Table 1). The prevalence of ever testing for HIV was 88.4% ($n = 597$ of 675), while the prevalence of HIV testing within the previous year was 74.6% ($n = 516$ of 692) (Tables 2 and 3).

TABLE 1. Sample Characteristics for 2015 Atlanta Youth Count and Needs Assessment (AYCNA)

Variable	<i>n</i> (%)
Age group (years) ($n = 693$)	
15–19	202 (29.1)
20–25	491 (70.9)
Race/ethnicity ($n = 691$)	
Non-Hispanic Black	484 (70.0)
Hispanic	56 (8.1)
Non-Hispanic White	37 (5.4)
Non-Hispanic other	114 (16.5)
Sex ($n = 683$)	
Female	229 (33.5)
Male	454 (66.5)
Sexual orientation ($n = 689$)	
Heterosexual	504 (73.1)
Sexual minority ^a	170 (24.7)
Other ^a	15 (2.2)
Sexual risk factors ^b	
Sexually active within the previous year ($n = 693$)	589 (85.0)
Sex without condom within the previous year ($n = 579$)	365 (63.0)
≥ 4 sex partners ($n = 571$)	219 (38.4)
Experiences of violence ^b	
Physical abuse in a relationship ($n = 663$)	141 (21.3)
Sexual abuse in a sexual relationship ($n = 663$)	83 (12.5)
Sexual assault or rape ($n = 663$)	171 (25.8)
Transactional sex ^b	
Sex exchanged for drugs, food, rides, or shelter ($n = 663$)	98 (14.8)
Sex exchanged for money ($n = 663$)	156 (23.5)
Sex exchanged for money—family, friend, or mentor involved ($n = 662$)	64 (9.7)
Sex exchanged for money—“street daddy,” “boyfriend,” or “pimp” involved ($n = 663$)	45 (6.8)
Sexually transmitted infection (STI) ^b	
Ever had an STI (non-HIV) ($n = 669$)	57 (8.5)

Note. All numbers might not sum to 693 because of missing data, and percentages might not add to 100 because of rounding. ^aSexual minority includes youth who responded that they were lesbian, gay, or bisexual. Other includes youth who responded “something else” or “still undecided/questioning.” ^bFrequencies are reported for those who said Yes to each risk factor, experience, or infection; data for No responses are not reported in Table 1.

TABLE 2. Prevalence of Ever Having Been Tested for HIV Infection, by Demographic and Other Factors, 2015 Atlanta Youth Count and Needs Assessment (AYCNA)

Variable	<i>n</i> (%)	95% CI	<i>p</i> value ^a
Ever having been tested for HIV infection (<i>n</i> = 675)	597 (88.4)	86.0, 90.8	—
Age group (years)			< .001
15–19 (<i>n</i> = 199)	161 (80.9)	75.4, 86.4	
20–25 (<i>n</i> = 476)	436 (91.6)	89.1, 94.1	
Race/ethnicity			.109
Non-Hispanic Black (<i>n</i> = 471)	415 (88.1)	85.2, 91.0	
Hispanic (<i>n</i> = 56)	45 (80.4)	70.0, 90.8	
Non-Hispanic White (<i>n</i> = 36)	33 (91.7)	82.7, 100.7	
Non-Hispanic Other (<i>n</i> = 111)	103 (92.8)	88.0, 97.6	
Sex			.752
Female (<i>n</i> = 221)	197 (89.1)	85.0, 93.2	
Male (<i>n</i> = 445)	393 (88.3)	85.3, 91.3	
Sexual orientation			.081
Heterosexual (<i>n</i> = 491)	428 (87.2)	84.2, 90.2	
Sexual minority ^b (<i>n</i> = 168)	156 (92.9)	89.0, 96.8	
Other ^c (<i>n</i> = 15)	12 (80.0)	59.8, 100.2	
Sexual risk factors			
Sexually active within the previous year (<i>n</i> = 583)	523 (89.7)	87.2, 92.2	.010
Not sexually active within the previous year (<i>n</i> = 92)	74 (80.4)	72.3, 88.5	
Sex without a condom within the previous year (<i>n</i> = 360)	328 (91.1)	88.2, 94.0	.271
Sex with a condom within the previous year (<i>n</i> = 213)	188 (88.3)	84.0, 92.6	
≥ 4 sex partners (<i>n</i> = 218)	198 (90.8)	87.0, 94.6	.435
< 4 sex partners (<i>n</i> = 347)	308 (88.8)	85.5, 92.1	
Experiences of violence			
Physical abuse in a relationship (<i>n</i> = 139)	131 (94.2)	90.3, 98.1	.018
No physical abuse in a relationship (<i>n</i> = 518)	451 (87.1)	84.2, 90.0	
Sexual abuse in a sexual relationship (<i>n</i> = 82)	80 (97.6)	94.3, 100.9	.006
No sexual abuse in a sexual relationship (<i>n</i> = 575)	502 (87.3)	84.6, 90.0	
Sexual assault or rape (<i>n</i> = 169)	159 (94.1)	90.5, 97.7	.009
No sexual assault or rape (<i>n</i> = 488)	423 (86.7)	83.7, 89.7	
Transactional sex			
Sex exchanged for drugs, food, rides, or shelter (<i>n</i> = 97)	93 (95.9)	92.0, 99.8	.014
No sex exchanged for drugs, food, rides, or shelter (<i>n</i> = 560)	489 (87.3)	84.5, 90.1	
Sex exchanged for money (<i>n</i> = 156)	147 (94.2)	90.5, 97.9	.011
No sex exchanged for money (<i>n</i> = 501)	435 (86.8)	83.8, 89.8	
Sex exchanged for money—family, friend, or mentor involved (<i>n</i> = 64)	60 (93.8)	87.9, 99.7	.170
No sex exchanged for money—family, friend, or mentor involved (<i>n</i> = 592)	521 (88.0)	85.4, 90.6	
Sex exchanged for money—“street daddy,” “boyfriend,” or “pimp” involved (<i>n</i> = 45)	40 (88.9)	79.7, 98.1	.947
No sex exchanged for money—“street daddy,” “boyfriend,” or “pimp” involved (<i>n</i> = 612)	542 (88.6)	86.1, 91.1	
Sexually transmitted infections (STI)			
Ever had an STI (non-HIV) (<i>n</i> = 57)	55 (96.5)	91.7, 101.3	.045
Never had an STI (<i>n</i> = 611)	535 (87.6)	85.0, 90.2	

Note. CI: confidence interval. ^a*p* values were derived by using Pearson's chi-square test. 2 × 2 comparisons were conducted for all analyses with the exception of race/ethnicity (4 × 2) and sexual orientation (3 × 2). ^bSexual minority includes youth who responded that they were lesbian, gay, or bisexual. ^cOther includes youth who responded “something else” or “still undecided/questioning.”

TABLE 3. Prevalence of Having Been Tested for HIV During the Previous Year, by Demographic and Other Factors, 2015 Atlanta Youth Count and Needs Assessment (AYCNA)

Variable	<i>n</i> (%)	95% CI	<i>p</i> value ^a
Tested for HIV during the previous year (<i>n</i> = 692)	516 (74.6)	71.4, 77.8	—
Age group (years)			.829
15–19 (<i>n</i> = 201)	151 (75.1)	69.1, 81.1	
20–25 (<i>n</i> = 491)	365 (74.3)	70.4, 78.2	
Race/ethnicity			.088
Non-Hispanic Black (<i>n</i> = 483)	355 (73.5)	69.6, 77.4	
Hispanic (<i>n</i> = 56)	38 (67.9)	55.7, 80.1	
Non-Hispanic White (<i>n</i> = 37)	33 (89.2)	79.2, 99.2	
Non-Hispanic Other (<i>n</i> = 114)	89 (78.1)	70.5, 85.7	
Sex			.290
Female (<i>n</i> = 229)	177 (77.3)	71.9, 82.7	
Male (<i>n</i> = 454)	334 (73.6)	69.5, 77.7	
Sexual orientation			.320
Heterosexual (<i>n</i> = 503)	371 (73.8)	70.0, 77.6	
Sexual minority ^b (<i>n</i> = 170)	134 (78.8)	72.7, 84.9	
Other ^c (<i>n</i> = 15)	10 (66.7)	42.8, 90.6	
Sexual risk factors			
Sexually active within the previous year (<i>n</i> = 588)	452 (76.9)	73.5, 80.3	.001
Not sexually active within the previous year (<i>n</i> = 104)	64 (61.5)	52.1, 70.9	
Sex without a condom within the previous year (<i>n</i> = 364)	285 (78.3)	74.1, 82.5	.472
Sex with a condom within the previous year (<i>n</i> = 214)	162 (75.7)	70.0, 81.4	
≥ 4 sex partners (<i>n</i> = 219)	176 (80.4)	75.1, 85.7	.115
< 4 sex partners (<i>n</i> = 351)	262 (74.6)	70.0, 79.2	
Experiences of violence			
Physical abuse in a relationship (<i>n</i> = 140)	116 (82.9)	76.7, 89.1	.036
No physical abuse in a relationship (<i>n</i> = 522)	388 (74.3)	70.6, 78.0	
Sexual abuse in a sexual relationship (<i>n</i> = 82)	68 (82.9)	74.8, 91.0	.123
No sexual abuse in a sexual relationship (<i>n</i> = 580)	436 (75.2)	71.7, 78.7	
Sexual assault or rape (<i>n</i> = 170)	138 (81.2)	75.3, 87.1	.074
No sexual assault or rape (<i>n</i> = 492)	366 (74.4)	70.5, 78.3	
Transactional sex			
Sex exchanged for drugs, food, rides, or shelter (<i>n</i> = 97)	79 (81.4)	73.7, 89.1	.184
No sex exchanged for drugs, food, rides, or shelter (<i>n</i> = 565)	425 (75.2)	71.6, 78.8	
Sex exchanged for money (<i>n</i> = 155)	128 (82.6)	76.6, 88.6	.031
No sex exchanged for money (<i>n</i> = 507)	376 (74.2)	70.4, 78.0	
Sex exchanged for money—family, friend, or mentor involved (<i>n</i> = 63)	54 (85.7)	77.1, 94.3	.060
No sex exchanged for money—family, friend, or mentor involved (<i>n</i> = 598)	449 (75.1)	71.6, 78.6	
Sex exchanged for money—“street daddy,” “boyfriend,” or “pimp” involved (<i>n</i> = 44)	35 (79.5)	67.6, 91.4	.583
No sex exchanged for money—“street daddy,” “boyfriend,” or “pimp” involved (<i>n</i> = 618)	469 (75.9)	72.5, 79.3	
Sexually transmitted infections (STI)			
Ever had an STI (non-HIV) (<i>n</i> = 57)	50 (87.7)	79.2, 96.2	.039
Never had an STI (<i>n</i> = 611)	462 (75.6)	72.2, 79.0	

Note. CI: confidence interval. ^a*p* values were derived by using Pearson’s chi-square test. 2 × 2 comparisons were conducted for all analyses with the exception of race/ethnicity (4 × 2) and sexual orientation (3 × 2). ^bSexual minority includes youth who responded that they were lesbian, gay, or bisexual. *Other* includes youth who responded “something else” or “still undecided/questioning.”

DIFFERENCES IN HIV TESTING BY DEMOGRAPHIC CHARACTERISTICS

Prevalence of ever testing for HIV was significantly higher among persons who were aged 20–25 years (91.6%, $n = 436$ of 476), compared with those aged 15–19 years (80.9%, $n = 161$ of 199) ($\chi^2 = 15.70$; $p < .001$). HIV testing within the previous year did not differ significantly by age ($\chi^2 = 0.05$; $p = .829$). Neither ever testing for HIV nor HIV testing within the previous year differed by race/ethnicity, sex, or sexual orientation (Tables 2 and 3).

DIFFERENCES IN HIV TESTING BY SEXUAL RISK, VIOLENCE, AND TRANSACTIONAL SEX

Prevalence of ever testing for HIV was higher among homeless youth who had been sexually active during the previous year (89.7%, $n = 523$ of 583), compared with those who had not been sexually active (80.4%, $n = 74$ of 92) ($\chi^2 = 6.69$; $p < .05$). Ever testing for HIV was higher among homeless youth who had experienced physical abuse in a sexual relationship (94.2%, $n = 131$ of 139), compared with youth who had not (87.1%, $n = 451$ of 518) ($\chi^2 = 5.59$; $p < .05$); youth who had experienced sexual abuse in a sexual relationship (97.6%, $n = 80$ of 82), compared with youth who had not (87.3%, $n = 502$ of 575) ($\chi^2 = 7.47$; $p < .01$); and youth who had experienced sexual assault or rape (94.1%, $n = 159$ of 169), compared with youth who had not (86.7%, $n = 423$ of 488) ($\chi^2 = 6.80$; $p < .01$). Testing prevalence was higher among those who indicated having exchanged sex for drugs, food, rides, or shelter (95.9%, $n = 93$ of 97), compared with those who had not (87.3%, $n = 489$ of 560) ($\chi^2 = 5.98$; $p < .05$), and those who had exchanged sex for money (94.2%, $n = 147$ of 156), compared with those who had not (86.8%, $n = 435$ of 501) ($\chi^2 = 6.45$; $p < .05$). Ever testing for HIV did not vary on the basis of condom use; number of sex partners; whether they had a friend, mentor, or family member involved with their having exchanged sex for money; or whether participants had a street daddy, boyfriend, or pimp involved in their having exchanged sex for money (Table 2).

Prevalence of HIV testing within the previous year was higher among youth who had been sexually active during the previous year (76.9%, $n = 452$ of 588), compared with those who had not been sexually active (61.5%, $n = 64$ of 104) ($\chi^2 = 10.95$; $p < .01$). Testing within the previous year was significantly higher for youth who had experienced physical abuse in a sexual relationship (82.9%, $n = 116$ of 140), compared with youth who had not (74.3%, $n = 388$ of 522) ($\chi^2 = 4.42$; $p < .05$). Prevalence of HIV testing within the previous year was higher for those who had exchanged sex for money (82.6%, $n = 128$ of 155), compared with those who had not (74.2%, $n = 376$ of 507) ($\chi^2 = 4.63$; $p < .05$). HIV testing within the previous year did not differ on the basis of condom use; number of sex partners; experience of sexual abuse in a sexual relationship; experience of sexual assault or rape; whether they exchanged sex for drugs, food, rides, or shelter; whether participants had a friend, mentor, or family member involved with their having exchanged sex for money; or whether they had a street daddy, boyfriend, or pimp involved in their having exchanged sex for money (Table 3).

DIFFERENCES IN HIV TESTING BY STI HISTORY

Participants who had ever had an STI (non-HIV) had a higher prevalence of ever testing for HIV (96.5%, $n = 55$ of 57) than those who had not (87.6%, $n = 535$ of 611) ($\chi^2 = 4.03$; $p < .05$). Similarly, those who had ever had an STI (non-HIV) had a higher prevalence of testing for HIV within the previous year (87.7%, $n = 50$ of 57) than those who had not (75.6%, $n = 462$ of 611) ($\chi^2 = 4.27$; $p < .05$) (Tables 2 and 3).

DISCUSSION

In this study of HIV testing history, sexual risk, and other factors among homeless youth aged 14–25 years in Atlanta, GA, we found that the prevalence of ever testing for HIV among the homeless youth was 88.4%, which is high when compared with 9.3% among a nationally representative sample of U.S. high school students in 2017 (Kann et al., 2018). Our findings are consistent with the previous research showing high HIV testing prevalence among urban homeless youth in Los Angeles (85%) and Midwestern cities (67%). This increased testing prevalence among AYCNA respondents might be because either homeless youth engage in high-risk sexual activity or have increased access to testing through service providers focusing on homeless youth as indicated from previous studies of homeless youth (Cochran et al., 2002; Ferguson et al., 2011; Martino et al., 2011; Mastro et al., 2012; Solorio et al., 2006; Tucker, Ryan, & Golinelli, 2012; Tyler, 2013; Tyler et al., 2012). Also, from 2012 to 2015, there was an intervention in Atlanta to improve diagnosis, linkage, and retention in care of youth ages 18–24 at high-risk for contracting HIV. The Metropolitan Atlanta Community Adolescent Rapid Testing Initiative (MACARTI) included nontraditional venue testing (night clubs, street testing, Pride events, etc.), motivational interviewing, and case management (Camacho-Gonzalez et al., 2017). Some of the nontraditional testing venues from this initiative may have been in place at the time of the AYCNA interview and participants might have benefited from these testing venues and taken HIV tests.

Demographically, statistically significant differences in HIV testing prevalence existed only by age, but not for sex, race/ethnicity, or sexual orientation. Older youth had a significantly higher prevalence of HIV testing (ever testing for HIV and HIV testing within the previous year) for those aged 20–25 years, compared with those aged 15–19 years. These findings are consistent with a study in Los Angeles that reported that older youth had a higher prevalence of testing for HIV, compared with younger youth (Solorio et al., 2006). It is intuitive that HIV testing prevalence would increase with age among youth, because older youth have had more sexual experiences, and have had more opportunity for testing. Likewise, a study of homeless youth in the Midwest reported that older youth are more likely to get tested because of greater knowledge of health service locations, and a greater knowledge of HIV and STIs, and their association with sexual risk behaviors (Tyler et al., 2012).

Unlike our study, previous studies have determined substantial differences in homeless youth testing for HIV on the basis of race/ethnicity and sexual orientation. A study of homeless youth in Los Angeles and San Diego reported that Black and White youth were more likely to be tested than Latino youth, and gay/bisexual youth were more likely to be tested than heterosexual youth (De Rosa et al., 2001). Another study reported that gay/bisexual homeless youth report higher levels of behaviors

that put them at risk for HIV infection, which is why they were tested at higher rates (Solorio et al., 2006). Differences by these demographics might not have been observed for the AYCNA data because of targeted HIV testing efforts in Atlanta during that time that included a large portion of AYCNA participant demographic. During 2015, the CDC-funded High-Impact Prevention Program at the Fulton County Department of Health and Wellness had its best year with a 40.0% increase in HIV testing at community-based organizations and health departments, compared with the previous year (Fulton County, GA, 2011). The HIV testing component of this program enhanced testing for HIV in Atlanta and focused on youth, homeless populations, LGBTQ youth, Blacks, and other difficult to reach populations.

Our study had certain limitations. AYCNA was conducted in Atlanta and participants might not be representative of the national homeless youth population. The survey instrument relied on self-reported data, which introduces possible reporter bias. The data collection protocol was such that participants were unable to take the survey independently. A researcher read the questions, and the youth verbally indicated their responses, which might be limiting because youth might not have felt comfortable revealing certain information (e.g., sexual orientation, sexual abuse, or age). Additionally, youth may have been more likely to say they had been tested due to social desirability. Lastly, during consent procedures participants were informed that if they reported for themselves or another minor (aged <18 years) that they had been abused, neglected, or exploited, the researchers were required by Georgia State law to make a report to child protective services (Forge, Hartinger-Saunders, Wright, & Ruel, 2018; State of Georgia, Office of the Child Advocate, 2016). Therefore, despite assuring the participants that their identity would be protected and kept confidential, participants who were aged <18 years might have inflated their age.

CONCLUSIONS

Results from this study provide a detailed examination of the HIV testing prevalence of Atlanta's homeless youth, which has not previously been reported. Additionally, for improved accuracy in describing the current population of homeless youth in metro Atlanta, the study utilized sophisticated systematic capture-recapture field sampling methods to locate members of this hard-to-reach population (Wright et al., 2016). The high rates of HIV testing among homeless youth in metro Atlanta, relative to the national YRBS rate, are most likely indicative of public health efforts to decrease infection rates among vulnerable populations, and is a public health success for HIV prevention in this southern hotspot. The AYCNA HIV testing prevalence may also reflect the fact that urban areas tend to be focal points for HIV prevention interventions, STD testing, and social marketing campaigns. Still, a number of respondents (25.3%) had not been tested for HIV in the past 12 months. The CDC recommends annual testing for those at higher risk, for example men who have sex with men, > 1 sex partner since last HIV test, sex in exchange for drugs or money, and those who have been diagnosed with an STI (CDC, 2019). The recently announced Ending the HIV Epidemic: A Plan for America initiative proposes to end the HIV epidemic in the United States within 10 years (Department of Health and Human Services, 2019). In order for this initiative to be successful, we must ensure that all (especially youth) who are at any risk of contracting HIV, are tested, linked to care, and treated effectively. Opportunities exist for further research on effective strategies to increase rates of HIV testing and examine the linkages to care and outcomes for Atlanta's homeless youth living with HIV infection.

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