Published in final edited form as:

J Int Assoc Physicians AIDS Care (Chic). 2011 ; 10(4): 260–265. doi:10.1177/1545109710393310.

HIV-Testing Practices and a History of Substance Use among Women Living in Public Housing in Puerto Rico

Lisa R. Norman, PhD¹, Jessy G. Dévieux, PhD², Rhonda Rosenberg, PhD², and Robert M. Malow, PhD²

¹ AIDS Research Program, Ponce School of Medicine, Ponce, PR, USA

² AIDS Prevention Program, Florida International University, North Miami, FL, USA

Abstract

The objective of this study was to examine the relationship between HIV testing practices and history of substance use among a large sample of women living in public housing in Puerto Rico and the relationships among HIV testing and history of substance abuse. A total of 1138 women were surveyed between April and August 2006 using a self-administered survey instrument. A total of 82% of the women in the sample group reported a history of HIV testing. Logistic regression analysis revealed that those with a history of alcohol use, marijuana use, and other illicit drug use were more likely to report a history of HIV testing ($P < .05$). These findings suggest the possibility that women who engage in riskier behaviors may be aware of these risks and therefore make more of an effort to determine their status. Future studies should, however, further examine the risks among women from subpopulations who may be at high risk for HIV.

Keywords

HIV testing; Caribbean; Puerto Rico; substance use; Hispanic/Latina; women

Introduction

Entering its third decade, the HIV/AIDS epidemic continues to pose a major public health problem, particularly in the Caribbean, which has the second highest rate of HIV after sub-Saharan Africa.¹ As of December 2006, it is estimated that approximately 250 000 persons (range: 190 000–320 000) were living with HIV and/or AIDS in the Caribbean.² Overall, an estimated 1.2% of the adult population in the Caribbean region, aged 15 to 49 years, were living with the disease, with prevalence as high as 2.2% in countries like Haiti,² with women making up 50% of the cases in the Caribbean region.

© The Author(s) 2011

Corresponding Author: Lisa R. Norman, Associate Professor, Public Health Program, Behavioral Scientist, AIDS Research Program, P.O. Box 7004, Ponce, PR 00732, USA lnorman@psm.edu.

Declaration of Conflicting Interests

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

In Puerto Rico, 33 915 cases of AIDS have been reported as of November 2009;³ however, due to the lack of standardized testing, the actual number of cases may be significantly higher.⁴ Among all US states and territories, Puerto Rico ranks third in the estimated rates for adults and adolescents living with HIV/AIDS and fourth in reported AIDS cases.⁵ Since the beginning of the HIV/AIDS epidemic, the primary mode of transmission of HIV in Puerto Rico has been injection-drug use (IDU), accounting for 50% of all cases among adults since 1981.³ heterosexual transmission accounts for 25%; among women, however, heterosexual transmission accounts for 61% of the cases followed by IDU at 37%. While no official estimates of HIV prevalence among the adult population or subpopulations in Puerto Rico are available, small-scale studies of various samples have found rates between 1% among pregnant women to as high as 36% among IDUs.^{6,7}

Prevention programs have promoted HIV testing as one possible way to combat the spread of the disease.^{8,9} This strategy is based on the assumption that knowledge of serostatus enables individuals to initiate or maintain behaviors that prevent further transmission of HIV.¹⁰ Knowing their serostatus also serves as a means of educating those who are infected about care, treatment, and support. While HIV testing is promoted as a prevention strategy with various populations, previous research examining the relationship between HIV testing and substance abuse, more specifically, the role of substance abuse in the decision to test as well on actual testing behaviors has not been well researched.

A review of the published Caribbean-based literature found few studies that specifically included correlates of HIV testing behaviors. In a study of at-risk persons in Trinidad, individuals who were tested for HIV and who subsequently received counseling decreased high-risk sexual behaviors with nonprimary partners, but not with primary or steady partners.¹¹ In another study in a sample of university students in Jamaica, less than half had been tested for HIV; being tested was not associated with a later reduction of high risk behavior, such as inconsistent condom use.¹² These findings were similar to those from a national level study among Jamaican adults, revealing low levels of testing and no associations with subsequent adoption of protective behavior.¹³

Several studies were identified that examined correlates of HIV testing among populations living in Puerto Rico. A study of Puerto Rican youths in drug treatment revealed that 66% of those enrolled in ambulatory drug treatment centers agreed to take an HIV test; volunteers for testing, when compared to nonvolunteers, were more likely to be males who reported fewer years of education and who engaged in risky sexual and drug-related behaviors.¹⁴ Adult drug users receiving a positive test result were subsequently less likely to continue to engage in unprotected vaginal sex.¹⁵ Likewise, IDUs were significantly less likely to report being sexually active and more likely to use condoms during vaginal and oral sex after receiving positive results from HIV testing.¹⁶

Most HIV-related studies of populations in Puerto Rico that include women focus on correlates of HIV testing among IDUs, crack cocaine users, or sex workers. We were unable to identify any other studies in the literature that examined correlates for women who were not members of these high-risk groups. Although these groups are critical to controlling the epidemic, it is also imperative to address the majority of women at risk who are typically

from lower resource minority communities who may not be members of these subpopulations, yet are disproportionately affected by the epidemic in both the developed and developing world.¹⁷⁻¹⁹ Here, we report on research in which a public housing population in Puerto Rico was utilized to address this gap in the literature and examine associations between self-reported HIV testing behaviors and a reported history of substance use including alcohol, marijuana, and other illicit drugs (eg, heroin, cocaine, crack cocaine, amphetamines, and speedball).

Methods

Data Collection

Data for these analyses were derived from the *Proyecto MUCHAS*, an HIV-risk-reduction project targeting women living in public housing in Ponce, Puerto Rico. Eligibility criteria for the study included being female and a resident of targeted public housing developments. A nonprobability sampling approach was employed for the study. Once a public housing development was selected, based on availability and willingness to participate in the research study, posters were placed to announce that the project would be coming to the public housing development on a certain date, inviting all women to come to the community center and participate in the study. All eligible women, aged 17 and older, were invited to participate. Data were gathered between April and August 2006 from 1138 women in 23 public housing developments across the city of Ponce. Ponce is the second largest city in Puerto Rico, with an estimated population of approximately 180 000. The study and its survey instrument were reviewed and approved by the Institutional Review Board, Ponce School of Medicine.

A 219-item baseline questionnaire was developed that covered knowledge, attitudes, and behavior. Instruments from other Caribbean studies and from the US Centers for Disease Control and Prevention (CDC) were used to facilitate the development and inclusion of standard questions that are reliable and valid measures of HIV-related attitudes and behaviors across a range of samples.^{19,20}

The questionnaire was based upon social-psychological theories of behavior change, including the Health Belief Model, Theory of Reasoned Action, and Social Cognitive Theory.²¹⁻²³ Theoretical variables drawn from these theories included perceived risk, perception of norms, and self-efficacy with respect to condom use and included items addressing knowledge of transmission, knowledge of risks associated with specific sexual behaviors, attitudes toward persons living with HIV/AIDS, HIV-testing behaviors, sexual history, attitudes toward condoms and safer sex, sexual behaviors by steady and non-steady sex partners, and drug and alcohol use.

The instrument was piloted with a sample of 30 women in order to assess the ease of completing the instrument, to determine whether the questions were easily understood, and to ensure that the instrument could be completed in a timely fashion. On the basis of the first piloting phase, revisions were made, and the instrument was piloted again with 10 women during a focus group session. Following the results of the focus group discussion regarding the survey instrument, minor revisions were made, and the instrument was finalized.

Informed consent was received from every respondent. Women completed the assessments in the community center room within each housing development. Due to the nature of the questions and the potential discomfort that may be caused by items addressing sexual and drug use behaviors, the instrument was self-administered with no identifiers, providing anonymity to the respondents. Research assistants provided support for those women who were unable to read the questionnaire or who needed assistance filling out the survey. Each woman received US\$10 as compensation for completing the survey. All surveys were administered in Spanish. This survey was a baseline, formative survey, occurring before any intervention activities.

Variables

A number of variables were used in these analyses. Some variables were recoded to facilitate the logistic regression analyses. The following variables were included:

HIV testing—Participants were asked whether they had ever had an HIV test; responses were categorized as *yes* or *no*.

Formal education—Participants were asked to report the highest level of schooling they had attained. Responses were dichotomized into the following groups: at least high school education and less than high school education.

Age—Participants were asked to report their age, in years, on their last birthday. Those who reported being under the age of 25 were coded as *youths* while those 25 years of age and older were coded as *adults*. This categorization was based on the World Health Organization's (WHO) definition of youth.²⁴ Those who reported being at least 25 years of age were further categorized as *younger adults* (*age 25 to 39 years of age*) and *older adults* (*age 40+ years of age*). This additional categorization is based on evidence that middle-aged and older adults (those aged 40 years or older) in Puerto Rico are at an increasing risk of HIV, constituting 40% of reported AIDS cases through December 2009.²

History of alcohol use—Participants were asked whether they had ever used alcohol. Those who reported a history of use were coded as *having a history of alcohol use* (1), while remaining participants (scale score 0) were coded as *having no history of alcohol use* (0).

History of marijuana use—Participants were asked whether they had ever used marijuana. Those who reported a history of use were coded as *having a history of marijuana use* (1), while the remaining participants (scale score 0) were coded as *having no history of marijuana use* (0).

History of other illicit substance use—Participants were asked whether they had ever used any of the following substances: heroin, cocaine, crack-cocaine, speedball (heroin and cocaine mixed), and amphetamines. For each substance used, a score of 1 was assigned to the subject. All scores were summed, yielding a range from 0 to 5. Those who reported a history of use with at least one substance (scale score 1-5) were coded as *having a history of*

illicit substance use (1), while the remaining subjects (scale score 0) were coded as *having no history of illicit substance use* (0).

Stable/unstable relationships—Participants were asked what type of relationship they were in currently. Those who reported being legally married or in a common-law relationship were coded as being *in a stable relationship* (1), while the remaining women were coded as being *in an unstable relationship* (0).

Data Analysis

Both bivariate (chi-square analyses) and multivariate (logistic regression) analyses were employed. Chi-square analyses were used to examine the differences in proportions between persons who reported previous HIV testing and those with no previous HIV testing and a reported history of substance use. In addition, in order to understand the relationship among all the model variables with respect to the dependent variable of interest, HIV testing, logistic regression modeling was used. All model variables were dichotomized or trichotomized to facilitate the logistic regression analyses. In addition, age-specific multivariate analyses were employed to examine the relationships separately for HIV testing and the independent variables by age group, due to the increased number of cases among youth and older adults in Puerto Rico.⁵ Variables selected for the regression analyses were based on previous research findings, which indicated their importance for predicting HIV risk and HIV testing practices.

Results

Sample Characteristics

The mean age of the sample was 36.8 (Standard deviation [S_x] = 12.3). Approximately half of the women were either legally married (11.2%) or involved in a common-law relationship (38.6%). Less than one-third (28.9%) reported being single, never married; the remaining women were separated, divorced or widowed (21.4%). Slightly more than half of the respondents reported having completed high school (57.7%). The majority reported a history of alcohol use (62.2%), with smaller percentages reporting a history of marijuana use (17.2%) and other illicit substance use (7.8%). The majority of women reported a history of HIV testing (82.0%).

Bivariate Models

Tables 1 and 2 present the results of the bivariate analysis of HIV testing and selected independent variables. A number of statistically significant relationships emerged. Overall, women who reported previous HIV testing, compared to those with no history of testing, were more likely to be younger adults (aged 25 to 39) rather than younger (less than 25 years of age) or older (40 years of age or older). They were also more likely to report a history of alcohol use, marijuana use, and other illicit substance use ($P < .05$). No other significant associations emerged from these bivariate analyses.

Multivariate Models

Table 3 presents the results of the hierarchical logistic regression analyses for the total, unstratified sample. Both adjusted and unadjusted logistic regression analyses were employed. When examining the association between the reported histories of alcohol use and HIV testing, alcohol use was statistically significant in the unadjusted model, meaning that those women who reported a history of alcohol use were more likely to also report previous HIV testing (unadjusted odds ratios [UOR] = 1.42, 95% CI = 1.03-1.95). However, when the other covariates were added to the model (age, education, and relationship status), the strength of the association decreased, resulting in a marginally significant association (adjusted odds ratios [AOR] = 1.35, 95% CI = 0.96-1.90).

When examining the association between a history of marijuana use on the reported history of HIV testing, marijuana use was statistically significant in the unadjusted model, meaning that those women who reported a history of marijuana use were more than twice as likely to also report previous HIV testing (UOR = 2.24, 95% CI = 1.34-3.79). When the other covariates added to the model (age, education, and relationship status), the strength of the association decreased slightly, resulting in a marginally significant association (AOR = 1.35, 95% CI = 0.96-1.90).

When examining the association between a history of other illicit drug use and HIV testing, illicit drug use was statistically significant in the unadjusted model, meaning that those women who reported a history of illicit substance use were more likely to also report previous HIV testing (UOR = 2.48, 95% CI = 1.12-5.45). However, when the other covariates were added to the model (age, education, and relationship status), the strength of the association decreased, resulting in a marginally significant association (AOR = 2.00, 95% CI = 0.89-4.49).

Discussion

First, it is important to note that the proportion of women in the study population reporting a history of HIV testing was significantly higher than in the Puerto Rican general population (82% vs 40%—based on the last available data of the general population).²⁵ However, it is possible that testing among the general population has increased significantly in the last 10 years, but the supporting data is not available. Women in public housing have been targeted by several outreach groups in Puerto Rico for HIV testing, which may explain the high rates of testing in the sample.

The relationship between a reported history of HIV testing and a history of substance use is an important finding. It is possible that persons who were previous users of substances may have been more concerned regarding the risk of HIV, and therefore, more willing to take an HIV test. The data from this study revealed that those with a history of alcohol use and marijuana use did perceive themselves to be more at risk for contracting HIV infection than those who reported no such history ($P < .05$). While the percentage of women who reported a history of illicit drug use was higher than those with no such reported history, the finding was not significantly significant. This could be due to the small number of women who reported such a history (data not shown). However, no previous research was identified that

examined the association between a history of HIV testing and a history of substance use. Unfortunately, the cross-sectional nature of the data does not permit an examination of the temporal relationship between HIV testing and substance use. However, the positive associations between the variables warrant further research to identify the nature of the relationship between HIV testing and a history of substance use. It is important to note that although alcohol is a legal substance, only approximately two-thirds of the women reported a history of using alcohol. More distinct measures of previous alcohol use may need to be considered for inclusion in further research efforts examining this relationship. However, the questionnaire was anonymous and we have no reason to believe that these women deliberately misreported their history of alcohol use.

Client-initiated HIV testing to learn HIV status provided through voluntary counseling and testing remains critical to the effectiveness of HIV prevention.²⁶ Joint United Nations Programme on HIV/AIDS (UNAIDS)/WHO promote the effective promotion of knowledge of HIV status among any population that may have been exposed to HIV through any mode of transmission.

The CDC has launched a major new approach to HIV prevention by expanding prevention programs to include new and enhanced activities based on HIV serostatus, particularly targeting individuals with HIV, as a way to break the current steady state of HIV transmission.²⁷ The new initiative is called Serostatus Approach to Fighting the Epidemic (SAFE). It is aimed at those who are HIV-infected, including those not aware of their status, as well as those who have been tested and found to be uninfected, yet continue to be vulnerable because of high behavioral risk. Therefore, it is vital not to underestimate the importance of being tested. One of the first steps in self-protection from HIV is to be informed of one's HIV status, which allows one to make appropriate and responsible sexual decisions. Future success in decreasing the number of new HIV infections among women will result from targeting women who may be at high risk, but not because of sex work or drug use. For example, women in this sample were not likely to report condom use with either their most recent steady or non-steady partner but were engaging in anal intercourse, thereby increasing their risk of HIV transmission (data not shown). Increasing knowledge of HIV serostatus and the implications of these results, especially among those who are infected, can serve as a gateway to sustained behavioral risk reduction interventions as well as to care and treatment. As such, effective, culturally appropriate messages and prevention programs must be developed and implemented; it is vital to promote universal HIV testing and appropriate counseling so that persons may make informed sexual decisions with respect to protective sexual behaviors.

It is also important to remember that the literacy level of many of these women is quite low, thus inhibiting the effectiveness of some brochures and printed educational materials. More innovative techniques will be required to reach these women and help them to understand the risk of their behaviors. This includes teaching them skills (such as asking a potential partner's HIV status) and urging them to begin to use condoms with all sex partners, especially when HIV status is unknown. Considering the fact that both the actual and estimated numbers of HIV/AIDS cases among women in Puerto Rico continue to increase, it

is clear that effective, targeted, and aggressive strategies are urgently needed to prevent both primary and secondary HIV transmission.

While the present study has provided insight into the relationship between a history of substance use and a history of HIV testing among impoverished women living in Puerto Rico, it is important to note the limitations of the study may impact the validity of the findings. The sample was a nonprobability sample and as such, the generalizability of the results may be limited. In addition, the use of self-reported data may threaten internal validity. As with all surveys of sensitive issues, such data are likely to contain some bias.²⁸ Another limitation was the measure of alcohol use, considering it is a legal substance. However, we have no reason to believe that women underreported their history of alcohol use. We believe that these results warrant further research to identify the nature of the relationship between HIV testing and substance use, especially in light of the documented relationship between substance use and HIV risks among women^[27,29,30].

Acknowledgments

The authors would like to acknowledge the following person: Mr Bob Ritchie, Publication Officer, RCMI Program (Grant #2 G12 RR003050-22), Ponce School of Medicine, Ponce, Puerto Rico, for editing the manuscript.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: The Puerto Rico Comprehensive Center for HIV Disparities (NCRR U54RR019507).

References

1. UNAIDS 2006. AIDS epidemic update—December 2006. Joint United Nations Programme on HIV/AIDS; Geneva, Switzerland: 2006.
2. Joint United Nations Programme on HIV/AIDS. [December 2009] Caribbean AIDS epidemic update: Regional summary. 2008. http://data.unaids.org/pub/Report/2008/jc1528_epibriefs_caribbean_en.pdf.
3. Puerto Rico Department of Health. The HIV/AIDS Surveillance report. Puerto Rico; San Juan: 2009.
4. World Bank. HIV/AIDS in the Caribbean: issues and options.. Human Development Sector Management Unit, Latin American and the Caribbean Region, Report number 20491-LAC. 2000.
5. CDC. HIV/AIDS surveillance report, 15. Centers for Disease Control and Prevention; Atlanta, Georgia: 2005.
6. Deseda CC, Sweeney PA, Woodruff BA, et al. Prevalence of hepatitis B, hepatitis C, and human immunodeficiency virus infection among women attending prenatal clinics in San Juan, Puerto Rico, from 1989-1990. *Obst Gynecol*. 1995; 85(1):75. [PubMed: 7528370]
7. Robles RR, Matos TD, Colon HM, et al. Mortality among Hispanic drug users in Puerto Rico. *PR Health Sci J*. 2004; 22(4):369–376.
8. CDC. Revised guidelines for HIV counseling, testing, and referral. *MMWR*. 2001; 50(RR19):1–58.
9. UNAIDS. UNAIDS/WHO policy statement on HIV testing. Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS, June 2004. *J Public Health*. 2004; 90(1):57–63.
10. Voluntary HIV-1 Counselling and Testing Efficacy Study Group. Voluntary HIV-1 Counseling and testing in individuals and couples in Kenya, Tanzania, and Trinidad: a randomized trial. *Lancet*. 2000; 256(10):103–112.
11. Norman LR, Gebre Y. Prevalence and correlates of HIV testing: an analysis of university students in Jamaica. *Medsc General Med*. 2005; 7(1):70.

12. Norman LR. HIV testing practices in Jamaica. *HIV Med.* 2006; 7(4):231–242. [PubMed: 16630035]
13. Velez CN, Rodriguez LA, Schoenbaum E, Ungemack JA. Puerto Rican youth in drug treatment facilities: who volunteers for HIV testing? *PR Health Sci J.* 1997; 16(1):37–44.
14. Robles RR, Matos TD, Colon HM, et al. Effects of HIV testing and counseling on reducing HIV risk behavior among two ethnic groups. *Drugs Soc.* 1996; 9(1-2):173–184.
15. Colon HM, Robles RR, Marrero CA, et al. Behavioral effects of receiving HIV test results among injecting drug users in Puerto Rico. *AIDS.* 1996; 10(10):1163–1168. [PubMed: 8874635]
16. UNDP. HIV/AIDS and Poverty Reduction Strategies. United Nations Development Program; New York: 2003.
17. Murrain M, Barker T. Investigating the relationships between economic status and HIV risk. *J Health Care Poor Underser.* 1997; 8(4):416–423.
18. Krueger LE, Wood RW, Diehr PH, Maxwell CL. Poverty and HIV seropositivity: the poor are more likely to be infected. *AIDS.* 1990; 4(8):811–814. [PubMed: 2261136]
19. CDC. Hemophilia Behavioral Intervention Evaluation Project. CDC Behavioral Intervention Research Branch; Atlanta, GA: 1992.
20. Ministry of Health. National Knowledge, Attitudes and Practices Survey. Epidemiology Unit; Kingston, Jamaica: 2004.
21. Ajzen, I.; Fishbein, M. *Understanding Attitudes and Predicting Social Behavior.* Prentice Hall, Inc; Englewood Cliffs, NJ: 1980.
22. Bandura, A. *Social foundations of thought and action: a social cognitive theory.* Prentice Hall, Inc; Englewood Cliffs, NJ: 1986.
23. Becker, MH. *The health belief model and personal health behavior.* Charles B. Slack, Inc.; Thorofore, NJ: 1974.
24. WHO. Definitions of indicators and targets for STI, HIV and AIDS surveillance. *STI/HIV/AIDS Surveillance Report.* 2000; 16(1):9–11.
25. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. National Center for Chronic Disease Prevention & Health Promotion; Atlanta, GA: 1997.
26. WHO. UNAIDS/WHO Policy Statement on HIV Testing. World Health Organization; Geneva, Switzerland: 2004.
27. Tross S, Hanner J, Hu MC, Pavlicova M, Campbell A, Nunes EV. Substance use and high risk sexual behaviors among women in psychosocial outpatient and methadone maintenance treatment programs. *Am J Drug Alcohol Abuse.* 2009; 35(5):368–374. [PubMed: 20180666]
28. Catania J, Gibson D, Chitwood D, Coates T. Methodological problems in AIDS behavioral research: influences on measurement error and participation bias in studies of sexual behavior. *Psychol Bull.* 1990; 108(3):339–362. [PubMed: 2270232]
29. MacMaster SA, Rasch RF, Kinzly ML, Cooper RL, Adams SM. Perceptions of sexual risk and injection for HIV among African American women who use crack cocaine in Nashville, Tennessee. *Health Social Work.* 2009; 34(4):283–291. [PubMed: 19927477]
30. Friedman MS, Marshal MP, Stall R, et al. Associations between substance use, sexual risk taking and HIV treatment adherence among homeless people living with HIV. *AIDS Care.* 2009; 21(6): 692–700. [PubMed: 19806485]

Table 1

Bivariate Results of Prior HIV Testing among Women Living in Public Housing by Selected Socio-Demographic, Attitudinal, and Behavioral Variables (N = 1133)

Variable	Tested Number N (%) ^a	Untested Number N (%) ^a	(P Value)
Age			
Less than 25 years	156 (70.9)	64 (29.1%)	(<.001)
25-39 years	385 (91.2)	37 (8.8%)	
40 years or older	368 (78.8)	99 (21.2%)	
Formal education			
6th grade or less	111 (81.0)	26 (19.0)	(.928)
7th to 9th grade	270 (83.3)	54 (16.7)	
High school	427 (82.8)	89 (17.2)	
Post high school	88 (81.5)	20 (18.5)	
Relationship status			
Married/common law	458 (82.5)	97 (17.5)	(.406)
Single	254 (79.4)	66 (20.6)	
Separated/divorced/widowed	199 (83.3)	40 (16.7)	

^aValid percentages presented based on number of respondents providing data for each measure.

Table 2

Bivariate Results between Prior HIV Testing and History of Substance Use among Women Living in Public Housing (N = 1133)

	Valid Percentage of Those Who Reported a History of HIV Testing	Valid Percentage of Those Who Reported No History of HIV Testing	(P Value)
History of alcohol use			
Yes	567 (84.4%)	105 (15.6%)	(.031)
No	324 (79.2%)	85 (20.8%)	
History of marijuana use			
Yes	168 (90.3%)	18 (9.7%)	(.002)
No	722 (85.4%)	173 (14.6%)	
History of other illicit substance use			
Yes	77 (91.7%)	7 (8.3%)	(.020)
No	807 (81.4%)	184 (19.6%)	

Table 3

Logistic Regression Analyses Examining History of HIV Testing and a History of Substance Use among Women Living in Public Housing (N = 1133)

Independent Variable	Unadjusted Odds Ratio and 95% CI	Adjusted Odds Ratio and 95% CI ^a
History of alcohol use	1.47 (1.03-1.95) ^b	1.35 (0.96-1.90) ^c
History of marijuana use	2.37 (1.34-3.73) ^d	2.15 (1.25-3.70) ^d
History of other illicit substance use	2.48 (1.12-5.45) ^b	2.00 (0.89-4.50) ^c

^e $P < .001$.

^a The model was adjusted for age, education, and relationship status.

^b $P < .05$.

^c $P < .10$.

^d $P < .01$.