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Risk factors associated with sexually transmitted infections among women under community supervision in New York City

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Abstract

The number of women under community supervision in the United States has increased, and this population has a high risk for sexually transmitted infections (STIs). We examined STI prevalence and multiple risk factors among drug-involved women under community supervision in New York City. Data were from a randomized controlled trial testing the efficacy of a behavioral HIV/STI intervention (Women on the Road to Health [WORTH]) among drug-involved women in the community corrections system in New York City from 2009 to 2012. To be eligible for inclusion, women had to be under community supervision within the past 90 days, have used illicit drugs at least once in the past six months, and have unprotected sex at least once in the past 90 days. Participants completed a survey containing items on STI risk factors and were tested for *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis*. Multivariable regression was used to examine associations between risk factors and STI diagnosis. Of 333 women tested, 89 (26.7%) tested positive for an STI. Ten (3.0%) were positive for *C. trachomatis*, 4 (1.2%) for *N. gonorrhoeae*, and 77 (23.1%) for *T. vaginalis*. Women with any STI were more likely to be black (AOR: 2.02; 95% CI: 1.08–3.77), homeless in the past 90 days (AOR: 2.07; 95% CI: 1.01–4.26), arrested in the past 90 days (AOR: 1.97; 95% CI: 1.14–3.39), and have a greater number of sexual partners in the past 90 days (AOR: 1.24; 95% CI: 1.08–1.42). Drug-using women under community supervision have a high burden of STIs driven by multiple risk factors. Implementing STI screening, prevention, and treatment programs in community supervision settings could facilitate a reduction in STIs among this population.

Keywords

Chlamydia; gonorrhea; high-risk behavior; trichomoniasis; women

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Introduction

In 2015, an estimated 4.65 million adults in the United States were under community supervision and approximately 1.16 million of these were women.¹ Community supervision includes individuals who are on probation or parole, have attended community courts, or are in alternative to incarceration programs. The percentage of persons under community supervision that are women has increased from 23% in 2005 to 25% in 2015.¹ Women under community supervision are primarily from racial and ethnic minority groups,² are socioeconomically disadvantaged, have comorbid substance use disorders, and have poor access to the healthcare system,³ which correlate with higher risks for sexually transmitted infections (STIs).⁴ Despite their increased risk for STI acquisition, women under community supervision are rarely tested for STIs. It is estimated that only 0.9% of community supervision programs offer STI testing and only 0.02% of individuals in the U.S. under community supervision receive STI testing.⁵

The STI vulnerability of women under community supervision is likely shaped by their “risk environment,”^{6,7} which comprises multiple individual, interpersonal, and structural factors. *Individual factors* related to STI acquisition may include age, race, substance use, and HIV status.⁸ For example, studies have shown that drug users have higher risk of STI infection due to elevated levels of sexual risk-taking and links to high-risk networks.⁹ *Interpersonal factors* include sexual risk behaviors, such as number of sexual partners, condom use, and intimate partner violence (IPV). For instance, IPV has been shown to be associated with inconsistent condom use and STI diagnosis.^{10,11} *Structural factors*, such as lack of economic resources, homelessness, and criminal history, can facilitate the spread of STIs among marginalized populations. The environment of criminal justice settings, for example, can promote or encourage risky health behaviors.¹² Involvement in the criminal justice system may result in unemployment and unstable housing, forcing some women to engage in sex work in order to survive, thus, increasing their risk of STI acquisition.¹³ These individual, interpersonal, and structural challenges, if not addressed, will continue to perpetuate STI acquisition and transmission. Despite the large number of women under community supervision and their high risk for STI acquisition, limited research exists on STI risk factors at multiple levels among this population. Most research on criminal justice populations focuses on those who are incarcerated. Understanding the multilevel risk factors that contribute to STIs among women under community supervision is critical to reducing incident infections of STIs among this population and their partners.¹⁴ Thus, the purpose of this paper is to examine the prevalence of STIs among a sample of women under community supervision in New York City and examine multilevel risk factors associated with STIs among this population.

Methods

Design and study population

Data were from a randomized controlled trial testing the efficacy of a behavioral HIV/STI intervention (Women on the Road to Health [WORTH]) among drug-involved women in the community corrections system in New York City.^{3,15} The trial was conducted between November 2009 and January 2012. A total of 1104 women were screened from community

courts and probation sites in New York City. Of these, 449 were eligible for study inclusion. A total of 337 women completed informed consent and baseline interviews. To be eligible for inclusion, women had to be (1) aged 18 years or older; (2) under community supervision in a community or criminal court, on probation or parole, under drug treatment court supervision or another alternative to incarceration program within the past 90 days; (3) report one or more incidents of illicit drug use within six months; (4) have one or more incidents of unprotected vaginal or anal intercourse within the past 90 days; and (5) be HIV positive or at risk for HIV. Data were collected at community supervision sites throughout New York City. During baseline, trained staff provided instructions for how to complete the study survey, and biological samples were collected for HIV and STI testing. All participants provided written informed consent to participate in the study. This study was approved by institutional review boards at Columbia University and the Center for Court Innovation.

Measures

At baseline, women completed a computer-assisted self-administered survey approximately an hour and a half in length. Surveys were based on a multilevel risk framework¹⁶ and included items on *individual* level factors such as sociodemographic characteristics (age, race/ethnicity, marital status, education level), alcohol and substance use, and HIV status; *interpersonal* level factors such as sexual risk behaviors (number of sexual partners, condom use) and IPV; and *structural* level factors such as criminal history and economic-related variables (income, employment status, housing).

STI diagnosis.—The dependent variable was diagnosis with an STI. Women obtained a self-collected vaginal swab during their baseline visit to test for *Trichomonas vaginalis*, *Chlamydia trachomatis*, and *Neisseria gonorrhoeae*. Specimens were tested for *T. vaginalis* using the TaqMan polymerase chain reaction assay, developed and validated by the Caliendo Laboratory at Emory University.¹⁷ *C. trachomatis* and *N. gonorrhoeae* were tested for using the Becton Dickinson ProbeTec ET Amplified DNA Assay (Becton, Dickinson and Co, Sparks, MD, USA).

Individual level factors.—*Sociodemographics:* Participants reported their age, education, and race/ethnicity. Any participant who reported that they were black/African American and not Hispanic was coded as “non-Hispanic black” for the analysis. All participants who reported they were Hispanic were coded as “Hispanic.” All participants who did not report that they were black/African American were coded as “Non-black.”

Alcohol and substance use: Women were asked whether they had used illicit drugs over the past 90 days (including all forms of ingestion of heroin, cocaine, crack, marijuana, crystal meth, ecstasy, and non-prescribed stimulants, barbiturates, or opiates) and whether they had binge drank alcohol over the past 90 days. We tested for associations between each type of drug used and STI diagnosis, but no associations were found (possibly due to low frequencies); thus, we combined all illicit drug use in the past 90 days into one dichotomous variable.

HIV status: Oral swabs were collected from participants at baseline to test for the presence of HIV-1 and HIV-2 antibodies using the OraQuick ADVANCE Rapid HIV Test (OraSure Technologies Inc., Bethlehem, PA, U.S.). Participants with reactive test results were coded as “HIV-positive” and those with non-reactive results were coded as “HIV-negative.”

Interpersonal level factors.—Sexual risk behaviors: We assessed sexual risk through a number of measures, including number of sexual partners other than their main partner in the past 90 days, participation in sex work in the past 90 days, and unprotected vaginal sex with any partner in the past 90 days. Sex work was defined as having sex with a partner who paid them with money, drugs, alcohol, food, and/or other resources. Women who reported only having a main partner were coded as having “no casual partners.” Women who reported having no main partner were coded as having “no main partner.” Women with a main partner who reported having additional partners were coded based on the number of casual partners reported.

IPV: IPV victimization was measured through a shortened eight-item version of the Revised Conflict Tactics Scale,¹⁸ which included questions on various forms of IPV victimization in women’s lives. Women were asked if they had experienced any of the scale items in the past 90 days. Items were combined to form one dichotomous variable. Women who responded affirmatively to any item were coded as “yes” for experiencing IPV in the past 90 days. Women who did not report experiencing any of the items were coded as “no.”

Structural level factors.—Economic factors: Participants were asked to report their income (less than \$400 per month, \$400–\$850 per month, more than \$850 per month). Participants were also asked their employment status and if they had been homeless in the past 90 days.

Criminal justice history: Women were asked when their last arrest was. If women had been arrested within the past three months, they were coded as having been arrested in the past 90 days.

Healthcare access: Women were asked if they had visited a gynecologist in the last 12 months. They were also asked whether they had accessed STI counseling or education in the past 90 days.

Statistical analysis.—Descriptive statistics were used to describe the sample. Individuals who had missing data for biological variables were excluded from the analysis. Out of 337 women who completed baseline interviews, four were excluded because they did not provide vaginal swabs for STI testing, thus 333 women were retained for analysis. To determine which factors were associated with a diagnosis of an STI, we examined associations between independent variables and STI diagnosis using bivariate logistic regression to calculate the unadjusted odds ratios (OR) and their 95% confidence intervals (CI). We examined multicollinearity between variables, but no variables were found to be highly correlated. Variables that showed significance at the 0.10 alpha level in the bivariate logistic regression models were included in the initial multivariable model. For selection of the final model, logistic regression was performed with significant variables from the bivariate analysis.

Statistical significance in the multivariate analysis was determined using an alpha level of 0.05. All analyses were conducted using SPSS version 23 (Durham, NC, USA).

Results

Individual level risk factors

The mean age of study participants was 41.3 years, with participants ranging in age from 18 to 62 years. The majority of participants (71.1%) were age 36 or older (Table 1). Nearly three-quarters of women in our sample were non-Hispanic black (69.1%) and nearly half (41.7%) had less than a high school education. Over half (63.4%) of women had used illicit drugs in the past 90 days. Over a quarter (29.1%) of women had binge drank alcohol in the past 90 days. Over 13% of women in our study were infected with HIV at baseline.

Interpersonal level risk factors

The majority of women (86.5%) reported having a main sexual partner. About half (48.3%) of women had at least one other sexual partner in addition to their primary sexual partner. Nearly a third (31.8%) of women participated in sex work in the past 90 days. The majority of women (79.0%) reported unprotected vaginal sex with a partner in the past 90 days. Nearly a fifth (17.1%) of women in our sample reported experiencing intimate partner violence (IPV) in the past six months.

Structural level risk factors

The vast majority of women were unemployed (91.0%), and over half (57.7%) made less than \$400 a month. Over a quarter (29.4%) of women had been arrested in the past 90 days, nearly a quarter (23.7%) had been a client in community court, 14.7% had participated in a drug or mental health court, roughly a third (33.9%) had been on probation, 14.1% had been on parole, and a few (7.5%) had been in an alternative-to-incarceration program. Several women (12.3%) had been homeless in the past 90 days. Most women (70.9%) had visited a gynecologist in the past 12 months, but less than half (44.1%) had accessed STI counseling or education in the past 90 days.

Prevalence of STIs

Over a quarter (26.7%) of women in this study tested positive for an STI at baseline. Seventy-seven women (23.1%) tested positive for *T. vaginalis* infection, 10 (3.0%) tested positive for *C. trachomatis*, and four (1.2%) tested positive for *N. gonorrhoeae*. Women aged 18–25 were significantly more likely to be infected with *C. trachomatis* and *N. gonorrhoeae* than women of other age groups. There were no significant differences between age groups in *T. vaginalis* infection rates.

Bivariate analysis

In the bivariate analysis (Table 2), for *individual* factors, testing positive for an STI was significantly associated with being 18–25 years of age (unadjusted OR 3.08; 95% CI: 1.45–6.58) and being non-Hispanic black (OR: 2.83; 95% CI: 1.06–7.55). For *interpersonal* factors, only having three or more additional sexual partners in the past 90 days was

significantly associated with having an STI (OR: 2.90; 95% CI: 1.36–6.20). *Structural* factors significantly associated with an STI were having an income less than \$400 a month (OR: 2.87; 95% CI: 1.15–7.17), being homeless in the past 90 days (OR: 2.16; 95% CI: 1.10–4.26), being arrested in the past 90 days (OR: 2.29; 95% CI: 1.37–3.81), and participating as a client in a community court in the past 90 days (OR 2.73; 95% CI: 1.60–4.67). Illicit drug use, condom use, IPV, HIV status, employment status, and recent healthcare access history were not significantly associated with STI diagnosis and were thus excluded from the multivariable analysis.

Multivariable analysis

A positive STI diagnosis was associated with a number of risk factors (Table 3). For *individual* factors, we found that an age of 18–25 years (adjusted odds ratio [AOR]: 3.31; 95% CI: 1.39–7.85) and being non-Hispanic black (AOR: 3.574; 95% CI: 1.20–10.58) were significantly associated with having an STI. Being HIV positive approached, but did not reach, statistical significance. Only one *interpersonal* factor was associated with having an STI. Women who had three or more additional sexual partners in the past 90 days were significantly more likely to have an STI than women who had no additional partners (AOR: 3.45; 95% CI: 1.48–8.06). For *structural* factors, women who had been homeless in the past 90 days were twice as likely to have an STI as women who had stable housing, and women who made less than \$400 a month were nearly three times more likely to have an STI than women who had higher incomes. Also, women who had participated as a client in community court in the past 90 days were nearly three times as likely to have an STI as women who had not recently participated in community court. It should be noted that because all women in our sample were under some form of community supervision, high levels of risk factors associated with STIs were reported. Nonetheless, women who were diagnosed with an STI had higher levels of these risk factors (e.g. number of partners, lower income) or had experienced them more recently (e.g. participation in community court or homelessness in the past 90 days).

Discussion

There is a paucity of data on STI prevalence and risk factors for STIs among women under community supervision. To address this, our study examined the STI prevalence and multiple risk factors for STIs among a sample of women under community supervision in New York City. Over a quarter (26.7%) of women in our study were diagnosed with an STI. Consistent with other studies, *C. trachomatis* and *N. gonorrhoeae* rates were much higher among women aged 18–25.¹⁹ Inconsistent with other studies, we found that the prevalence of *T. vaginalis* was comparable across all age groups (roughly 20%). Although the reasons for this are unclear, it may be that women under community supervision are more likely to be at risk for *T. vaginalis* infection across the board or that younger women under community supervision are more likely to engage in sexual mixing with populations with a higher burden of *T. vaginalis* infection than younger women in the general community. Further research should be conducted on *T. vaginalis* infection among women under community supervision to determine if these trends are consistent and to examine underlying causes of infection. In this study, we found that there were a number of

individual, interpersonal, and structural level factors that were associated with having an STI among this sample of vulnerable women.

Our findings have significant implications for public health intervention strategies. It is noteworthy that women who participated in community court or were arrested in the past 90 days were more likely to have an STI than women who had not recently participated in community court or been arrested. Community supervision settings have the potential to connect criminal justice-involved individuals to healthcare services, which is particularly important for women under community supervision who are at heightened risk for STI acquisition and who often have a tenuous relationship with the healthcare system.²⁰ Establishing community supervision-based STI screening programs could be an innovative approach to improving the sexual health of justice-involved individuals by providing access to care through onsite testing, treatment, and referral services.²⁰ Given the ease of self-collecting samples for STI screening, it would be feasible to gather samples for STI testing in community supervision settings without a nurse or medical personnel. Staff could be easily trained to store and ship samples to appropriate medical facilities. Test results could be given during follow-up appointments at community supervision facilities or directly by phone from medical personnel. Additional research is needed on the acceptability of self-collecting samples for STI testing in community supervision settings, but vastly expanding STI testing beyond the mere 0.9% of community supervision settings that currently offer such services could have a substantial impact on decreasing STI transmission and morbidity among this population.⁵

Consistent with other studies,^{8,21} at the *individual* level, black women were more likely to have an STI than non-black women. This is likely due to the multiple social risk factors faced by this community. Black individuals are disproportionately represented in the community corrections system and tend to be more socioeconomically disadvantaged, which are risk factors for STI acquisition.⁸ Community supervision programs should be particularly cognizant of the risk environment faced by many black women and ensure that these women are able to access needed STI screening and treatment.

We also found that younger women were more likely to have *C. trachomatis* and *N. gonorrhoeae* than older women. This is consistent with other research.^{22,23} Younger women also had similar prevalence rates of *T. vaginalis* as older women. Nearly half (45%) of women aged 18–25 were diagnosed with at least one STI at baseline, indicating a significant need for STI testing and treatment among younger women. STI testing in community supervision settings, particularly for women under age 25, may be one promising way to successfully diagnose and treat this high-risk population for STIs.

At the *interpersonal* level, women with three or more sexual partners outside of the primary relationship were significantly more likely to have an STI than women with fewer or no extra-relationship partners. Community supervision programs could stress the importance of limiting the number of sexual partners and practicing safe sex behaviors to reduce the risk of acquiring an STI. At the *structural* level, we found that women who were homeless in the past 90 days were also twice as likely to have an STI as women who had stable housing. Women who are unstably housed may need to exchange sex for housing or money to pay for

housing. Women who lack stable, safe housing are also at greater risk for rape, which may increase their likelihood of acquiring an STI.²⁴ Likewise, women with the lowest income levels were significantly more likely to have an STI. Community supervision programs could target women who have unstable housing situations or low incomes to ensure that they receive needed testing and treatment for STIs.

This study has some limitations that should be considered. First, the data were obtained from a convenience sample of women under community supervision in New York City; thus, our findings may not be generalizable to broader populations or community supervision populations in other geographical settings. Although women were not recruited randomly, we were able to access a key population of women with high levels of STI risk, targeting those in most need of prevention and intervention services. Second, the use of self-report for measuring risk behaviors may have resulted in biased responses, influenced by social desirability. However, the use of a computer-based self-completed survey and the emphasis by study personnel on confidentiality and anonymity may have mitigated self-report bias. Third, since we only assessed STIs through vaginal samples, our findings may represent an underestimate of the true extent of STI morbidity in this population. Recent studies among women indicate that a non-trivial proportion of *C. trachomatis* and *N. gonorrhoeae* infections occur at extragenital sites.^{25–28} Finally, the data were collected from 2009 to 2012, and hence STI rates among women under community supervision may have changed since then. However, the Centers for Disease Control and Prevention reports that STIs are on the rise across the U.S., which likely means there is an even greater need now for STI screening and treatment among women under community supervision than previously.²⁹

Although involvement in the community supervision system poses challenges to STI prevention and treatment, it also provides a structured setting in which an STI intervention could be effectively implemented.^{14,30} The concentration of STIs among drug-using women under community supervision, a population that is also often estranged from traditional health services, warrants consideration of community supervision programs as sites for STI screening, prevention, and treatment activities. At the very least, referral strategies for STI testing by staff should be in place for women who engage in STI-risk behaviors or who request access to STI testing or treatment. The establishment of such programs in community supervision settings could provide an opportunity to alleviate the high burden of STIs among a marginalized population that lacks political voice.³¹ Partnerships between public health and criminal justice systems could result in the successful development and implementation of STI interventions that are based in scientific evidence, but that are also responsive to the unique needs of this high-risk community.

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Table 1.

Sociodemographic characteristics of women under community supervision 2009–2012 (N = 333).

	Overall
<i>Individual factors</i>	
Age (years), n (%)	
18–25	40 (12.0)
26–35	56 (16.8)
36–45	113 (33.9)
46 and older	124 (37.2)
Race/ethnicity (%)	
Non-Hispanic black	230 (69.1)
Hispanic	65 (19.5)
Non-Hispanic, non-black	38 (11.4)
Education (%)	
Less than high school	139 (41.7)
High school diploma/GED	106 (31.8)
Some college or more	88 (26.4)
Marital status (%)	
Single, never married	223 (67.0)
Married	52 (15.6)
Divorced/separated/widowed	58 (17.4)
Used illicit drugs past 90 days (%)	211 (63.4)
Binge drank in the past 90 days (%)	97 (29.1)
HIV status (%)	
Positive	44 (13.2)
Negative	287 (86.2)
<i>Interpersonal factors</i>	
Currently has a main sexual partner (%)	288 (86.5)
Number of partners in the past 90 days (%)	
Main partner with no additional partners	128 (38.4)
One additional partner	80 (24.0)
Two additional partners	41 (12.3)
Three or more additional partners	40 (12.0)
No main partner	44 (13.2)
Participated in sex work in the past 90 days (%)	106 (31.8)
Unprotected vaginal sex with a partner in past 90 days (%)	263 (79.0)
Experienced IPV in the past six months (%)	57 (17.1)
<i>Structural factors</i>	
Employment status (%)	
Unemployed	303 (91.0)
Occasional or seasonal	6 (1.8)
Part-time	13 (3.9)

	Overall
Full-time	11 (3.3)
Monthly income (%)	
Less than \$400 per month	192 (57.7)
\$400–850 per month	98 (29.4)
\$850 or higher	43 (12.9)
Homeless in the past 90 days (%)	41 (12.3)
Arrested in the past 90 days (%)	98 (29.4)
Participated as a client in a community court in the past 90 days (%)	79 (23.7)
Participated in a drug court or mental health court in the past 90 days (%)	49 (14.7)
Been on probation in the past 90 days (%)	113 (33.9)
Been on parole in the past 90 days (%)	47 (14.1)
Participated in an alternative-to-incarceration program in the past 90 days (%)	25 (7.5)
Accessed STI counseling/education in the past 90 days (%)	147 (44.1)
Visited a gynecologist in the past 12 months	236 (70.9)
<i>Prevalence of STIs (n=333) (%)</i>	
Any STI	91 (27.3)
<i>C. trachomatis</i>	10 (3.0)
<i>N. gonorrhoeae</i>	4 (1.2)
<i>T. vaginalis</i>	77 (23.1)

STI: sexually transmitted infection; HIV: human immunodeficiency virus.

Table 2.

Bivariate analysis of factors associated with any STI among women under community supervision in New York City (N = 333), 2009–2012.

	Prevalence		P
	of STIs (%)	OR [95% CI]	
<i>Individual factors</i>			
Age			
18–25 years	18 (45.0)	3.08 [1.45–6.58]	.004
26–35 years	13 (23.2)	1.14 [0.54–2.43]	.735
36–45 years	32 (28.3)	1.49 [0.82–2.70]	.190
46 years and older	26 (21.0)	Ref.	
Race			
Non-Hispanic black	69 (30.0)	2.83 [1.06–7.55]	.038
Hispanic	15 (23.1)	1.98 [0.66–5.97]	.225
Non-Hispanic, non-black	5 (13.2)	Ref.	
Education			
Less than high school	38 (27.3)	1.36 [0.73–2.57]	.332
High school diploma/GED	32 (30.2)	1.57 [0.82–3.03]	.177
Some college or higher	19 (21.6)	Ref.	
Marital status			
Single	66 (29.6)	1.57 [0.76–3.24]	.225
Divorced/separated	12 (20.7)	0.97 [0.39–2.44]	.952
Married	11 (21.2)	Ref.	
Used illicit drugs in the past 90 days			
Yes	60 (28.4)	1.27 [0.76–2.13]	.355
No	29 (23.8)	Ref.	
Binge drank in the past 90 days			
Yes	28 (28.9)	1.16 [0.69–1.97]	.572
No	61 (25.8)	Ref.	
HIV status			
HIV-positive	16 (36.4)	1.68 [0.86–3.27]	.131
HIV-negative	73 (25.4)	Ref.	

	Prevalence of STIs (%)	OR [95% CI]	P
<i>Interpersonal factors</i>			
Currently has a main sexual partner			
Yes	77 (26.7)	Ref.	.618
No	12 (27.3)	0.85 [0.45–1.61]	
Number of other partners in the past 90 days			
Main partner, no additional partners	26 (20.3)	Ref.	
One additional partner	21 (26.3)	1.40 [0.72–2.70]	.320
Two additional partners	13 (31.7)	1.82 [0.83–4.00]	.135
Three or more additional partners	17 (42.5)	2.90 [1.36–6.20]	.006
No main partner	12 (27.3)	1.47 [0.67–3.25]	.339
Participated in sex work in the past 90 days			
Yes	31 (29.2)	1.20 [0.72–2.01]	.478
No	58 (25.6)	Ref.	
Unprotected vaginal sex with any partner in the past 90 days			
Yes	69 (26.2)	0.89 [0.49–1.56]	.695
No	20 (28.6)	Ref.	
Experienced intimate partner violence in the past six months			
Yes	19 (33.3)	1.47 [0.80–2.72]	.217
No	70 (25.4)	Ref.	
<i>Structural factors</i>			
Employment status			
Unemployed	84 (27.7)	1.92 [0.71–5.18]	.199
At least some employment	5 (16.7)	Ref.	
Income			
Less than \$400 per month	61 (31.8)	2.87 [1.15–7.17]	.024
\$400–\$850 per month	22 (22.4)	1.79 [0.67–4.78]	.249
More than \$850 per month	6 (14.0)	Ref.	
Homeless in the past 90 days			
Yes	17 (41.5)	2.16 [1.10–4.26]	.025
No	72 (24.7)	Ref.	

	Prevalence of STIs (%)	OR [95% CI]	P
Arrested in the past 90 days			
Yes	38 (38.8)	2.29 [1.37–3.81]	.002
No	51 (21.7)	Ref.	
Participated in a community court in the past 90 days			
Yes	34 (43.0)	2.73 [1.60–4.67]	.000
No	55 (21.7)	Ref.	
Participated in a drug court or mental health court in the past 90 Days			
Yes	16 (32.7)	1.40 [0.73–2.69]	.312
No	73 (25.7)	Ref.	
Been on probation in the past 90 days			
Yes	28 (24.8)	0.86 [0.51–1.44]	.565
No	61 (27.7)	Ref.	
Been on parole in the past 90 days			
Yes	8 (17.0)	0.52 [0.23–1.16]	.110
No	81 (28.3)	Ref.	
Participated in an alternative-to-incarceration program in the past 90 days			
Yes	8 (32.0)	1.32 [0.55–3.17]	.537
No	81 (26.3)	Ref.	
Accessed STI counseling or education in the past 90 days			
Yes	33 (22.4)	Ref.	.111
No	56 (30.3)	1.50 [0.91–2.47]	
Visited a gynecologist in the past 12 months			
Yes	58 (24.6)	Ref.	.151
No	31 (32.3)	1.46 [0.87–2.46]	

HIV: human immunodeficiency virus; STI: sexually transmitted infection; OR: odds ratio; GED: General Equivalency Diploma.

Table 3.

Multivariable analysis of factors associated with any STI among women under community supervision in New York City (N = 333) 2009–2012.

	Adjusted OR (95% CI)	P
<i>Individual factors</i>		
Age		
18–25 years	3.31 (1.39–7.85)	.007
26–35 years	1.01 (0.43–2.38)	.976
36–45 years	1.83 (0.94–3.56)	.078
46 years and older	Ref.	
Race		
Non-Hispanic black	3.57 (1.20–10.58)	.022
Hispanic	2.44 (0.73–8.15)	.148
Non-Hispanic, non-black	Ref.	
HIV status		
HIV-positive	2.09 (0.98–4.43)	.056
HIV-negative	Ref.	
Interpersonal factors		
Number of partners in the past 90 days		
Main partner with no add. partners	Ref.	.253
One additional partner	1.52 (0.74–3.14)	.278
Two additional partners	1.60 (0.68–3.76)	.004
Three or more additional partners	3.45 (1.48–8.06)	.331
No main partner	1.55 (0.64–3.77)	
Structural factors		
Income		
Less than \$400 per month	2.96 (1.09–8.09)	.034
\$400–\$850 per month	2.09 (0.71–6.19)	.182
More than \$850 per month	Ref.	
Homeless in the past 90 days		
Yes	2.16 (1.01–4.61)	.037
No	Ref.	
Arrested in the past 90 days		
Yes	1.71 (0.97–3.03)	.065
No	Ref.	
Participated as a client in community court in the past 90 days		
Yes	2.82 (1.54–5.19)	.001
No	Ref.	

HIV: human immunodeficiency virus; OR: odds ratio; STI: sexually transmitted infection; CI: confidence interval.