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Socio-Structural and Neighborhood Predictors of Incident Criminal Justice Involvement in a Population-Based Cohort of Young Black MSM and Transgender Women

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Abstract Black men who have sex with men (MSM) and transgender women are disproportionately affected by criminal justice involvement (CJI) and HIV. This study recruited 618 young Black MSM and transgender women in Chicago, IL, using respondent-driven sampling between 2013 and 2014. Random effects logistic regression evaluated predictors of incident CJI over 18 months of follow-up. Controlling for respondent age, gender and sexual identity, spirituality (aOR 0.56, 95% CI 0.33–0.96), and presence of a mother figure (aOR 0.41, 95% CI 0.19–0.89) were protective against CJI. Economic hardship (financial or residential instability vs. neither aOR 2.23, 95% CI 1.10–4.51), two or more past episodes of CJI vs. none (aOR 2.66, 95% CI 1.40–5.66), and substance use (marijuana use vs. none aOR 2.79, 95% CI 1.23–6.34; other drug use vs. none aOR 4.49, 95% CI 1.66–12.16) were associated with CJI during follow-up. Research to identify and leverage resilience factors that can buffer the effects of socioeconomic marginalization may increase the effectiveness of interventions to address the socio-structural factors that increase the risk for CJI among Black MSM and transgender women. Given the intersection of incarceration, HIV and other STIs, and socio-structural stressors, criminal justice settings are important venues for interventions to reduce health inequities in these populations.

Keywords HIV · Criminal justice involvement · Incarceration · Health inequities · Sexual and gender minorities · Resilience · Socio-structural factors

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Introduction

In the USA, Black men who have sex with men (MSM) and transgender women (TGW) are disproportionately

affected by HIV and have experienced relatively stable incidence in recent years [1, 2]. Inequities have persisted despite a lack of differences in individual-level risk behavior and likely result from a complex interplay of socio-structural factors that increase transmission risk in sexual networks and impede access to prevention resources and engagement in HIV treatment and care [3–7]. These trends underscore an urgent need for interventions to address the socio-ecological context of HIV transmission among Black MSM and TGW [8–11].

Criminal justice involvement (CJI) disproportionately affects Black men in the USA overall and Black MSM in particular [12–14]. Fewer studies have examined experiences of CJI among transgender women, but evidence suggests high rates of CJI in this population as well, likely resulting from the intersection of stigma and socioeconomic marginalization [15, 16]. Transgender populations also face structural stigma in institutional settings related to reinforcement of the gender binary [15, 17]. The negative health and social consequences of CJI have been widely documented and include disrupted social ties [18], limited employment opportunities, housing instability, and reduced access to medical care, all of which can lead to cycles of socioeconomic marginalization [14, 19, 20], transmission of HIV and other STIs, and further CJI. Compared with other CJI populations, relatively few studies have examined predictors of CJI among Black MSM and TGW specifically, though emerging evidence suggests that as with other populations, socioeconomic factors [12], past CJI [12, 21], substance use [13], mental illness [22], perceived racism [12], childhood trauma [12], and violence [13, 22] may increase risk for CJI in these populations. CJI has been shown to impact subsequent housing stability, substance use, risk for violence, and social network stability among young Black MSM and TGW [12, 21]. CJI also has implications for outcomes along the HIV care continuum [23, 24], particularly with repeated episodes of incarceration [25], and may pose significant barriers to post-release retention in care and viral suppression, potentially due to its impact on housing stability [26–28] or access to healthcare and other social services [28–30].

In Chicago and elsewhere in the USA, residential racial segregation and mass incarceration as a result of racially motivated arrest and sentencing practices have resulted in a concentration of neighborhoods impacted by high levels of crime, unemployment, and social and economic disinvestment [31–33], all of which can contribute to recurrent cycles of violence and CJI. As with other populations, these contextual factors may increase the likelihood of future CJI among Black MSM and TGW. Furthermore, sexual and gender minorities face additional risk for violence and harassment as a result of sexual orientation and gender identity–based stigma [34–36]. For example, past research has demonstrated associations between neighborhood stressors and poverty and gay-related victimization among Black MSM [37]. However, few studies have prospectively examined the impact of neighborhood environmental influences on CJI among Black MSM and TGW.

As important, but less well understood, than potential risk factors for CJI are factors that make individuals resilient despite exposure to socio-environmental stressors. Resilience has been described as a mechanism by which assets (individual factors) and resources (external factors) operate to compensate for or protect against the negative effects of risk exposure [38]. Elements of resilience are multidimensional and factors such as spirituality and social support have been identified as factors that may protect against HIV transmission risk and other negative health outcomes among Black MSM [38–40] and TGW [41, 42]. Given the overlapping nature of risks for HIV and incarceration [43] and increased risk of trauma and violence exposure among sexual and gender minority populations [44, 45], it is important to understand how multilevel socio-environmental and individual factors impact risk for CJI among Black MSM and TGW and identify resilience factors that may mitigate risk. This study sought to examine whether socioeconomic stressors and other psychosocial risk factors (e.g., substance use, psychological distress) were associated with increased risk of CJI and whether resilience factors (e.g., social support, spirituality) were protective against CJI in this population.

Methods

Sample and Data Collection

We conducted a secondary analysis of data collected as part of a longitudinal study that examined the impact of social influences on HIV transmission risk and use of biomedical and behavioral prevention among young Black MSM and TGW residing on the South Side of

Chicago, an area of the city burdened by lack of resources and high prevalence of HIV and incarceration. Sampling, recruitment, and data collection have been previously described [46]. Briefly, participants were recruited using respondent-driven sampling (RDS) [47, 48] between June 2013 and July 2014. Initial recruits (seeds) were selected from community organizations, health clinics, and virtual spaces such as Facebook. Respondents were eligible if they self-identified as African American or Black; resided or spent the majority of their time on the South Side of Chicago; were assigned male sex at birth; were between the ages of 16 and 29; reported oral or anal sex with a male in the past 24 months; and were willing and able to provide informed consent. Respondents were given vouchers to recruit up to 6 other people and received $60 for participation and $20 for each additional recruit enrolled. Participants provided information on sociodemographics, behavior, social networks, and connections to communities and other social spaces at baseline, 9, and 18 months post-enrollment. Of the initial 618 respondents, 525 (85%) were retained at 9 months and 507 (82%) at 18 months.

Variable Descriptions and Classification

Outcome

CJI was assessed at each follow-up wave based on the question "Since your last study visit, have you ever been detained, arrested, or spent time in jail or prison (yes/no)?" Participants also reported how many times they had experienced CJI since the last visit. The outcome for analysis was defined as reporting any new episode of CJI since the previous wave. CJI was analyzed as a binary outcome (any vs. none) and as a count of the total episodes of CJI reported (0, 1, or ≥ 2). Lifetime history of CJI was also assessed at baseline and included as a predictor in the follow-up analyses.

Resilience Factors

Resilience factors included presence of a mother and/or father figure (including non-biological relationships), level of emotional support received from a mother and/or father figure (assessed on a 4-point scale from very unsupportive to very supportive and categorized as very vs. less than very supportive), closeness to the gay and Black communities (assessed on a 4-point scale from not close at all to very close and categorized as very vs. less than very close), importance of religion in the participant's life (very vs. less than very important or not religious), and spirituality (e.g., "to what extent do you consider yourself a spiritual person?") from not spiritual at all to very spiritual and categorized as moderately or very spiritual vs. not at all spiritual.

Psychosocial Risk Factors

Lifetime violence exposure was assessed using 7 items (e.g., "witnessed a gun-related incident," "had a close friend or relative die violently"), measured on a 7-point scale from "0" to "6 or more times" [49]. Items were summed, with higher scores reflecting higher levels of exposure to violence. Cronbach's alpha in our sample was 0.88. Past 12-month substance use was assessed as any vs. no use of marijuana, ecstasy, methamphetamine, crack/cocaine, or heroin. We created a three-category variable for analysis: no substance use, marijuana use only, or use of any drugs other than marijuana. We also assessed binge drinking as any report of consuming 5 or more drinks on one occasion in the past 12 months. Psychological distress was assessed using the Brief Symptom Inventory 18-item scale (BSI-18), which measures past week psychological symptoms [50]. Participants rated the degree to which they experienced somatic symptoms, anxiety, and depression on a 5-point scale from "not at all" to "extremely." Items were summed to create an overall score, and sum scores were calculated for each of the three subscales. Cronbach's alpha for the global score was 0.93. We also calculated T-scores for anxiety and depression, with values >62 indicating presence of clinical symptoms as in previous work [50].

Neighborhood Factors

Neighborhood characteristics were derived from multiple administrative sources and past projects, including the 2014 American Community Survey (5-year estimates for 2010–2014 from the US Census Bureau), the Chicago Data Portal, Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Spatial Data Science at the University of Chicago, and a previous study by the authors on affiliation networks of YBMSM [51]. The creation of neighborhood-level variables has been described in detail elsewhere [52]. All neighborhood variables were aggregated to the Chicago

community area level. The Chicago community areas are clearly delineated and stable and have been used in previous geographic analyses [52]. They are also widely used by government agencies and community stakeholders and are thus a relevant unit of analysis for consideration of potential structural interventions. Participants provided residential addresses at the baseline survey, and addresses were geocoded. Valid geolocation information at the community area level was obtained from 575 of 618 participants.

Sociodemographics

Sociodemographic variables included age, gender identity and sexual orientation, highest level of educational attainment (current student, less than high school, high school or GED equivalent, or post-secondary education), and annual income (<$10,000, $10–19,999, or ≥$20,000). We also assessed past 12-month residential transience (≥2 or more residences in the past year) and ever vs. never having insufficient resources for basic necessities (e.g., rent, food) in the past 6 months. Because residential and financial instability are correlated, we created an index to reflect economic hardship by summing responses on the two items: residential transience and insufficient resources. The index ranged from 0 to 2 with higher scores reflecting higher economic hardship; this scale has been used in previous work [53]. HIV status was determined by self-report of a previous diagnosis or positive test at baseline. STI history at baseline was based on a self-reported diagnosis of any STI (e.g., gonorrhea, Chlamydia, syphilis, herpes simplex virus) in the past 12 months.

Statistical Analysis

Participant characteristics were summarized at baseline and compared according to lifetime CJI history using chi-square tests and *t* tests for categorical and continuous variables, respectively. Associations between baseline individual and neighborhood characteristics and subsequent CJI over 18 months of follow-up were evaluated using logistic and ordinal logistic regression. Models included subject-level random effects to account for within-subject correlation due to repeated measures and robust variance estimation to account for potential model misspecification and residual dependency. Subject and neighborhood-level intraclass correlation coefficients (ICCs) were calculated by fitting regression models with CJI as the outcome and a random effect for a subject (or community area) with no covariates. The community area ICCs were essentially zero, indicating minimal clustering at the neighborhood level, whereas subject-level ICCs indicated moderate levels of correlation within individuals over time (ICC ≈ 0.45). Therefore, models incorporated random effects at the subject level only.

Neighborhood indicators are often highly correlated, and multicollinearity may arise in analyses utilizing multiple place-based indicators. Principal components analysis (PCA) was used to classify neighborhood indicators into a set of uncorrelated components that were then used as predictors in regression models. PCA with varimax rotation yielded 3 meaningful components with eigenvalues > 1, which together explained 78% of the variance among the set of neighborhood variables. The 3 components were classified as the following: (1) socioeconomic disadvantage (e.g., violent crime, poverty, vacant building density), Black race also loaded on this component; (2) immigrant population (e.g., majority Latino, foreign-born); and (3) instability (e.g., renter-occupied housing, residential instability, high liquor outlet density).

An initial set of variables was chosen for evaluation based on a priori hypotheses about potential predictors of CJI. At the individual level, we hypothesized that financial hardship, substance use, and psychological distress would be associated with increased risk of CJI and that resilience factors (e.g., social support, spirituality) would be protective. We also hypothesized that neighborhood characteristics (e.g., concentration of poverty, violent crime) would be associated with increased risk of CJI.

Unadjusted odds ratios were calculated for all variables of interest. To generate a parsimonious multivariable model with a relevant set of predictors, variables with $p < 0.2$ in univariable analysis were initially entered into a multivariable regression model and evaluated using an iterative process whereby those with $p < 0.05$ were retained in the final models. All models also included sociodemographics (age, gender identity and sexual orientation, and HIV status) and the neighborhood component scores regardless of statistical significance.

We conducted several analyses to evaluate the sensitivity of the results to various assumptions. First, we reran the individual-level analyses specifying the *pweights* option with Giles Sequential Sampling

weights [54, 55] to account for the RDS design. Estimates from these analyses yielded similar results and conclusions. Because our primary focus was on inference about the relative magnitude of various predictors of CJI as opposed to the estimation of population prevalence, non-weighted results are presented. We also compared findings for neighborhood characteristics using principal component scores with those with the original constituent variables. None of the neighborhood variables was significant in these analyses. All analyses were conducted in Stata/SE version 15.1 [56].

Results

Of the original sample of 618 young Black MSM and TGW, 1 was excluded from the baseline analysis due to missing information on lifetime CJI history and 73 were excluded from the incidence analyses due to missing information on CJI during follow-up ($n = 2$) or lost to follow up at waves 2 and 3 ($n = 71$), yielding a final analytic sample of 545 individuals for the follow-up analyses. At baseline, 46% had a history of CJI; of 545 with at least 1 follow-up visit, 107 (19.6%) had any CJI during follow-up. A total of 184 episodes of CJI were reported over 837.8 years of follow-up, an incidence rate of 22.0 (95% CI 17.7–27.2) per 100 person-years. The median age was 23; 66% identified as gay, and 7.8% as transgender. Over one-third (37%) were HIV positive, and 25% reported an STI diagnosis in the past 12 months. Economic hardship, residential instability, and past CJI were common. Nearly half (46%) reported any lifetime history of CJI, and 28% had multiple experiences of CJI (Table 1). At baseline, age, bisexual identity, HIV positivity, STI history, residential and financial instability, drug use, binge drinking, and depression were associated with a previous lifetime history of CJI (Table 2).

Predictors of CJI over Follow-Up

In univariable analysis, spirituality, presence of a mother figure, and having a supportive parental figure (mother or father figure) were protective against CJI during follow-up (Table 2). Lower levels of educational attainment, economic hardship, substance use, any previous lifetime history of CJI and total lifetime episodes of CJI, higher lifetime violence exposure, and higher BSI-18 scores were associated higher likelihood of CJ during follow-up. In multivariable analysis, spirituality (aOR 0.56; 95% CI 0.33–0.96) and presence of a mother figure (aOR 0.41; 95% CI 0.19–0.89) remained protective against CJI controlling for respondent age, gender, and sexual identity (Table 3). Economic hardship (financial or residential instability vs. neither aOR 2.23, 95% CI 1.10–4.51), two or more past episodes of CJI vs. none (aOR 2.66, 95% CI 1.40–5.66), and substance use (marijuana use vs. none aOR 2.79; 95% CI 1.23–6.34; other drug use vs. none aOR 4.49, 95% CI 1.66–12.16) remained statistically significantly associated with CJI. None of the neighborhood variables (examined as component scores or as individual constituent items) was statistically significant in univariable or multivariable analysis. Findings were similar in terms of magnitude and statistical significance when the total number of episodes of CJI was analyzed as an ordinal outcome, with increasing magnitude of associations with increasing episodes of CJI (not shown).

Discussion

Consistent with our hypotheses, we found that spirituality and having a mother figure were protective against incident CJI, while economic instability, substance use, and previous CJI were associated with increased odds of future CJI. These findings have important implications for HIV prevention, given the intersection of HIV and CJI and their disproportionate impact on this population. Spirituality has long been recognized as an important component in the lives of Blacks and African Americans and may provide a source of inner strength for coping with hardship, as well as linkages to social support and material resources that promote health and well-being [38]. Our findings are consistent with previous research demonstrating spirituality as a resilience resource [38], though we found no association between the importance of religion in participant's lives and CJI. It is important to distinguish between endorsement of spiritual beliefs and participation in organized religious institutions as these may have very different implications in terms of risk or protective effects for Black MSM and TGW.

The importance of having support from a mother figure or other kin has been demonstrated across populations [57, 58]. This may be particularly important for sexual and gender minorities since affirmation of sexual orientation and gender identity is critical to the development of self-worth that may buffer against negative

Table 1 Sample characteristics at baseline by a lifetime history of CJI, $N = 617$

	Total		Lifetime CJI history				
			Yes		No		
	N or mean	% or SD	*N* or mean	% or SD	*N* or mean	% or SD	*p* value
Age, mean (SD)	22.76	3.1	23.26	3.0	22.33	3.2	< 0.001
Sexual orientation							
Gay	409	66.4	170	59.9	239	72.0	0.006
Bisexual	167	27.1	93	32.8	74	22.3	
Straight/other	40	6.5	21	7.4	19	5.7	
Transgender identity	48	7.8	25	8.8	23	6.9	0.380
Education							
Less than HS	37	6.0	22	7.7	15	4.5	0.034
HS or GED	164	26.6	83	29.1	81	24.4	
More than HS	219	35.5	104	36.5	115	34.6	
Current student	197	31.9	76	26.7	121	36.5	
Annual income							
<$10,000	363	60.6	171	61.7	192	59.6	0.844
$10–19,999	127	21.2	58	20.9	69	21.4	
>$20,000	109	18.2	48	17.3	61	18.9	
Insufficient resources in past 6 m	263	43.2	146	51.6	117	35.9	< 0.001
Homeless in past 12 months	155	25.2	85	29.8	70	21.2	0.014
Residential transience in past 12 months	281	45.7	135	47.5	146	44.1	0.395
HIV positive	226	36.6	120	42.1	106	31.9	0.009
STI diagnosis in past 12 months	155	23.3	89	31.3	66	20.1	0.001
Total CJI episodes							
0	332	54.1	–	–	–	–	–
1	107	17.4	–	–	–	–	–
≥ 2	175	28.5	–	–	–	–	–
Drug use past 12 months							
None	146	23.7	36	12.6	110	33.1	< 0.001
Marijuana only	390	63.2	194	68.1	196	59.0	
Other drugs	81	13.1	55	19.3	26	7.8	
Any binge drinking past 12 months	268	43.9	140	49.7	128	38.9	0.008
Violence scale (continuous), Mean (SD)	17.99	9.5	20.09	9.52	16.16	9.1	< 0.001
Psychological distress							
Depression (T-score > 62)	66	11.1	41	14.8	25	7.8	0.007
Anxiety (T-score > 62)	94	15.7	50	17.9	44	13.8	0.166
BSI-18 total score, mean (SD)	199.58	34.7	203.61	38.0	196.07	31.2	0.008
Closeness to Black community[a]	285	46.4	143	50.5	142	42.9	0.059
Closeness to gay community[a]	139	22.5	69	24.2	70	21.1	0.354
Spirituality[b]	391	64.2	180	64.1	211	64.3	0.944
Importance of religion[c]	311	50.6	144	50.7	167	50.5	0.950
Have mother figure	558	90.4	255	89.5	303	91.3	0.451

Table 1 (continued)

	Total		Lifetime CJI history				
			Yes		No		
	N or mean	% or SD	*N* or mean	% or SD	*N* or mean	% or SD	*p* value
Have father figure	387	62.7	187	65.6	200	60.2	0.169
Supportive parental figure	420	68.3	178	62.7	242	73.1	0.006

[a] Very close vs. less than very close

[b] Very/moderately vs. slightly/not at all spiritual

[c] Very important vs. less than very important or not religious

external influences. Among young Black MSM, family network composition has been associated with lower levels of HIV-associated risk behaviors [57] and improvements in the care continuum when network members are involved in care [58]. Having a mother figure could also reflect increased social capital and other material resources that could mitigate economic hardship contributors to CJI risk in this population. Of note, maternal figures included a broader definition than biological mothers; a significant minority were described as extended family members (e.g., grandmother, aunt), friends, or other mentors (14.9%), and 5.6% were described as house or play mothers. Supportive relationships with non-biological maternal figures, including those in the House and Ball community, may thus represent important sources of resilience for sexual and gender minorities.

Our findings with regard to economic instability and past incarceration are consistent with prior literature [14], including a recent study of Black MSM in 6 US cities which found that socioeconomic disadvantage, perceived racism, and prior incarceration were associated with incident incarceration [12]. Repeated CJI has detrimental effects on the care continuum by creating disruptions in care for HIV-positive individuals [23, 25] and has been linked with other stressors (e.g., housing instability, employment, and income loss) that may make it more difficult to re-engage in care after release. Economic instability may in turn impact subsequent CJI in a cyclical fashion. Similar factors may impact interaction with healthcare system and engagement in HIV prevention continuums (e.g., PrEP uptake and retention) for HIV-negative individuals. These factors, along with potential disruptions in social ties and sexual networks, may be mechanisms by which CJI could impact population-level HIV transmission. The current analysis did not examine the impact of CJI on HIV incidence, but previous analyses of this sample did not find direct associations between CJI and incident HIV [18, 59], though it was linked with other HIV-associated risk factors (network and housing instability, violence, substance use) [18]. Prior analyses of this sample also indicate high prevalence of other risk factors, including condomless anal sex, sex drug use, and recent STI history [18, 21, 59]. While HIV incidence in the cohort was high (8.5 per 100 person-years) [59], the absolute number of new infections was small ($n = 33$), so the power to detect effects may have been limited. Given the intersection of incarceration, HIV and other STIs, and sociostructural stressors, criminal justice settings remain critically important venues for interventions to reduce health inequities.

The lack of statistically significant neighborhood-level effects on CJI is contrary to our initial hypothesis, but may be due to insufficient geographic variability in the sample. Chicago's extreme history of racial segregation, redlining, and policies that limit access to high-quality public education and the study inclusion criteria led to a sample with a concentration of individuals from predominately Black neighborhoods with high levels of poverty, violence, and social disinvestment. Although 40 of 77 Chicago community areas were represented (mean cluster size = 24; range = 2–142), the vast majority of participants resided on the South side of Chicago, though they may have had exposure to other neighborhood contexts (e.g., for socialization, clinical care). More nuanced and objective measures of neighborhood context would be better suited to examination of the impact of place than measures

Table 2 Unadjusted logistic regression results: factors associated with new CJI during follow-up, $N = 1029$ observations among 545 individuals

	OR	95% CI	*p* value
Age in years	0.99	0.90–1.08	0.756
Sexual orientation (ref = gay)			
Bisexual	1.62	0.90–2.91	0.108
Straight/other	1.82	0.66–4.98	0.246
Transgender identity	1.18	0.40–3.46	0.767
Education (ref = > HS)			
Less than HS	2.63	0.86–8.05	0.091
HS or GED	2.68	1.34–5.34	0.005
Current student	1.77	0.90–3.50	0.100
Economic hardship index (ref = none)			
Lack of resources or residential instability	2.36	1.22–4.58	0.011
Lack of resources and residential instability	2.99	1.34–6.71	0.008
HIV positive	1.45	0.83–2.52	0.190
STI diagnosis in past 12 months	1.29	0.71–2.32	0.402
Total CJI episodes (ref = 0)			
1	2.45	1.22–4.94	0.012
≥ 2	4.31	2.30–8.10	< 0.001
Drug use past 12 months (ref = none)			
Marijuana only	2.93	1.36–6.31	0.006
Other drugs	5.80	2.26–14.91	< 0.001
Any binge drinking past 12 months	1.19	0.70–2.02	0.523
Violence sum score (continuous)	1.03	1.00–1.06	0.023
Psychological distress			
Depression	1.60	0.72–3.55	0.253
Anxiety	1.48	0.73–2.99	0.278
BSI-18 sum score (continuous)	1.01	1.00–1.01	0.043
Closeness to gay community[a]	0.84	0.44–1.62	0.602
Closeness to Black community[a]	1.05	0.61–1.80	0.862
Spirituality[b]	0.56	0.32–0.95	0.033
Importance of religion[c]	1.04	0.62–1.76	0.877
Have mother figure	0.47	0.21–1.04	0.062
Have father figure	0.85	0.49–1.48	0.566
Supportive parental figure	0.60	0.34–1.05	0.076

[a] Very close vs. less than very close

[b] Very/moderately vs. slightly/not at all spiritual

[c] Very important vs. less than very important or not religious

derived from residential addresses, particularly for highly mobile populations. Emerging work includes the use of a global positioning system (GPS) and other approaches to activity space measurement [60, 61] that could be triangulated with other sources of meta-data (e.g., crime reports) to provide new insights about relevant place-based drivers of CJI. Furthermore, other aspects of community (i.e., family, friends, and other social and cultural influences) may be more salient than residential geography.

Finally, transgender women were not more likely than MSM to experience CJI in our study, but the

Table 3 Associations of neighborhood variables with CJI during follow-up

	Model 1: neighborhood + demographics			Model 2: neighborhood + demographics + economic hardship and CJI			Model 3: full model		
	aOR	95% CI	*p* value	aOR	95% CI	*p* value	aOR	95% CI	*p* value
Neighborhood components[a]									
Component 1: socioeconomic disadvantage	1.20	0.76–1.90	0.434	1.20	0.75–1.93	0.447	1.21	0.74–1.98	0.454
Component 2: immigrant	0.96	0.61–1.49	0.850	0.98	0.63–1.54	0.941	0.98	0.64–1.50	0.921
Component 3: instability	0.99	0.68–1.43	0.941	0.88	0.61–1.27	0.493	0.98	0.69–1.40	0.917
Individual characteristics									
Age in years	0.98	0.90–1.08	0.722	0.93	0.85–1.02	0.137	0.97	0.89–1.07	0.565
Sexual orientation (ref = gay)									
Bisexual	1.69	0.92–3.10	0.091	1.48	0.81–2.70	0.198	1.70	0.96–3.02	0.070
Straight/other	2.04	0.66–6.25	0.215	1.74	0.61–4.97	0.302	1.47	0.58–3.68	0.415
Transgender identity	1.08	0.32–3.67	0.897	0.86	0.28–2.59	0.783	1.05	0.38–2.90	0.925
HIV positive	–	–	–	1.65	0.89–3.07	0.109	1.70	0.94–3.07	0.079
Economic hardship (ref = none)									
Lack of resources or residential instability	–	–	–	2.42	1.21–4.87	0.013	2.23	1.10–4.51	0.026
Lack of resources and residential instability	–	–	–	1.77	0.76–4.13	0.187	1.84	0.79–4.28	0.160
Total CJI episodes (ref = 0)									
1	–	–	–	2.29	1.08–4.84	0.031	1.74	0.84–3.62	0.137
≥ 2	–	–	–	4.14	2.11–8.12	< 0.001	2.66	1.40–5.06	0.003
Drug use past 12 months (ref = none)									
Marijuana only	–	–	–	–	–	–	2.79	1.23–6.34	0.015
Other drugs	–	–	–	–	–	–	4.49	1.66–12.16	0.003
Spirituality[b]	–	–	–	–	–	–	0.56	0.33–0.96	0.035
Have a mother figure	–	–	–	–	–	–	0.41	0.19–0.89	0.024

aOR adjusted odds ratio; *CJI* criminal justice involvement; *CI* confidence interval

[a] Component scores were standardized for ease of interpretation such that their coefficients represented a change in the outcome associated with a 1 standard deviation change in the component score

[b] Very/moderately vs. slightly/not at all spiritual

relatively small number of TGW in our sample limited power for stratified analysis or tests of interaction by gender. Understanding the unique contextual and socio-structural factors that impact CJI among TGW remains an important priority [15].

Limitations

Our measure of criminal justice exposure was broad and included any experience of detention, arrest, or time spent in jail or prison. However, relevant predictors may be different for different types of CJI (e.g., jail vs. prison). A more specific measurement of CJI would allow for comparison of predictors across different types of CJI and to clarify whether and how varying frequency and duration of CJI impacts health and social outcomes. There is potential for bias if participants were lost to follow-up as a result of CJI during the study, though retention was high at both waves (80–85%), and CJI history at baseline was not associated with missed follow-up visits. Outcomes were based on participant self-report and may have been subject to social desirability bias. Finally, while the RDS design yielded a sample that was fairly representative of the population of young Black MSM and TGW in Chicago [18], generalizability to Black MSM in other geographic areas may be limited.

Conclusions

Consistent with those of previous literature, our findings suggest that many of the drivers of CJI among Black MSM and TGW are structural in nature. Interventions to strengthen social relationships and empower families may help to mitigate socio-environmental stressors and could be coupled with interventions to provide transitional and supportive housing, GED attainment, employment interventions, or combinations of these. Substance use decriminalization policies, such as marijuana legalization, would also likely impact risk for CJI and recidivism. Further research is needed to understand how resilience can be leveraged as part of strengths-based interventions to buffer the negative effects of socio-environmental stressors that impact incarceration and other socio-structural risks for HIV.

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