



HHS Public Access

Author manuscript

Subst Use Misuse. Author manuscript; available in PMC 2015 February 21.

Published in final edited form as:

Subst Use Misuse. 2014 January 01; 49(1-2): 124–133. doi:10.3109/10826084.2013.824469.

Racial/Ethnic Differences in Recent Drug Detoxification Enrollment and the Role of Discrimination and Neighborhood Factors

Natalie D. Crawford^{1,2}, Abby E. Rudolph³, and Crystal M. Fuller⁴

¹Department of Epidemiology, University of Michigan, Ann Arbor, Michigan, USA

²Division and Epidemiology and Biostatistics, School of Public Health, Georgia State University, Atlanta, Georgia, USA

³San Diego School of Medicine, La Jolla, California, USA

⁴Mailman School of Public Health, Columbia University, New York, New York, USA

Abstract

Drug detoxification and long-term drug treatment utilization is lower for drug-dependent minorities than Whites. Log-binomial regression was used to assess discrimination and neighborhood-level factors on past 6-month drug treatment utilization among 638 New York City (NYC) drug users between 2006 and 2009. Drug-use discrimination was positively associated with detoxification and long-term treatment. Participants in higher concentrated Black neighborhoods were less likely to attend long-term treatment. Significantly fewer Blacks versus Whites and Hispanics reported drug-use discrimination, which may systematically filter drug users into treatment. More research is needed to understand social forms of discrimination and drug treatment.

Keywords

discrimination; neighborhood; race/ethnicity; drug treatment; urban health

Introduction

Only one-third of drug-dependent persons in the United States have utilized drug treatment in the past year (Compton, Thomas, Stinson, & Grant, 2007). Previously identified barriers to drug treatment entry include housing instability (Lloyd et al. 2005), crack use (Gyarmathy & Latkin, 2008), and HIV negative status (Davey, Latkin, Hua, Tobin, & Strathdee, 2007). Although racial minorities have not been shown to utilize drug detoxification programs less than Whites (Elwy, Ranganathan, & Eisen, 2008), racial/ethnic differences do exist with respect to more rigorous, long-term/residential treatment enrollment, which can include

Address correspondence to Natalie D. Crawford, Department of Epidemiology, University of Michigan, 1415 Washington Heights SPH 1, Room 3642, Ann Arbor, MI 48109, USA; ncrav@umich.edu.

Declaration of Interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

detoxification services and are generally more successful in achieving abstinence (Perron et al., 2009). Specifically, Blacks in the United States are less likely than Whites and Hispanics to receive treatment from a professional clinician and be enrolled in an inpatient treatment program. Conversely, Blacks are more likely than Whites and Hispanics to attend 12-step and outpatient drug treatment programs (Perron et al., 2009), which is not optimal for stopping drug use. Differences in the type of drug treatment program may influence racial/ethnic disparities observed with drug treatment outcomes. For example, in terms of successful drug treatment completion, Blacks are less likely than Whites to remain in drug treatment (Coustasse, Singh, & Trevino, 2007) and more likely than Whites to relapse following drug treatment (Coustasse et al., 2007).

Studies argue that criminal history and Medicaid enrollment (Daley, 2005; Le Cook, Carson, & Alegria, 2010) influence racial differences in drug treatment utilization by increasing access to drug treatment programs through mandates imposed by the criminal justice system for non-violent drug offenses, and health care programs that offer drug treatment services. However, minorities with more access through managed care programs remained less likely to use higher quality drug treatment programs and less likely to remain in care compared to Whites (Daley, 2005). A large body of literature suggests that perceptions of racial discrimination, in the health care setting and in other social settings, influence utilization of a host of health care services among minorities (Williams, Neighbors, & Jackson, 2003). Therefore, discrimination may provide insight as to why racial disparities exist in particular with utilization of long-term care and not for short-term detoxification services. Specifically, discrimination may act as a barrier for long-term care that is higher quality, but criminal justice and health care mandates preclude treatment barriers for short-term care. Some researchers note that relapse while in drug treatment programs may be influenced by general and specific perceptions of discriminatory treatment because of being a heroin user (Brenner, von Hippel, von Hippel, Resnick, & Treloar, 2010) by eroding self-esteem and positive beliefs in one's own abilities (Link, Castille, & Stuber, 2008). It is also plausible that experiences of discrimination prior to drug treatment entry may lower self-esteem (Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007) and negatively influence one's decision to enroll in drug treatment (Lee, Ayers, & Kronenfeld, 2009). Alternatively, experiences of discrimination may positively influence drug treatment entry by highlighting one's drug use as a problem, but negatively impact one's ability to complete drug treatment due to erosion of their self-esteem.

Geographic barriers to long-term drug treatment programs may also be an important factor. Few studies have directly examined the impact of geographic distance and geographic resources on drug treatment utilization. But, studies have shown that distance affects completion of drug treatment where individuals with shorter travel distance to drug treatment (less than one mile) were more likely to complete treatment (Beardsley, Wish, Fitzelle, O'Grady, & Arria, 2003). Moreover, structural neighborhood inequities and disadvantage have also been shown to influence completion of alcohol treatment programs (Jacobson, Robinson, & Bluthenthal, 2007). Thus, it is possible that geographic distance barriers and poor distribution of resources across neighborhoods may influence utilization of drug treatment as well.

With long-term drug treatment being the most effective strategy to reduce drug dependence, it is critical to examine whether racial and ethnic differences in long-term drug treatment enrollment are influenced by social experiences of discrimination and contextual neighborhood characteristics that influence the availability of drug treatment programs and drug markets. Although racial and ethnic disparities do not exist in drug detoxification enrollment, it is also important to assess whether these social processes influence drug detoxification enrollment, which is often accessed via emergency room settings. Therefore, using data among adult illicit drug users in New York City, we explored the relation between race/ethnicity and type of drug treatment enrollment, whether or not this relation can be explained by experiences of discrimination and neighborhood characteristics, and whether discrimination modifies the relationship between race/ethnicity and drug treatment enrollment.

Methods

Data Sources

This analysis used data from the Social Ties Associated with Risk of Transition into Injection Drug Use (START) study, which set forth to determine the social predictors of transitioning from non-injection drug use to injection drug use among young adults in New York City between 2006 and 2009. The study design and methods have been described previously (Rudolph et al., 2011). In brief, data were collected using two study designs: (1) an 18-month prospective study among non-injection drug users (NIDUs) who reported using heroin, crack and/or cocaine; and (2) a cross-sectional survey of recently initiated (injecting <5 years) injection drug users (IDUs). All participants were between the ages of 18 and 40 years and provided informed consent. For this analysis, baseline data from NIDUs and cross-sectional data from IDUs were combined. All study protocols and survey instruments were approved by the institutional review boards at Columbia University and the New York Academy of Medicine.

Participants were recruited using a combination of respondent driven sampling (RDS) and targeted street outreach (TSO) in low-income NYC neighborhoods ethnographically mapped as having high levels of drug activity. Participants were asked to name the cross streets in the neighborhood within which they were recruited. These neighborhood addresses were geocoded and linked with 2000 US census-tract data using ArcGIS. Neighborhood “hangout” address was selected as the link to neighborhood data rather than the home address due to missing home addresses (i.e., high levels of homelessness) and has been previously found to represent the neighborhood where most of their time is spent and personal relationships are established (Fuller et al., 2005).

Dependent Variables

We explored two outcomes: recent (past 6 months) enrollment in a drug detoxification program versus not and recent (past 6 months) enrollment in a long-term treatment program versus not. Drug detoxification programs typically consist of 24- to 48-hr clinic stay (either detoxification clinic or emergency department). Long-term treatment program enrollment (which may include detoxification) was defined as outpatient methadone maintenance, or in-

patient cocaine or heroin treatment, or other residential treatment in the past 6 months versus not attending a long-term treatment program in the past 6 months. All participants could report drug detoxification and/or long-term treatment in the past 6 months. Participants with missing data on recent drug detoxification or long-term treatment were excluded ($n = 9$).

Independent Variables

Race was categorized as Hispanic, non-Hispanic Blacks, and non-Hispanic Whites or others. The “other” race category included Asian or Pacific Islander, Native American, Eskimo, or Aleutian, mixed and other. Hispanics who identified as Black ($n = 5$) were combined with Hispanics rather than non-Hispanic Blacks because their reports of discrimination were more similar to that of Hispanics (data not shown). Participants who identified as Hispanic and Black were from Puerto Rico (60%) and the Dominican Republic (40%).

We focused on the three most common types of discrimination experienced among drug using populations (Ahern, Stuber, & Galea, 2007; Young, Stuber, Ahern, & Galea, 2005): discrimination due to race, drug use, and prior incarceration. Discrimination was based on the following question (Young et al., 2005), “In your lifetime, have you ever been discriminated against, prevented from doing something, or been hassled or made to feel inferior because of any of the following?” Participants could respond “yes” or “no” to experiencing discrimination because of their age, race, sex (gender), sexual orientation, poverty, drug use, having been in jail or prison, religion, mental illness, physical illness, or other.

Neighborhood characteristics assessed in this analysis included minority composition (percentage Black and percentage Latino), poverty (percentage living below 100% of the poverty threshold), and unemployment (percentage unemployed). We also computed the Townsend index of disadvantage and deprivation which aggregated (1) unemployment as a percentage of those aged 16 and over who are economically active, (2) non-home ownership as a percentage of all households, and (3) household overcrowding. In the standard Townsend scale calculation (Morris & Carstairs, 1991), the percentage of car ownership in the neighborhood is also included, but because the primary mode of transportation in New York is public transportation, education level defined as percentage of adults 25 or older with less than a high school diploma was substituted for car ownership. Higher values of the Townsend score indicate higher levels of neighborhood disadvantage and deprivation. For the analysis, each neighborhood characteristic was continuous and a 10% increase in the neighborhood characteristic on the outcome was assessed.

Covariates

Several variables were explored as potential con-founders based on previous studies (Latkin, Mandell, Oziemkowska, Vlahov, & Celentano, 1994; Latkin, Forman, Knowlton, & Sherman, 2003; Mandell, Kim, Latkin, & Suh, 1999; Rudolph et al., 2011). Age was considered continuous. Gender was categorized as male and female; transgendered persons were excluded from this analysis due to small sample size ($n = 5$). Other variables included education (<high school vs. high school or general equivalency degree [GED]), income (<\$5,000 vs. \$5,000), homelessness in the past 6 months (yes vs. no), incarceration history

(ever vs. never), marital status (single vs. married/divorced), sampling strategy (RDS vs. TSO), HIV testing in the past 6 months (yes vs. no), HIV status (yes vs. no), injection status (yes vs. no), and primary type of drug used (cocaine, crack cocaine, heroin, and polytomous drug use including equal use of all three drug types).

Statistical Analysis

The distribution of the entire sample ($n = 638$) was examined and for each outcome: recent detox and recent long-term treatment program. The median and interquartile range (IQR) is presented for continuous variables and frequencies are presented for categorical variables. Mann-Whitney tests were used to calculate statistically significant differences in the median of continuous variables for each outcome and chi-square tests were used to calculate significant differences of categorical variables for each outcome. With the exception of race, which was forced into the model because it was the key variable of interest for this analysis, other characteristics that showed significance at the $p < .05$ level were included in the final model. Statistically significant interactions between race and each form of discrimination in the final model were assessed. Generalized estimating equations specifying a log-binomial distribution and robust standard error were used to account for clustering of individuals on the neighborhood level and calculate the adjusted prevalence ratio (APR) given the high prevalence of each outcome. All data management and statistical analyses were performed using SAS version 9.3 (SAS Institute Inc., 2008).

Results

About a quarter (23.82%) of the sample reported recent enrollment in drug detoxification and about a third (33.39%) reported recent enrollment in a long-term treatment program. The median age of the sample was 33 years, most participants were Black (48.7%) or Hispanic/Latino (37.1%), male (70.5%), single (84.7%), and recruited through RDS (65.0%). About half had at least a high school degree/GED (50.3%), but most made less than \$5,000/year of taxable income (82.4%), had been homeless in the past 6 months (71.3%), and were previously incarcerated (81.1%). Almost three-fourths were tested for HIV tests in the past 6 months (71.1%) and 9.0% reported being HIV positive. The primary drug used was crack (51.9%) followed by heroin (27.3%) and most were non-injectors (77.8%).

About one-quarter reported racial (25.8%) and drug use (32.8%) discrimination in their lifetime and of those who spent time in jail or prison, 34.1% reported discrimination due to prior incarceration. Racial, drug, and incarceration discrimination were marginally correlated ($r = .31-.35$; data not shown), however drug use and incarceration discrimination were more correlated ($r = .54$). Interestingly, Blacks (25.6%) were significantly less likely to report experiencing drug use discrimination compared to Hispanics (40.8%) and White/others (37.1%; $p = .0007$; data not shown). No significant racial differences were seen in reports of racial or incarceration discrimination. Participants were recruited in neighborhoods where the median percent Black was 51.6, percent Latino was 28.7, percent foreign-born was 19.2, percent poverty was 40.1, percent unemployed was 19.2, and the median Townsend score of the neighborhoods was 2.1.

There were few socio-demographic differences between those who recently attended drug detox versus those who did not in the bivariate analysis (Table 1). Specifically, slightly fewer Blacks compared to Hispanic/Latinos and Whites, fewer people who primarily used cocaine compared to crack, heroin or polyusers, and fewer non-injectors compared to injectors recently attended detox. People who were incarcerated in their lifetime, who reported recent homelessness, and who experienced drug use discrimination in his/her lifetime were more likely to have recently attended detox. Those recruited in higher percentage Black and Latino neighborhoods were also less likely to recently attend drug detox.

Socio-demographic differences were similar for those who recently attended a long-term care treatment program in the bivariate analysis (Table 1). Significantly fewer Blacks and White/others compared to Hispanics, fewer participants recruited through RDS, fewer cocaine compared to crack, heroin, and polyusers, fewer non-injectors compared to injectors, and more people who experienced discrimination because of their drug use or prior incarceration reported recent enrollment in a long-term drug treatment program. Those recruited in higher percentage Black and Latino neighborhoods were significantly less likely to attend recent long-term drug treatment.

In the adjusted analyses (Table 2), those who had experienced drug use discrimination were significantly more likely to recently attend detox (Model 3 APR: 1.47; 95%CI: 1.09–1.97) after accounting for race/ethnicity, neighborhood factors, past 6-month homelessness, primary drug used, and injection status. The associations between recent detox attendance and drug use discrimination, homelessness, heroin use, and injection status also remained significant in the adjusted analysis, but the effects of incarceration history and neighborhood seen in the bivariate analysis diminished after adjustment. Significant interactions between race/ethnicity and drug use discrimination on recent detox were present in the final adjusted model (Model 4). Specifically, Hispanics who reported drug use discrimination were significantly more likely to report recently attending detox (APR: 2.74; 95%CI: 1.10–6.82). Drug use discrimination was only marginally ($p = .09$) associated with recent detox attendance (APR: 2.26; 95%CI: 0.87–5.82) for Blacks.

For those recently attending long-term drug treatment, Hispanics (APR: 1.45; 95%CI: 1.03–2.03) compared to Whites/others were significantly more likely to recently attend long-term drug treatment (Table 3). Those who experienced drug use discrimination (APR: 1.29; 95%CI: 1.00–1.66) compared to those who did not were slightly more likely to have recently attended long-term drug treatment. Although Blacks were not less likely to recently enter into long-term drug treatment, those recruited in high percentage Black neighborhoods (APR: 0.94; 95%CI: 0.90–0.98) were less likely to recently attend drug treatment. Injectors were more likely to enter into long-term drug treatment, but there were no differences with respect to primary type of drug used observed. The modifying effect of race/ethnicity on the relation between (1) drug use and long-term treatment, and between (2) jail discrimination and long-term treatment were not significant (data not shown).

Discussion

The major finding of this study is that history of discrimination due to drug use surfaced as an important correlate of recent enrollment in both detoxification and long-term drug treatment programs. It is possible that drug use discrimination heightens awareness of an individuals' drug problem, which may encourage cessation of drug use. It is also plausible that drug users report discrimination because of mandated drug treatment programs, which are generally imposed as a form of leniency among those who are arrested for non-violent crimes involving drug possession. In such cases, the criminal justice system acts as a liaison with drug treatment and rehabilitation programs to help individuals stop using drugs rather than incarcerating them for their drug use. The decision to mandate drug treatment rather than seek punitive treatment in the criminal justice system has been shown to be highly discretionary and may be disproportionately offered to White drug offenders as opposed to Black offenders regardless of differences in previous arrests and incarceration (Alexander, 2010). In this sample, both Whites and Hispanics compared to Blacks report more drug use discrimination and higher enrollment in short- and long-term drug treatment programs. It is possible that although mandated treatment is beneficial for treatment enrollment, individuals may perceive mandated drug treatment enrollment as discriminatory, which would explain high drug treatment enrollment among Hispanics and those who report drug use discrimination. Moreover, when assessing the interaction between race and drug use discrimination with respect to drug treatment, significant findings were observed among Hispanics and Blacks who reported drug use discrimination compared to those who did not encounter discrimination for recent detox entry. It is possible that mandated treatment programs filter individuals into shorter term programs that are less expensive, which would explain why no interaction effect was seen between race and discrimination with respect to long-term treatment.

Given these findings, a better understanding of the trajectory of drug treatment among all racial/ethnic groups and their experiences once enrolled in a drug treatment program is needed. It is possible that drug use discrimination encourages drug treatment enrollment, but simultaneously lowers self-efficacy and negatively impact one's ability to actually complete treatment and subsequently abstain from drugs (Brener et al., 2010; Link et al., 2008). Given that this study was cross-sectional, we cannot confirm that drug users who attended drug treatment were more likely to report discrimination because of their experience in drug treatment or if this truly impacted their treatment completion. Thus, future studies that determine the timing of discrimination (e.g., before/during drug treatment), whether discrimination influences individual or mandated enrollment in drug treatment programs, the types of drug treatment programs entered into, and respective drug treatment completion rates are warranted.

The findings of this study are consistent with other studies that did not observe racial/ethnic disparities in drug detoxification enrollment (Elwy et al., 2008). However, after accounting for socio-demographic characteristics, significantly more Hispanics enrolled in long-term treatment compared to Whites. Studies suggest that drug treatment enrollment patterns between Hispanics and Whites are similar (Perron et al., 2009). More research is needed to confirm the findings in this study accounting for discrimination and neighborhood factors

among a representative sample of current and former drug users who may have successfully completed treatment and would therefore not be eligible for this study.

Another key finding in this study is that a higher percentage of Black residents in one's neighborhood was significantly associated with a lower likelihood of recent long-term drug treatment enrollment. There are two possible explanations for this finding. First, a previous report noted fewer drug treatment facilities in minority neighborhoods. (Beardsley et al., 2003). Further evidence also suggests that critical resources such as drug treatment facilities that promote drug abstinence and reduce stressors that may lead to drug use may be lacking altogether in disadvantaged neighborhoods. For example, Boardman, Finch, Ellison, Williams, and Jackson (2001) show that neighborhood disadvantage (operationalized as percentage in poverty, percentage with female-headed household, male unemployment rate, and percentage of families receiving public assistance) increases drug use through a path mediated by social stressors (Boardman et al., 2001). Although our study attempted to control for neighborhood disadvantage, it is possible that the Townsend scale of disadvantage used in this study was not a good indicator of true disadvantage, which would explain residual effects of percentage Blacks in the neighborhood and the nonsignificant association with the Townsend scale of disadvantage. Future studies should determine whether differences in drug treatment facilities exist by neighborhood characteristics.

A second explanation for the relationship between higher percentage Blacks and lower long-term drug treatment enrollment stems from previous researchers suggesting that informal measures of neighborhood disadvantage that capture smaller level neighborhood effects such as those used in this study (percentage Blacks) may not completely capture the social and political systems that create disproportionate access to health care facilities such as drug treatment facilities (White & Borrell, 2011). Therefore, future studies should also assess the influence of more formal measures of neighborhood disadvantage within larger neighborhood areas such as segregation dissimilarity that may better capture inequalities between neighborhoods. Future studies should also examine other neighborhood features that would influence access to drug treatment such as the density of drug treatment programs in the neighborhood and drug-related arrests that may highlight patterns of mandated drug treatment versus incarceration.

It is important to mention a few noteworthy limitations in this study. For example, drug treatment enrollment and discrimination may have been under- or over-reported resulting in an over- or underestimate of the true effect. However, previous studies have noted valid reports among heavy, illicit drug users (Colon, Robles, & Sahai, 2002). These data may also lack generalizability and only represent heroin and crack cocaine users in New York City. Yet, our findings are largely consistent with previous reports and have opened the door to the potential role of discrimination and neighborhood social characteristics on short- and long-term drug treatment enrollment. Finally, because temporality between discrimination and drug treatment enrollment is not certain in this study, we attempted to provide some evidence that may suggest ordering of these two events by further examining lifetime discrimination with recent drug treatment enrollment (i.e., during past 6 months only). We performed sensitivity analyses excluding individuals who reported discrimination in the past 6 months and the results did not change. This subsequent analysis provides evidence of

distal, rather than proximal, experiences of discrimination influencing drug treatment entry patterns. However, future studies that provide more detailed and nuanced information about the timing and sources of discrimination, drug treatment enrollment, and drug treatment outcomes (dropout vs. completion) are needed to confirm these findings. More information on the motivations for seeking treatment, whether forced or voluntary and the corresponding amount of time an individual was able to abstain from drug use following drug treatment is also needed.

In summary, this study provides a springboard for further investigation of social and contextual neighborhood characteristics that influence short- and long-term drug treatment beyond our current understanding. Furthermore, these data highlight the complexity and potentially multifaceted process of discrimination, which is typically studied as a risk factor for poor access to health facilities (Williams et al., 2003). We have presented data counter to the prevailing understanding of discrimination on health behaviors by showing that discrimination due to drug use may improve entry into drug treatment programs among illicit drug users. However, it is important to note that the impact of discrimination on drug treatment retention/success is unknown. These findings highlight drug use discrimination may work differently than racial discrimination, which is most often studied (Williams et al., 2003). The entire process and various forms of discrimination should be further explored, particularly for minorities who are generally more likely to experience racial discrimination and may have differential reasons for entering drug treatment. Examination of the multiple forms of discrimination and various ways in which they can influence health may help describe both entry and the poor drug treatment outcomes typically observed.

Acknowledgments

The authors would like to acknowledge the START study staff and participants for their contributions.

This study was funded by the National Institute on Drug Abuse (R01 DA 019964-01). The authors thank the Robert Wood Johnson Foundation Health & Society Scholars program and NIDA Grant T32 DA023356, and K01DA033879-01A1 for its financial support.

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Glossary

APR	Adjusted prevalence ratio
IDU	Injection drug user
IQR	Inter-quartile range
NIDU	Non-injection drug user

Biography



Natalie D. Crawford, Ph.D., is an Assistant Professor in the Division of Epidemiology and Biostatistics at the Georgia State University School of Public Health. She completed her postdoctoral training at the University of Michigan as a Robert Wood Johnson Health and Society Scholar and received her Ph.D. in Epidemiology from Columbia University's Mailman School of Public Health. She worked as a Project Director at the New York Academy of Medicine and Columbia University on several federally and privately funded studies that examine social determinants of health. Dr. Crawford's broad research interests are examining the social processes that create and perpetuate racial and ethnic health disparities. Her published work has examined the influence of education, income, social discrimination, and neighborhood environment on a host of health outcomes including, but not limited to, illicit drug use, high-risk relationships, obesity, and diabetes. She has extensive experience in research implementation including primary data collection, community-based participatory research, statistical analyses, and structural interventions. Dr. Crawford's current research examines how contextual neighborhood features and drastic changes in the neighborhood environment influence racial and ethnic disparities in health and health behaviors.



Abby E. Rudolph, Ph.D., M.P.H., is an infectious disease epidemiologist at the Pacific Institute for Research and Evaluation. She holds a Master's degree in Public Health from Columbia University Mailman School of Public Health and a Ph.D. in Epidemiology with a focus on Infectious Diseases from the Johns Hopkins Bloomberg School of Public Health. Dr. Rudolph's research focuses on understanding how individual, environmental, and network factors act together to shape disease transmission dynamics, risk behaviors, and health service utilization among populations disproportionately burdened with disease. Her publications cover a variety of topics including HIV- and drug use-related stigmas, recruitment strategies for hidden populations, network correlates of HIV and risk behaviors, neighborhood correlates of HIV transmission and risk behaviors, respondent-driven sampling, pharmacy syringe access for injection drug users (IDUs), and community-based participatory interventions to connect marginalized populations with health services. She is currently funded by a K01 Mentored Research Scientist Award from the National Institute on Drug Abuse (NIDA) that aims to better understand the independent and combined influence of social network and spatial/neighborhood factors on linkage to care, treatment adherence, and drug treatment enrollment among HIV positive IDUs in Baltimore, MD.



Crystal M. Fuller, Ph.D., has a Ph.D. in Epidemiology from Johns Hopkins University, Bloomberg School of Public Health, and has been on faculty for the past 12 years as an Associate Professor in the Department of Epidemiology at the Mailman School of Public Health, Columbia University. Dr. Fuller has led several large-scale, federal, and private-funded research studies since her professional career began 13 years ago. Her research has led to a publication record of over 65 peer-reviewed manuscripts and 3 book chapters building extensive experience in the design, conduct, and analysis of community-based infectious disease and drug abuse epidemiologic studies, particularly structural and multilevel intervention studies focused on solving the problem of racial disparities in HIV and other social and medical consequences related to HIV and drug abuse. Dr. Fuller conducts original data collection often using community-based participatory research (CBPR) methods with a focus on sustainability, and translating research into practice. Her most recent work is the investigation of access to antiretroviral medication as a means to prevent HIV among drug users and their peers in New York City, also referred to as

postexposure prophylaxis (PEP). Complementing this work, Dr. Fuller is developing expertise in the use of technology to support risk reduction behavior, increase access to prevention services, and increase medication adherence among drug users and other marginalized communities. In addition to her research, Dr. Fuller has an extensive background in mentoring undergraduate, graduate, and postdoctoral students, and junior faculty, many of whom have been supported by individual and training grant NIH sponsorship directed and/or coordinated by Dr. Fuller.

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Table 1
Distribution of sample characteristics overall, by recent detox and recent long term treatment, START study (n = 638), 2006–2009

	Distribution of characteristics (n = 638)		Recent detox prevalence (n = 152)		Recent long-term treatment prevalence (n = 213)	
	n	%	n	%	n	%
Socio-demographic						
Age (median, IQR)	638	33 (28–37)	33 (28–37)	.5379	33 (28–37)	.6768
Race/ethnicity						
Hispanic/Latino	237	37.15	27.43	.0796	43.88	<.0001
Black	311	48.75	19.94		24.44	
White/other	90	14.11	27.78		36.67	
Sex						
Male	450	70.53	24.67	.4398	33.56	.8880
Female	188	29.47	21.81		32.63	
Education						
<High school	316	49.61	25.00	.5037	33.86	.8224
High school/GED	321	50.39	22.74		33.02	
Income						
\$0–\$4,999	498	82.45	23.69	.6973	33.94	.9958
>\$5,000	106	17.55	25.47		33.96	
Past 6 months homelessness						
Yes	401	71.35	27.18	.0092	32.17	.3092
No	161	28.65	16.77		36.65	
Incarceration history						
Yes	472	81.10	26.69	.0237	35.17	.1631
No	110	18.90	16.36		28.18	
Marital status						
Single	537	84.70	24.95	.0712	40.21	.1247
Married/divorced	97	15.30	16.49		32.22	
Recruitment strategy						
Respondent driven	415	65.05	22.17	.1805	29.64	.0062

	Distribution of characteristics (n = 638)		Recent detox prevalence (n = 152)		Recent long-term treatment prevalence (n = 213)	
	n	%	%	p-value	%	p-value
Targeted	223	34.95	26.91		40.36	
HIV testing (past 6 months)						
Yes	394	71.12	23.60	.5502	33.25	.3762
No	160	28.88	21.25		29.38	
HIV status						
Positive	53	9.04	32.08	.1338	41.51	.1384
Negative	533	90.96	22.89		31.52	
Drug use characteristics						
Primary drug used						
Cocaine	60	10.02	6.67	<.0001	13.33	<.0001
Crack	311	51.92	23.47		25.72	
Heroin	164	27.38	29.27		53.66	
Poly drug use	64	10.68	32.81		42.19	
Injection status						
Non-injector	494	77.80	20.65	.0003	26.92	<.0001
Injector	141	22.20	35.46		56.74	
Lifetime discrimination characteristics						
Racial						
Yes	162	25.84	20.37	.2386	34.57	.7364
No	465	74.16	24.95		33.12	
Drug						
Yes	206	32.85	33.50	<.0001	46.60	<.0001
No	421	67.15	19.00		27.08	
Prior incarceration ^a						
Yes	158	34.13	27.85	.6530	44.30	.0040
No	305	65.87	25.90		30.82	

	Recent detox				Recent long-term treatment			
	n	Median (IQR)		p-value	Yes	Median (IQR)		p-value
		Yes	No			Yes	No	
Neighborhood characteristics								
% Black	629	51.58 (25.67–75.78)	46.33 (20.17–74.65)	52.89 (27.71–75.78)	.0134	46.33 (20.17–75.26)	55.92 (39.12–75.78)	.0020
% Latino	629	28.76 (13.68–49.77)	29.58 (19.88–50.76)	27.30 (13.68–49.77)	.0471	34.84 (13.81–57.72)	23.51 (13.68–49.77)	.0020
% Foreign-born	628	19.23 (14.51–27.98)	19.85 (16.58–30.62)	19.23 (14.51–26.22)	.0269	20.10 (16.58–30.99)	17. (14.51–35.31)	.0002
% Poverty	628	40.06 (29.39–49.12)	40.06 (30.92–49.12)	40.06 (29.39–49.12)	.8579	39.73 (29.85–48.81)	43.10 (29.39–49.12)	.0903
% Unemployed	627	19.25 (13.50–20.35)	19.27 (14.99–21.81)	19.24 (13.19–20.07)	.4092	19.23 (14.56–20.07)	19.27 (13.19–22.00)	.9020
Townsend disadvantage	574	2.07 (1.18–2.74)	2.07 (1.35–2.78)	2.01 (1.18–2.67)	.1214	2.07 (1.35–2.74)	2.06 (0.95–2.33)	.0287

^a Only includes those who spent time in jail or prison ($n = 463$).

Table 2
Adjusted prevalence ratios and 95% confidence intervals estimating recent drug detoxification enrollment by race/ethnicity, discrimination, and neighborhood characteristics, START study ($n = 638$), 2006–2009

Recent drug detoxification enrollment PR (95% CI)				
	Model 1	Model 2	Model 3	Model 4
Race/ethnicity				
Hispanic/Latino	1.11(0.71–1.74)	1.16(0.74–1.83)	1.10(0.70–1.74)	—
Black	0.97(0.59–1.62)	1.05(0.62–1.77)	0.99(0.59–1.67)	—
White/other	1.00	1.00	1.00	—
Past 6 months homelessness				
Yes	1.38(0.94–2.01)	1.40(0.96–2.03)	1.39(0.96–2.01)***	1.35(0.94–1.93)***
No	1.00	1.00	1.00	1.00
Incarceration history				
Yes	1.37(0.87–2.18)	1.29(0.81–2.06)	1.29(0.80–2.06)	1.32(0.84–2.08)
No	1.00	1.00	1.00	1.00
Primary drug used				
Cocaine	1.00	1.00	1.00	1.00
Crack	1.23(0.86–1.76)	1.24(0.87–1.78)	1.22(0.85–1.75)	1.22(0.85–1.74)
Heroin	1.67(1.12–2.51)**	1.53(1.02–2.30)**	1.51(1.01–2.27)**	1.53(1.03–2.27)**
Poly drug use	1.29(0.83–2.00)	1.39(0.93–2.10)	1.40(0.94–2.09)***	1.45(1.00–2.11)***
Injection status				
Non-injector	1.00	1.00	1.00	1.00
Injector	1.47(1.01–2.13)**	1.50(1.04–2.16)**	1.50(1.03–2.18)**	1.51(1.05–2.18)**
Discrimination				
Drug use	—	1.49(1.11–2.00)*	1.47(1.09–1.97)*	—
Drug use × Hispanic/Latino	—	—	—	2.74(1.10–6.82)**
Drug use × Black	—	—	—	2.26(0.87–5.82)***
Drug use × White/other	—	—	—	1.00
Neighborhood factors ^a				
% Black	—	—	1.02(0.94–1.12)	1.02(0.93–1.10)
% Latino	—	—	1.05(0.97–1.13)	1.03(0.96–1.12)
% Foreign-born	—	—	1.05(0.99–1.11)	1.05(1.00–1.10)***

 $p < .10$,

**
 $p < .05$,

*
 $p < .01$.

^a Modeled every 10% increase in the neighborhood characteristic on the outcome.

Table 3
Adjusted prevalence ratios and 95% confidence intervals estimating recent long-term drug treatment enrollment by race/ethnicity, discrimination, and neighborhood characteristics, START study ($n = 638$), 2006–2009

Recent long-term treatment program enrollment PR (95% CI)			
	Model 1	Model 2	Model 3
Race/ethnicity			
Hispanic/Latino	1.27(0.94–1.71)	1.22(0.87–1.71)	1.45(1.03–2.03) **
Black	1.05(0.72–1.52)	1.02(0.66–1.56)	1.13(0.73–1.75)
White/other	1.00	1.00	1.00
Recruitment strategy			
Respondent driven	1.00	1.00	1.00
Targeted	1.12(0.89–1.40)	1.06(0.83–1.35)	0.96(0.84–1.10)
Primary drug used			
Cocaine	1.00	1.00	1.00
Crack	0.99(0.77–1.27)	0.98(0.74–1.29)	0.89(0.70–1.13)
Heroin	1.99(1.44–2.77) *	1.52(1.05–2.20) **	1.36(0.94–1.97) ***
Poly drug use	1.01(0.73–1.38)	1.07(0.79–1.44)	1.07(0.89–1.28)
Injection status			
Non-injector	1.00	1.00	1.00
Injector	1.53(1.16–2.01) *	1.67(1.23–2.25) *	1.47(1.11–1.96) *
Discrimination			
Drug use	—	1.30(1.00–1.70) **	1.29(1.00–1.66) **
Incarceration ^a		1.09(0.85–1.40)	1.17(0.93–1.48)
Neighborhood factors ^b			
% Black	—	—	0.94(0.90–0.98) *
%Latino	—	—	0.98(0.94–1.02)
Townsend	—	—	1.28(0.89–1.85)

 $p < .10$,

**
 $p < .05$,

*
 $p < .01$.

^a Only includes those who spent time in jail or prison ($n = 463$).

^b Modeled every 10% increase in the neighborhood characteristic on the outcome.