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Socio-environmental risks for untreated depression among formerly incarcerated Latino men

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Abstract

Objective—To identify the levels of untreated depression and the socio-environmental factors associated with it among formerly incarcerated Latino men (FILM).

Methods—Cross-sectional survey with 259 FILM ages 18 to 49 who were released from prison/jail within the prior five years. Depression was measured by the Brief Symptom Inventory (BSI). Backward elimination was used to determine the best regression models.

Results—26.9% of the study sample reported depression. Low familism, residing farther away from family members, low utilization of health and social services, high levels of loneliness and high lifetime and current frequency of alcohol use were also associated with depression.

Discussion—Depression is a major problem among FILM. Addressing untreated depression among FILM must be a public health priority.

Keywords

depression; Latino; men; formerly incarcerated populations

INTRODUCTION

Depression is an increasingly common and treatable mental disorder with an estimated 9.0 percent of adults in the United States reporting symptoms of current depression.^[1] Recent studies indicate that racial and ethnic minorities are disproportionately impacted by depression. Latinos, in particular, experience significantly higher rates of current depression symptoms (11.4%) compared to their white counterparts (7.9%).^[1] Specifically, depression among Latino men who have served time in prison or jail is an increasing problem that remains largely overlooked in public health research and prevention efforts. Nationally,

Latinos are overrepresented in U.S. correctional facilities, constituting over 25 percent of the incarcerated population, but only 13 percent of the overall U.S. population.^[2] Rates of depression among male inmates are estimated between 17 to 40 percent—2 to 9 percent higher than rates among the overall general population.^[3–5] Depression significantly impacts the quality of life and presents considerable barriers for formerly incarcerated men reentering the community. The present exploratory analysis seeks to identify the levels of depression and the socio-environmental factors associated with differences in levels of depression among formerly incarcerated Latino men (FILM). For the purposes of this analysis, we define depression as a clinical, chronic condition measured by depression rating scales. We measured depression using the Brief Symptom Inventory (BSI). A fuller description of the BSI is included below.

CONCEPTUAL FRAMEWORK

Despite growing enthusiasm for integrating men into health initiatives, public health research often frames men as posing potential risks to society. This is especially true for formerly incarcerated men who are thought to be doubly threatening on account of their criminal records and the belief that they will commit another offense after reentry into society. That is, formerly incarcerated men are seen threats to public health and public safety. This study takes a different approach by exploring how a relatively disempowered group of men—marginalized because of their ethnicity, socioeconomic status and imprisonment history—are not sources of risk but subjects of risk environments, which potentially constrain their options and adversely affect their health. We understand risk environments to be social situations and physical places that produce or reduce harm.^[6] Risk environments vary by type (physical, social, economic, and political) and level of influence (micro and macro). Drawing on Rhodes' (2002) concept of risk environments, we conceptualized the risk for depression to be driven by the physical, social, and economic environments of FILM.^[6]

The decision to study the environmental factors associated with depression among FILM was guided by preliminary findings from a larger mixed-methods study, which sought to examine not depression per se but the social determinants of health risk behaviors, including marijuana binge use, alcohol binge drinking, and sexual risk taking among FILM. In an early phase of this larger study, we conducted qualitative in-depth interviews with FILM, in which many of the interviewees reported feeling sad or depressed as a result of challenges they faced post-release. Our thematic analysis of the data suggested that their depression was potentially related to post-traumatic stress disorder following incarceration; a lack of family support during the reentry period; the presence of physical illness, including hepatitis C, cardiac disease, diabetes and chemical dependence; the avoidance of mental health treatment due to cultural factors, including masculinity norms; and internalized stigma associated with their incarceration history.

Convinced that a deeper understanding of depression among FILM was thus both relevant and timely, we developed a self-administered survey to examine depression and its relationship to risk environments. The results of the self-administered survey are the focus of this article. Our exploratory analysis consisted of testing four hypotheses:

Hypothesis 1 – Perceived Physical Environment—Compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) reside farther away from family members; b) have fewer close friends in their neighborhoods of residence; and c) experience higher levels of neighborhood violence. Living conditions are known to affect individuals' mental health. Studies specifically focused on the physical attributes of neighborhoods have found that residents living in poor, run-down neighborhoods have a high incidence of mental health disorders.^[7–9] Studies that examined other neighborhood characteristics, such as the social cohesion, disorderliness and violence, had similar findings.^[7,9,10] Many FILM reside in low-income neighborhoods. We anticipated that those with depression will be more likely live in environments where they experience threats of neighborhood violence or where they are physically separated from their family members.

Hypothesis 2 – Social Environment—Compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) have lower levels of familism; b) have less social connectedness with kinship and social networks; c) have social networks in which levels of interpersonal conflict and drug use are common; and, d) have a higher sense of loneliness within their social networks. Studies have shown “familism,” conceptualized as a culturally-specific set of values that creates interdependence among nuclear and extended family members via notions of support, loyalty and solidarity,^[11] to be the most important factor influencing the lives of Latinos, with positive implications for reducing health risks.^[12–14] Social networks, which include networks of peers, gang-related networks, and pro-prisoner rights networks, can have positive and negative implications for health, depending on the type of network and the influences that its members have on one another.^[15] Social isolation due to incarceration stigma and racial-ethnic racism is known to negatively affect mental health.^[16] We anticipated that FILM would be less connected with nuclear and extended family members and social networks on account of having been incarcerated; in the event that FILM had maintained ties with existing social networks or else developed new ones while in prison or post-release, we expected those networks to be ones where drug use and interpersonal conflicts were common.

Hypothesis 3 – Economic Environment—Compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) have been unemployed for a longer period of time; b) be living in unstable housing; c) be solely responsible for household income; and, d) have less access to health and social services. Being unemployed has been demonstrated to have an impact upon both physical and mental health, including causing depression.^[17,18] It is also known that many formerly incarcerated men have difficulties finding steady employment.^[19] We anticipated that FILM with the most limited access to health and social services would be unemployed and more likely to be depressed.

Hypothesis 4 – Micro Environment—Compared to their asymptomatic counterparts, depressed FILM will be more likely to report a higher interpersonal-behavioral risk profile (measured through sexual and drug behavior with others) and higher levels of perceived stress. A number of studies have documented the intersections of depression, alcohol and marijuana use in different populations.^[20–23] Although the literature on the relationship between depressive symptoms and high-risk sexuality activity is less robust, de Santis and

his colleagues (2008) found that higher levels of depressive symptoms were associated with lower levels of safer sex behaviors in Latino men who have sex with other men.^[24]

The factors selected for inclusion in the survey are all known to affect the health, and in some cases the mental health, of Latino populations. No known studies, however, have explicitly examined the relationship between social factors and depression among FILM.

METHODS

Study design

As mentioned, this examination of risk environments and depression was embedded within a larger mixed-methods study that sought to examine the social determinants of health risk behaviors among FILM. We used three data collection strategies: 1) open-ended qualitative interviews (n=60); 2) quantitative self-administered surveys (n=259); and 3) life-history interviews (n=18). The analyses presented in this manuscript focus exclusively on data collected through the self-administered survey.

Data collection procedures

Five trained community field researchers recruited participants from three geographic areas in New York City: the Bronx, Brooklyn, and Upper Manhattan. One quarter of participants (n=65) were recruited from referrals from flyers posted in the research sites. The remaining participants (n=194) were recruited on the street or at community events through person-to-person outreach. Individuals were included in the study if they were male, they were between the ages of 18 and 49, and they had been in jail or prison within the past five years. Individuals on probation or parole were included in the self-administered survey portion of the study (see Table 1).

Data collection took place during data collection events organized by the community field researchers. Individuals that had been deemed eligible for the study first underwent informed consent procedures with trained staff in a private setting near the recruitment site or in our offices. They were then asked to complete the survey on a laptop computer in the same private setting or office where consent had been ascertained. The survey took 45 to 90 minutes to complete. Before initiating the survey, participants were, once again, asked to indicate their consent to participate by agreeing to a voluntary participation statement on the computer screen. Each participant was compensated \$50 for participating in the survey. Additionally, a Certificate of Confidentiality was obtained from the National Institute of Mental Health in order to protect the privacy and confidentiality of the study participants and any contact information linking study participants to participation in the cross-sectional survey phase of the study was destroyed after completion of the survey. This study was approved by the Columbia University Institutional Review Board (protocol number: IRB-AAAE4697).

The cross-sectional survey phase of the study was originally designed to recruit 200 FILM and 200 individuals that they considered their closest source of support (regardless whether the individual was a family member or a friend). During the data collection process, a considerable number of FILM were unable to identify an individual as their closest source of

support. Thus, we received permission to alter our inclusion criteria and allow FILM without sources of support into the study. Of the 350 men we recruited, 88.6% (n=310) met the eligibility criteria for the study, of those, 12.9% refused to participate due to time constraints or a lack of interest and 3.5% began but did not completed the survey (n=259).

Measures

Guided by the conceptual framework outlined above, we used the following measures in the analysis. All measures were examined for reliability prior to data analysis. Where appropriate, we have reported the Cronbach's Alpha (CA) reliability coefficients for each measure.

Physical environmental risk measures included: 1) distance between the study participant's place of residence and that of close family members other than his spouse or cohabitating partner (measured in travel time or number of blocks); 2) number of close friends in the participant's neighborhood of residence; and, 3) perceived neighborhood violence and disorderly conduct (this measure was excluded from the analysis because of poor reliability (CA < .60)).

Our measures of social environment measures consisted of: 1) familism (18 items,^[25] CA=0.93); 2) sense of loneliness from social networks (20 items,^[26] CA=0.88); and, 3) the following descriptive measures of social and kinship networks. Participants were asked to list the most important people in their lives (i.e., their network referents) with a maximum list of five individuals. They were then asked to classify the individuals into one of 15 categories (i.e., close friends, lovers, girlfriends, boyfriends, uncle, cousin, wife, wife/cohabitating partner, etc.) and provide detailed information about the characteristics of each individual and the nature of their relationship. This allowed us to examine: 1) number and type of network ties (e.g., parents, wives, girlfriends, friends.); 2) quality of the relationships (e.g., frequency of contact, level of intimacy, level of trust, etc.); 3) general social connectedness (e.g., number of relatives in the neighborhood, number of people viewed as potential sources of support, etc.); and, 4) risk activities engaged in with network ties (e.g., binge drinking, drug use, etc.). Our measures of economic environment included three descriptive questions and one scale: 1) employment history; 2) current housing situation; 3) household income distribution; and, 4) connectedness to health and social service networks (12 items; CA=0.75).

Micro risk environmental factors were measured along two dimensions. First, we measured stress related to current social situations through perceived stress (10 items,^[27] CA=0.78) and strategies for coping with unemployment and family issues (28 items,^[28] CA=0.91). Second, we measured interpersonal behavioral risks were examined through the following indicators: 1) alcohol and drug use (lifetime and current, prior 30 days); and 2) sexual history (e.g., number of sexual partners, frequency of unprotected sex, etc.); and 3) STIs in the prior 12 months as indicators of risk exposure, measured through self-report of seven types of infections (e.g., Genital Herpes, Syphilis, Gonorrhea and HIV).

Depression as measured by the Brief Symptom Inventory (BSI) was our dependent variable (6 items of depression BSI subscale, CA = .97). The BSI consists of 53 items covering nine

symptom dimensions, of which depression is one. FILM ranked each feeling item (e.g., “your feelings being easily hurt”) on a 5-point scale ranging from 0 (not at all) to 4 (extremely). Rankings characterize the intensity of distress during the past seven days. The BSI is the short version of the SCL-R-90,^[29, 30] which measures the same dimensions. Items for each dimension of the BSI were selected based on a factor analysis of the SCL-R-90, with the highest loading items on each dimension selected for the BSI.^[30–32] Using BSI manual guidelines we standardized depression BSI subscale raw scores and determine the cutoff score for depression at 2.20 out of 4.00. BSI score cutoffs are highly correlated with being symptomatic of the mental health disorder dimension, in our case chronic depressive disorder. Raw scores from participant responses were converted to T scores using the tables provided in the BSI manual and interpreted by comparison to age-gender appropriate normative data of non-clinical samples of adults.^[30, 32]

Statistical analysis

Data were extracted from the survey database and imported into SPSS, version 15.0.1.^[33] We performed logistic regression modeling to test our four hypotheses. The sample was divided into two groups: FILM with and without depression at the time of the study. To test our study hypotheses we tested four models: 1) physical, 2) social, 3) economic, and, 4) micro environmental risk factors. We regressed depression status (positive vs. negative) in each of the models onto each of the models of environmental risk factors. In the following section, we present the results of our logistic regression models. After running the four logistic regression models, we ran an overall model that included each of the significant parameters of the independent models to explore how factors from the four dimensions (physical, social, economic and micro) of the FILM environments were associated with the likelihood of depression after controlling for the effects of age differences and taking into consideration the effects of each of the variables within the models (Adjusted Odds Ratios, AOR).

RESULTS

Depression and demographic differences

Of the 259 FILM that participated in the study, 26.9 percent met the threshold of depression based on the BSI depression scores. Differences in depression status were not associated with demographic factors.

Hypothesis 1 (Physical Risk Environment)

Of the factors entered into the logistic regression equation to examine *Hypothesis 1* (i.e., compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) reside farther away from family members, b) have fewer close friends in their neighborhoods of residence, and c) experience higher levels of neighborhood violence), having depression among FILM was positively associated with the distance between respondent’s place of residence and their family members (AOR = 1.63; Model 1 R^2 = .06, p = .023; see Table 2).

Hypothesis 2 (Social Risk Environment)

Of the factors entered into the logistic regression equation to examine *Hypothesis 2* (i.e., compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) have lower levels of familism; b) have less social connectedness with kinship and social networks; c) have social networks in which levels of interpersonal conflict and drug use are common; and, d) have a higher sense of loneliness within their social networks), having depression among FILM was associated with higher levels of marijuana use within men's kinship network, i.e., level of use of marijuana with family members (AOR = 2.77), higher loneliness (AOR = 1.05); and, inversely associated with men's familism (AOR = .98; Model 3 $R^2 = .15$; $p = .005$; see Table 2).

Hypothesis 3 (Economic Risk Environment)

Of the factors entered into the logistic regression equation to examine *Hypothesis 3* (i.e., compared to their asymptomatic counterparts, depressed FILM will be more likely to: a) have been unemployed for a longer period of time; b) be living in unstable housing; c) household socio-economic status; and, d) have less access to health and social services), having depression among FILM was associated with: a lower perceived position in socio-economic latter of household with respect to others in the surrounding communities (AOR = .87) and lower connectedness to health and social services (AOR = .89; Model 2 $R^2 = .04$, $p = .025$; see Table 1).

Hypothesis 4 (Micro Risk Environment)

To identify the individual level factors that will go into the model to test our *Hypothesis 4* (i.e., depressed FILM will be more likely to report a higher interpersonal-behavioral risk profile and higher levels of perceived stress than their asymptomatic counterparts), we conducted bivariate analyses between individual risk factors and the likelihood of depression controlling for age differences. In these bivariate analyses, having depression among FILM was associated with higher levels of lifetime and current use of the following drugs: 1) alcohol (AOR = 1.81; 95%CI, 1.05, 3.12; $p = .032$); 2) crack cocaine (AOR = 1.52; 95%CI, 1.01, 2.27; $p = .044$); 3) ketamine (AOR = 1.56; 95%CI, 1.03, 2.37; $p = .038$) and prescription stimulants, not used as prescribed (AOR = 1.78; 95%CI, 1.13, 2.76; $p = .012$). From the bivariate analyses, having depression was also associated with higher lifetime number of sexual (female) partners (AOR = 2.65; 95%CI, 1.17, 5.99; $p = .020$); having concurrent sexual partners, i.e., a regular female partner and one or more extra dyadic relationships in the prior 2 months (AOR = 2.92; 95%CI, 1.04, 8.19; $p = .042$); having unprotected vaginal intercourse while intoxicated from alcohol in the past 30 days (AOR = 1.19; 95%CI, 1.04, 8.19; $p = .037$), and, having a STI in the prior 12 months (AOR = 2.12; 95%CI, 1.01, 4.46; $p = .048$). The above factors were entered into one logistic regression equation to examine *Hypothesis 4* (see Table 2, Model 4). Having depression among FILM was associated with high frequency lifetime and current use of alcohol (AOR = 1.79), having more than 15 lifetime partners (AOR = 13.85), and, having a STI in the prior 12 months (AOR = 4.91; $R^2 = .04$, $p < .023$).

Multivariate analysis

In the multivariate analysis we regressed depression onto all the factors that were significant in the individual equations above. Our data suggest that depression among FILM is associated with some, but not all, of the factors associated with our hypotheses on risk environments. The strongest factors associated with depression among FILM were high distance of residence from close family members, AOR = 1.59; 95%CI, 1.13, 2.69; $p = .005$ (physical risk environment); low connectedness to health and social services, AOR = .87; 95%CI, .78, .98; $p = .007$ (economic risk environment); high frequency of lifetime and current alcohol use, AOR = 1.74; 95%CI, 1.03, 3.08; $p = .018$ (micro risk environment); and low familism, AOR = .97; 95%CI, .96, .98; $p = .010$, and high loneliness, AOR = 1.05; 95%CI, 1.02, 1.10; $p = .010$ (social risk environment) (Overall Multivariate Model: $X^2 = 14.9$, adjusted $R^2 = .14$, $p < .01$).

DISCUSSION

Depression among FILM seems to be associated with poor emotional connectedness with family members (low familism), a greater physical distance from close relatives, and a higher sense of loneliness. Depression was also found among FILM who reported a higher frequency of drug use, unprotected vaginal intercourse while intoxicated, and recent infection with an STI. Lastly, our findings suggest that increasing the utilization of health and social services could reduce the likelihood of depression among FILM by increasing their access to care. The cross-sectional design of this study is a limitation in fully understanding the causal relationships between the social factors and differences in levels of depression. Furthermore, although the factors specified within each of the four risk environment models for depression among FILM were theoretically sound, valid, reliable measures, our statistical analyses were exploratory in focus, in other words, our analytical objectives were to identify the relevancy of these factors in the likelihood of depression. Because of this analytical strategy together with our cross-sectional design, our analyses may be limited by potential endogeneity in our independent variables in relation to our outcome variable. In other words, the estimated effect of a regressor on an outcome is inconsistent when that regressor is determined simultaneously with that outcome (Foster, 1997), i.e., a FILM's chance of depression could potentially be jointly determined by the variables that we identified in the models and unspecified factors. For example, our findings suggest strong statistical associations between likelihood of depression and alcohol use, depression could be the cause of alcohol abuse, but alcohol is a depressant drug known to cause depression. Similarly, we also found that depression among FILM was associated with loneliness and low familism, where high loneliness and low emotional connections with family can be interpreted as the causes of depression, but it is also known that depression causes individuals to become socially isolated. Using instrumental variables estimation (i.e., in essence conducting statistical modeling using variables that are uncorrelated with the outcome variable but correlated with the independent variable) is a means of obtaining consistent parameter estimates in this situation.^[34] Foster has argued that the best-known form of instrumental variables is two-stage least squares; unfortunately, this procedure cannot be simply extended to non-linear models^[34] such as our logistic regression modeling because our outcome variable (depression) is binary (presence or absence), and although

there are other methodologies such as Generalized Method of Moments that use instrumental variables they are most adequate when the data collected is longitudinal. Therefore, our study findings must be taken as exploratory and further longitudinal research designs are needed to examine the causal linkages between risk environments and onset of depression (and early detection untreated depression). Our final potential limitation is our depression measure. Depression, measured through the BSI has several limitations that have been documented in the literature.^[35–36] A more rigorous and robust measure of depression, such as the World Health Organization's Composite International Diagnostic Interview (CIDI), would be useful in examining the prevalence of major depressive disorders among FILM.

The need for future research on depression among FILM is of paramount importance, especially for the purposes of intervention. Because depression may be caused by low familism, additional research should consider how bonds between men and their families are sustained or ruptured as a result of incarceration experiences; how these disruptions may lead to the onset of depression; and how some men manage to avoid depression through various coping mechanisms that mitigate the effects of social isolation, such as replacing family support systems with other types of social networks. Future research should also pay close attention to how the physical and psychological stress of being incarcerated may cause depression. What types of stress do men experience in prison? What are the causes of this stress? What are the pathways by which incarceration-induced stress results in feeling depressed once men are released? The association found between depression and alcohol and drug use suggests that FILM might be coping with depression through self-medication. As mentioned, the literature on depression and unsafe sexual activity is scant. Our findings points to the need to further explore this association.

Possible models for intervention that draw upon these research trajectories could focus on maintaining a strong sense of familism during incarceration and immediately after release or else supporting men in the development of new social networks that promote healthy practices and social cohesion in the event that family bonds have been broken. Interventions should also make mental health treatments readily available to men during the reentry period, which could help them to manage the stress, stigma and social exclusion associated with their incarceration experiences.

Significant and widening disparities in depression diagnosis and treatment have been documented among Latinos, who are less likely to be diagnosed with depression by a primary care or mental health provider and less likely to enter into treatment following diagnosis. Latinos have also been shown to receive lower quality care after entering treatment, even after controlling for factors such as socioeconomic and insurance status.^[37] Both Latino men and women are more likely than non-Latino whites to underutilize services, discontinue treatments prematurely and receive depression care that is poor in quality, even after adjusting for differences in educational levels, mental health needs, insurance and socioeconomic status.^[38, 39] Data regarding the health care screening and treatment practices of Latino men, in particular, suggest that they underutilize services relative to both Latinas and White men, and are therefore more likely to have undiagnosed and untreated depression.^[40] Epidemiological studies have found that after controlling for

mental health needs, health insurance, and other socioeconomic indicators, Latino men are less likely than Latina women to use mental health services from both the specialty mental health and general medical sectors.^[31, 42]

Inequities in depression care among Latinos, men in particular, have been linked to structural and financial barriers.^[43] Important modifiable barriers that prevent Latino men from seeking and engaging in depression care include lack of knowledge about depression and treatment, negative attitudes toward depression care, stigma, and denial of depression as a treatable medical illness.^[44–47] In one of the few studies that examine Latino men's perceptions of depression and attitudes towards help-seeking, which are key aspects of depression literacy, Latino men receiving primary care services were presented with a vignette depicting a man experiencing major depression. Sixty-one percent were unable to identify the individual as depressed^[48] compared to 31 percent of adult respondents in the general population.^[49] Additionally, Latino men view antidepressant medications as addictive and harmful and prefer to seek help for depression from family and friends rather than from mental health professionals. These findings reflect similar findings from recent studies indicating that individual-level factors are salient barriers to care among Latinos and may exert greater influence on health-seeking behavior and treatment uptake than external barriers, such as language and insurance status.^[50–53] Because Latino men, FILM in particular, are at increased risk for undiagnosed, untreated depression, we call upon public health researchers to further examine the reasons for disparities in depression diagnosis and treatment.

Most of the public health research on incarcerated populations has focused narrowly on recidivism, drug rehabilitation, and HIV risk;^[54–57] some studies even frame formally incarcerated men as a threat to society. The present study suggests that incarcerated men are themselves susceptible to threats in their environments, which may be adversely affecting their health. In particular, the social isolation and loneliness associated with incarceration may be causing depression and, furthermore, serving as an obstacle to mental health treatment. Because depression may take the form of violent and self-destructive behavior, research and interventions that address untreated depression among FILM is critical.

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Table 1

Study sample characteristics - formerly incarcerated Latino men (n=259)

Characteristics	n	%
Age (n=259)		
18–29	65	25.1
30–39	84	32.4
40–49	72	27.8
50–59	38	14.7
Employment status (n=259)		
Unemployed	194	74.9
Employed part-time or fulltime	65	25.1
Reason for unemployment (n=194)		
1. Ill, disabled, unable to work	59	30.7
2. Unable to find job	81	42.2
3. Taking care of home	24	12.5
4. Going to school	19	9.9
5. Retired	11	5.7
Education (n=259)		
Elementary school	16	6.2
Middle school/junior high school	33	12.7
10 th –11 grade	78	30.1
High school	35	13.5
General Educational Development (GED) exam	20	7.7
1–2 years of college	6	2.3
College degree	4	1.5
Vocational/specialized education (Plumbing, carpeting)	26	10.0
Sexual history (n=259)		
Sexually transmitted testing in the past 12 months (154 out of 259)	154	59.5
Any STI prior 12 months (54 out of 154 who tested for STIs)	54	35.1
Regular or casual female sexual partner in the past 30 days (163 out of 259)	163	63.2
Concurrent female sex partner/s in the past 30 days (46 out of 259)	46	17.7
Regular or casual male sexual partner in the past 30 days (0 out of 259)	0	0
Concurrent male sexual partner in the past 30 days (30 out of 259)	30	11.6
Any unprotected vaginal intercourse (UVI) in the last 30 days (166 221 that reported vaginal sex)	166	75.1
Any unprotected anal intercourse (UAI) in the last 30 days with female (20 out of 32 that reported anal sex)	20	62.5
Proportion of alcohol use during/before UVI in the last 30 days (77 166 that reported UVI)	77	46.4
Proportion of alcohol use during/before encounter UAI in the last 30 with female (17 out of 20 that reported UAI)	17	85.1
Proportion of drug use during/before UVI in the last 30 days (88 out 166 that reported UVI)	88	53.0
Proportion of drug use during/before encounter UAI in the last 30 days with female (14 out of 20 that reported UVI)	14	70.0

Characteristics	n	%
<i>Drug history in past 30 days (n = 259)</i>		
Alcohol	156	60.2
Marijuana	151	58.3
Smoking	130	50.2
Heroin	60	23.2
Crack cocaine	56	21.6
Powder cocaine	54	20.8
Prescription pain killers not used as prescribed	49	18.9
Prescription stimulants not used as prescribed	42	16.2
Ketamine	34	13.2
Ecstasy (MDMA, 3,4-methylenedioxy-N-methylamphetamine)	33	12.7
Prescription sedatives not used as prescribed	29	11.2
Erection pills	23	8.9
PCP (Phencyclidine, common street name: Angel Dust)	17	6.6
LSD (Lysergic acid diethylamide, common street name: Acid)	14	5.4
Mushrooms	12	4.6
GHB (gamma-hydroxybutyrate acid, common street name: G or Liquid Ecstasy)	11	4.2
Methamphetamine (Crystal)	10	3.9
Steroids	9	3.5
Ever overdose (lifetime)	18	6.9
Overdose experience in the past 30 days	13	5.0

Table 2

Physical and economic environments and likelihood of depression among formerly incarcerated Latino men (n=259; Adjusted Odds Ratio, AOR)

Models/Variables			95.0% Confidence Interval for AOR	
Model 1: Physical-residential environment ($X = 11.36$; Nagelkerke $R^2 = .06$; $p = .023$)	AOR	Sig.	Lower Bound	Upper Bound
Distance between place of residence and close relatives	1.63	.007	1.14	2.33
Number of close relatives residing in the same neighborhood	.97	.843	.72	1.31
Zipcode of place of residence	.79	.472	.19	3.38
Age 24 to 35 (Reference: Age 18 to 23)	1.31	.526	.57	3.02
Age 35+ (Reference: Age 18 to 23)	1.59	.104	.91	2.79
Constant	.18	.001		
Model 2: Economic environment ($X = 7.39$; Nagelkerke $R^2 = .04$; $p = .025$)				
Monthly household income (<i>Standardized scale, from all sources of income</i>)	1.23	.388	.76	2.01
Unemployment status and length of unemployment (<i>Reference: Employed</i>)	1.06	.963	.87	1.29
Perceived position in socio-economic ladder of household with respect to others in the surrounding communities (<i>Graphic representation of a ladder with 15 steps; 1 = lowest score; 15 = highest score</i>)	.83	.012	.73	.95
Education completed (<i>Grades</i>)	.98	.679	.92	1.05
Level of housing stability (<i>Scale, higher values indicate higher stability</i>)	1.03	.562	.87	1.15
Level of utilization of social and health services/agencies (<i>Composite measure of frequency of utilization of services listed over the past 6 months</i>)	.89	.025	.79	.98
Age 24 to 35 (Reference: Age 18 to 23)	1.28	.481	.56	2.99
Age 35+ (Reference: Age 18 to 23)	1.57	.575	.89	2.78
Constant	.01	.999		

Table 3

Social and micro environments and likelihood of depression among formerly incarcerated Latino men (n=259; Adjusted Odds Ratio, AOR)

Models/Variables			95.0% Confidence Interval for AOR	
Model 3: Social network environment ($X = 30.04$; Nagelkerke $R^2 = .15$; $p = .005$)	AOR	Sig.	Lower Bound	Upper Bound
Level alcohol use within social networks (<i>Accumulative frequency of substance use by each network member</i>)	.62	.533	.13	2.79
Level alcohol use within kinship networks (<i>Accumulative frequency of substance use by each network member</i>)	.76	.704	.19	3.06
Level marijuana use within social networks (<i>Accumulative frequency of substance use by each network member</i>)	2.27	.364	.39	13.34
Level marijuana use within kinship networks (<i>Accumulative frequency of substance use by each network member</i>)	2.77	.044	1.03	7.49
Level other drugs use (excluding marijuana and alcohol) within social networks (<i>Accumulative frequency of substance use by each network member</i>)	1.70	.254	.68	4.25
Level other drugs use (excluding marijuana and alcohol) within kinship networks (<i>Accumulative frequency of substance use by each network member</i>)	1.46	.468	.52	4.09
Frequency of contact with members of kinship and social network	.62	.538	.14	2.80
Size of kinship and social network	.77	.711	.19	3.07
Level of conflict in relationships with members of kinship and social networks	1.43	.499	.51	3.98
Level of intimacy/trust in relationships with members of kinship and social network	.94	.914	.33	2.69
Familism (scale, higher value = higher familism)	.98	.002	.97	.99
Loneliness (scale, higher value = higher sense of loneliness)	1.05	.001	1.02	1.09
Age 24 to 35 (Reference: Age 18 to 23)	1.22	.675	.49	3.04
Age 35+ (Reference: Age 18 to 23)	1.49	.190	.82	2.72
Constant	.13	.045		
Model 4: Micro-individual environment ($X = 11.36$; Nagelkerke $R^2 = .06$; $p = .023$)				
Lifetime and recent history of alcohol abuse	1.79	.038	1.03	3.08
Lifetime and recent history of ketamine abuse	2.01	.107	.86	4.69
Lifetime and recent history of crack cocaine abuse	1.29	.586	.52	3.21
Lifetime and recent history of prescriptions stimulants abuse (not used as prescribed)	1.49	.705	.56	2.35
Lifetime number of female sexual partners (<i>Reference: < 15 partners since release from prison/jail</i>)	13.85	.028	1.34	34.71
Concurrent sexual partners in the past 30 days	1.19	.843	.20	7.16
Sexually transmitted infections in the past 12 months	4.91	.048	1.02	22.95
Age 24 to 35 (Reference: Age 18 to 23)	1.43	.400	.62	3.32
Age 35+ (Reference: Age 18 to 23)	1.60	.103	.91	2.83
Constant	.88	.684		