HHS Public Access

Author manuscript

J Subst Abuse Treat. Author manuscript; available in PMC 2016 June 01.

Published in final edited form as:

J Subst Abuse Treat. 2015 June ; 53: 33–38. doi:10.1016/j.jsat.2014.12.005.

The relationship between drug use, drug-related arrests, and chronic pain among adults on probation

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Abstract

The intersection between chronic health conditions, drug use, and treatment seeking behavior among adults in the criminal justice system has been largely understudied. This study examined whether chronic pain was associated with opiate use, other illicit drug use, and drug-related arrests in a sample of substance-using probationers. We expected that probationers with chronic pain-related diagnoses would report more opiate use and drug-related arrests. This study used baseline data from 250 adults on probation in Baltimore, Maryland and Dallas, Texas who were participating in a larger clinical trial. Eighteen percent of probationers in this sample reported suffering from chronic pain. In bivariate analyses, probationers with chronic pain reported more drug-related arrests ($t=-1.81$; $p<0.05$) than those without chronic pain. Multivariate analyses support the hypothesis that probationers who reported chronic pain were marginally more likely to use opiates (OR=2.37; 95% CI .89–1.05) and non-opiate illicit drugs (OR=3.11; 95% CI 1.03–9.39) compared to offenders without chronic pain. In summary, these findings suggest that adults under probation supervision who suffer from chronic pain may be involved in criminal activity (specifically, drug-related criminal activity) in an effort to self-medicate their physical health

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Conflict of Interest: The authors declare that they have no competing interests.

Authors' Contributions: JMRG conceptualized the study, conducted data analysis, and created the first draft of this manuscript. FST and STW are co-principal investigators of the study, drafted the study protocol and all study materials, and obtained approval from their respective Human Subjects Review Boards and the National Institute on Drug Abuse (NIDA) to conduct this study. They provided thorough feedback on the study concept, analysis, direction of the study, and the final manuscript. JL is a project manager of the study and edited several versions of the manuscript. All authors contributed to the manuscript and approved the final version.

condition(s). Screening probationers for chronic pain in the probation setting and referring these adults to pain management treatment may be an important step in advancing public safety.

Keywords

MAPIT; chronic pain; drug use; drug arrest; mental health; probation

1. Introduction

During 2012, nearly five million adults were serving community-based correctional sentences in the United States, and 3.9 million of those were on probation (Maruschak & Bonczar, 2013). Adults on community supervision have nearly three times the rate of substance use problems compared to the general population (Feucht & Gfroerer, 2011), and drug-related violations are a common reason why probationers return to jail (Gray, Fields, & Maxwell, 2001). Further, among probationers eligible for treatment, less than ten percent have access to treatment programming (Taxman, Perdoni, & Harrison, 2007), and the treatment provided is often insufficient to address the severity of substance use disorders among probationers (Taxman, Pattavina, & Caudy, 2014). The prevalence of substance use (Mumola & Bonczar, 1998) and the unmet drug treatment needs of probationers (Lurigio, 2000; Taxman et al., 2007) reinforce the need for the criminal justice system to refer probationers to and/or provide treatment that may, in turn, prevent repeat criminal behavior.

Probationers with substance use disorders often have other comorbid conditions. More than one-third of probationers suffer from comorbid alcohol use and mental health disorders (Ditton, 1999). This has resulted in a call for integrated treatment programs that treat comorbid substance abuse and mental health conditions (Drake et al., 2001; Drake, Noordsy, & Ackerson, 1995; Sciacca, 1991). Integrated programs have also been developed for other issues that are common in adults with substance use disorders, including infectious diseases (Sylvestre et al., 2004; Volkow & Montaner, 2011) and chronic pain (Currie, Hodgins, Crabtree, Jacobi, & Armstrong, 2003). Despite this recognized need for the integrated treatment of chronic pain and substance use disorders, few studies have examined the association between chronic pain and criminal behavior. In this study, we assess the relationship between chronic pain, opiate and illicit drug use, and drug related arrests. This line of inquiry is important given the emphasis on integrated treatment for comorbid disorders, and the potential for offenders' drug use resulting from treatable physical health conditions (Drake et al., 2001; Volkow & Montaner, 2011).

1.1. Chronic Pain

In the general population, non-cancer chronic pain (lasting longer than 6 months) typically originates from back pain (20%), fibromyalgia or centralized pain including headaches (26%), and arthritis (13%) (Parsells Kelly et al., 2008). The typical treatment regimen for individuals suffering from chronic pain includes intensive pain management and tiered medication dosages. Medications are frequently used in conjunction with cognitive behavioral techniques, physical therapy, biofeedback, and psychological therapy (Glajchen, 2001; Gourlay, Heit, & Almahrezi, 2005). Some patients may be required to complete drug

testing and/or only receive treatment from one provider to reduce the likelihood of medication misuse (Glajchen, 2001; Katz et al., 2003). Despite this monitoring, prescription drug abuse (and dependence) is common, as studies suggest that between 16% and 50% of adults on opioid therapy for chronic pain simultaneously meet the criteria for abuse or dependence (Fishbain, Rosomoff, & Rosomoff, 1992; Højsted & Sjøgren, 2007; Manchikanti et al., 2006).

Although data on the health conditions of adults under correctional supervision are scarce, a recent study of prisoners found that 15% of adults in state and federal prisons report suffering from arthritis or rheumatism (Bureau of Justice, 2007). Less is known about the rates of chronic pain among adults on community supervision generally and probation specifically. However, the prevalence of chronic pain among those involved in the criminal justice system is likely higher than rates reported in the general population, especially given the frequent exposure to violence, weapon use, and assault-related injury among this population (DeVivo, 1997; McKinley, Kolakowsky, & Kreutzer, 1999; Piquero, Shepherd, Shepherd, & Farrington, 2011; Shepherd, Farrington, & Potts, 2002, 2004). The treatment of chronic pain represents a challenge to the criminal justice system (particularly among chronic criminal offenders) (Jennings et al., in press). These disorders are typically treated with easily abused prescription medications, including opiate analgesics, neuropathic drugs, other psychoactive drugs, and/or non-steroidal anti-inflammatory drugs (Ballantyne & Mao, 2003; Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006; Jackson, Dijkers, DeVivo, & Poczatek, 2004), many of which are frequently abused even among adults in the general population (Smith, Thirthalli, Abdallah, Murray, & Cottler, 2009).

1.2. Drug-Crime Nexus and Opioid Dependence

The prevailing theory used to explain the relationship between drug use and crime suggests that drug-related violence is due to pharmacological (drug craving), economic (pursuit of money), or systemic (protection of distribution networks) reasons (Goldstein & Brownstein, 1987). This theory partially explains drug use among offenders, but psychosocial factors that drive drug use are left unexplained under this paradigm (Goldstein & Brownstein, 1987; Huebner & Cobbina, 2007). In fact, the notion of self-medication of physical health conditions has been absent from theories that attempt to explain drug use and the role of drug use in its relationship with criminal behavior (Abram & Teplin, 1990; Haggard-Grann, Hallqvist, Langstrom, & Moller, 2006; Maldonado-Molina, Reingle, & Jennings, 2010; White & Gorman, 2000). Currently, the existing literature on the drug-crime nexus does not provide a framework for evaluating how health, utilization of available health care services, and unmet health needs influence criminal behavior. Although literature demonstrating a relationship between criminal behavior and chronic physical and mental health conditions, including obesity, cardiovascular disease, acute illness, unintentional injuries, disability, and hospitalization rates has been previously conducted (Piquero et al., 2011; Reingle, Jennings, Piquero, & Maldonado-Molina, 2014; Shepherd et al., 2002, 2004), no studies to our knowledge have evaluated the relationship between criminal behavior, illicit drug use, drug-related arrest history, and chronic pain. To initiate this line of research, we explored the relationship between chronic health conditions (particularly, those associated with chronic pain), drug use, and drug-related arrests among a community-based sample of probationers.

1.3. Purpose of the Study

Given this gap in the extant theory and research (particularly, our knowledge regarding the relationship between health conditions, drug use, and crime), we examined how health conditions that result in chronic pain are associated with drug use and criminal offending. Specifically, this study evaluated the relationship between opiate and other illicit drug use, drug-related arrests, and chronic pain among a sample of substance-using probationers in two urban settings. This study had three objectives: 1) to evaluate the behavioral and demographic characteristics of probationers, including the differential characteristics of probationers who reported suffering from chronic pain compared to those who did not; 2) to examine the relationship between drug use (specifically, opiates and other illicit drugs) and chronic pain; and 3) to examine the relationship between the number of total drug-related arrests and chronic pain. We expected that substance-using probationers who reported being diagnosed with conditions related to chronic pain would be likely to use illicit substances and have more drug-related arrests than those who did not report suffering from chronic pain.

2. Materials and Methods

These analyses used data collected as a part of the Motivational Assessment Program to Initiate Treatment (MAPIT) study (Walters et al., 2014). The MAPIT study collected data from offenders on community release from two large probation agencies in Baltimore City, Maryland (general population of 500,000), and Dallas County, Texas (general population of 2.5 million). Baltimore is the largest office of the Maryland Department of Public Safety and Correctional Services, which supervises more than 18,000 offenders each year. Dallas County Community Corrections and Supervision (like other Texas counties) is organized at the county level, and supervises approximately 30,000 offenders each year. At both sites, approximately forty percent of offenders were court ordered to drug or alcohol treatment, and the level of care was generally determined by a clinical interview at the start of probation.

To recruit participants for this study, research staff used a variety of convenience and snowball sampling methods, including word of mouth, flyers and brochures, and client referrals from probation officers. In Baltimore, research staff primarily conducted eligibility screening at the time of the client's probation intake at the probation offices. In Dallas, staff primarily conducted eligibility screening during orientation sessions, after offenders were referred to one of the probation field offices. To be eligible for participation in the trial, participants must have been: 1) at least 18 years of age; 2) currently on probation; 3) able to provide informed consent; 4) able to communicate in English; 5) sentenced to probation in the last 30 days or released from a short (i.e., less than 1 year) jail stay within the last 30 days; and 6) reporting use of any illicit drug and/or any heavy alcohol use (5 or more drinks for men; 4 or more drinks for women in a single occasion) in the last 90 days. A total of 1526 adults were screened for eligibility. Of those, 981 were ineligible for the study, and an additional 276 were screened eligible but did not complete a baseline assessment. This resulted in a final study sample of 250 people who were eligible and also completed the baseline assessment. In non-mutually exclusive categories, individuals were excluded for the

following reasons: under 18 years old (n=7); not under probation supervision (n=193); unable to provide informed consent (n=4); not initiating a new probation sentence (n=462); and did not report recent substance use (n=662).

2.1. Data collection methods

After participants were determined to be eligible and informed consent was obtained, a 2-hour baseline assessment was administered. Data were collected through direct one-on-one interviews with participants, and all data were directly entered into an online study management system. Baseline measures collected included demographic information, substance use history, substance abuse treatment history, physical and mental health history, employment/education history, sexual risk behaviors, HIV testing and care, trauma, criminal cognitions, and motivation for treatment. For completing the baseline interview, each probationer received a $40 gift card. Because this study was a part of a larger intervention trial, participants were then randomized to one of three treatment conditions. This study used data from 250 probationers who completed the baseline interview prior to May 2014. The University of North Texas Health Science Center and George Mason University institutional review boards (IRBs) approved data collection and analyses for the intervention study, and the University of Texas School of Public Health IRB approved all secondary analyses.

2.2. Measures

2.2.1. Dependent Variable: Chronic Pain—Each participant was asked, “Have you ever been told by a doctor or other healthcare professional that you have (a chronic pain condition [including: some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia])?”. This measure was derived from the Centers for Disease Control and Prevention’s National Health Interview Survey (Blackwell, Lucas, & Clarke, 2014; National Center for Health Statistics, 1976).

2.2.2. Independent Variables

Opiate Use: Each participant was asked, “In the last 30 days, how many days did you use [heroin, methadone, other opiates/analgesics]?”. Each drug was measured independently, and the number of days used was collapsed into “used in the past month” and “did not use in the past month”. These measures were derived from the Addiction Severity Index (ASI-Lite-CF) (McLellan, Cacciola, Carise, & Coyne, 1999).

Recent Illicit Drug Use: Other illicit drug use in the previous 30 days was measured as described above (excluding opiate use). Substances included barbiturates, sedatives/hypnotics/tranquilizers, cocaine, amphetamines (including methamphetamine), hallucinogens (LSD, ‘magic mushrooms, salvia, mescaline, PCP, ketamine, DPT, DMT), inhalants (air blast, boppers, poppers, poor man’s pot, hardware, whippets, snapper), and buprenorphine (suboxone, subutex). Each participant was categorized as having used one or more of these illicit substances in the past 30 days. These measures were also derived from the ASI-Lite-CF (McLellan et al., 1999).

Total Drug-Related Arrests: Lifetime drug-related arrest history was assessed using the following item: “About how many of these [total lifetime arrests] were for things you did while using drugs or trying to get drugs?” (Prendergast, 2005).

Covariates: Potential confounders of the relationship between opiate use, illicit drug use, drug-related arrests and chronic pain were evaluated as potential covariates in the analysis. These measures included body mass index (BMI; self-reported height and weight), tobacco use (“Have you ever smoked at least 100 cigarettes in your life?”), frequency of alcohol use (“In the last 30 days, how many days did you use alcohol [any use at all]?”), binge drinking (“In the last 30 days, how many days did you use alcohol to intoxication?), marijuana use (“In the last 30 days, how many days did you use cannabis [marijuana]?”), intravenous drug use (IDU; “In your lifetime, have you ever injected [or shot up] any drugs, not prescribed to you by a doctor?”), social support (Sherbourne & Stewart, 1991), antisocial cognitions (Criminogenic Cognitions Scale) (Tangney, Mashek, & Stuewig, 2007; Tangney et al., 2012), mental health conditions (Criminal Justice Co-Occurring Disorder Screening Instrument) (Sacks et al., 2007), age of first arrest, demographic information (age, race, ethnicity, gender) and data collection site (Baltimore or Dallas). Race and ethnicity were coded independently so that each participant may identify with more than one race and/or ethnicity; however, those who reported 'other race' only were excluded from the analyses due to the small sample size.

2.3. Analytic Methods

Preliminary analyses included descriptive statistics and frequency distributions of the dependent variable, each independent variable, and all covariates. After assessing the distribution of each measure, collinearity, and transforming and categorizing variables when necessary, we conducted bivariate *t*-tests and x^2 analyses to determine the presence of a relationship between each independent variable and covariate with chronic pain. Descriptive statistics were reported according to the distribution of the variable, as medians and ranges were reported when a variable was highly skewed, while means and standard errors were presented when the distribution of a variable was approximately normal. Due to the consistently observed relationship between drug use, drug-related arrests, and chronic pain diagnoses in the bivariate models, multivariate logistic regression analyses were conducted. The logistic regression analysis included only covariates related to the chronic pain in the bivariate models (with the exception of demographic measures, which were included regardless of significance in the prior analyses). All analyses were conducted using Stata 13 (College Station, TX).

3. Results

Of the total sample of 250 probationers, 56% were from Dallas and 69% were male. The majority of participants were Black (70%), and the median age was 33 years old (range: 18–62). Approximately 18% of the sample reported a diagnosis of a chronic pain-related condition in their lifetime, 13% reported using opiates, and 44% reported recent (other) illicit drug use. The median number of lifetime drug-related arrests in this sample was two

(range: 0–40), and the average age of first arrest was 21 (range: 18–62). Descriptive information is provided in Table 1.

Table 2 shows the bivariate relationship between each independent variable and chronic pain. In support of our hypotheses, probationers who reported opiate use (t=5.98; p<0.05) and recent illicit drug use (t=8.47; p<0.01) were more likely to have reported a chronic pain diagnosis. In addition, participants with a greater number of drug-related arrests were significantly more likely to report having received a diagnosis of chronic pain (t=-1.71; p<0.05). Further, probationers with chronic pain had significantly fewer antisocial cognitions (t=2.65; p<0.05), reported binge drinking less frequently (t=4.76; p<0.05), had more symptoms of mental health problems (t=−3.68; p<0.001), were more likely to have received drug or alcohol treatment in their lifetime (t=6.05; p<0.05), and were older at the time of their first arrest (t=−1.98; p<0.05) compared with those who did not report chronic pain. Those who reported chronic pain were more likely to be older (t=−3.95; p<0.001), located at the Baltimore site (t=11.61; p<0.001), and self-identified as Hispanic (t=5.67; p<0.05; compared to non-Hispanic). Body mass index, frequency of alcohol use, social support, tobacco use, marijuana use, and intravenous drug use were not related to chronic pain and were therefore excluded from multivariate analyses.

Table 3 shows the results of the multivariate logistic regression analyses that assessed the relationship between drug use, drug-related arrests, and chronic pain. The results suggested that recent illicit drug use was positively related to chronic pain. Opiate use was marginally related to chronic pain diagnoses (OR=2.37; 95% CI .89–1.05; p<0.10); however, probationers' total number of drug-related arrests was not related to diagnoses of chronic pain (OR=.98; 95% CI .92–1.04). Other correlates of chronic pain included fewer criminogenic cognitions (OR=.13; 95% CI .03–.50) and more symptoms of mental health problems (OR=1.47; 95% CI 1.02–2.14).

4. Discussion

In two urban probation sites, 18% of substance-using probationers reported a diagnosis related to chronic pain, a rate that is greater than similarly-aged adults in the general population (Verhaak, Kerssens, Dekker, Sorbi, & Bensing, 1998). Probationers who reported chronic pain were more likely to use opiates and non-opiate illicit drugs when compared to offenders without chronic pain. At the same time, participants who reported suffering from chronic pain had fewer antisocial cognitions than probationers without symptoms of chronic pain. These findings support the hypothesis that substance-using probationers who suffer from chronic pain *may* be involved in criminal activity (specifically, drug-related criminal activity) in an effort to self-medicate their chronic health condition(s). This assumption is consistent with the extant literature on self-medication, as pain medication users in the general population tend to self-medicate to treat discomfort (including withdrawal) resulting from mental and/or physical health problems (Khantzian & Albanese, 2008).

This study explored the relationship between chronic pain, drug use and offending (particularly, drug-related offending). By using the theory of self-medication to expand our

understanding of the drug-crime nexus, these results suggest that the relationship between drugs and crime might be better explained by assessing the role of psychosocial functioning, physical health, and self-medication as they relate to drug use (and as a result, re-arrest). The findings coincide with a large literature base that has evaluated the relationship between drug treatment and recidivism [for a comprehensive review, see (Taxman, 1998b)]. Among offenders serving community-based sentences, access to *any* treatment for a substance use disorder reduced recidivism rates, time to arrest, and substance use, general illegal activity, and improved employment status (Hubbard, Craddock, & Anderson, 2003; Taxman & Spinner, 1997).

Probation provides a unique opportunity to screen adults for high-risk behavior that may be associated with criminality (Taxman & Bouffard, 2000). Integrated case management programs that directly *link and monitor* (rather than simply refer) probationers to treatment, health care, and mental health care are necessary based upon the high rate of comorbid health conditions observed within this population. During probation supervision, it is possible to ensure treatment continuity, which has been found to reduce recidivism for a portion of the population (Skeem, Emke-Francis, & Louden, 2006; Taxman & Bouffard, 2000; Taxman, Henderson, & Belenko, 2009; Weisman, Lamberti, & Price, 2004). The "seamless system" approach (Taxman, 1998a; Taxman, Young, Byrne, & Holsinger, 2002) involves comprehensive treatment programming to meet the individual needs of clients including substance use, psychiatric needs, and/or health conditions. Utilization of this approach among probationers who report suffering from chronic pain may result in a long-term cost savings by reducing recidivism (Friedmann, Taxman, & Henderson, 2007; Healey, 1999; Taxman, 1998b; Ventura, Cassel, Jacoby, & Huang, 1998).

These findings have several implications for correctional health policy and practice. First, they suggest that screening for and referring probationers who report chronic pain to primary care physicians or substance use treatment facilities that simultaneously treat the underlying conditions causing chronic pain, which may improve the success of community release outcomes. If "at-risk" offenders who suffer from chronic pain can be identified upon intake to probation (or parole), they may be provided with referrals to publically available, comprehensive medical treatment. This provision of seamless services, including the identification and treatment of comorbid and chronic disease-related substance use problems, may influence the success of community release outcomes (Solomon & Draine, 1999; Turner, Petersilia, & Deschenes, 1992; Zanis et al., 2003). Further, the early identification of the underlying cause of drug use in criminal justice settings (including jails and prisons) may provide an opportunity to integrate care beyond treatment of a single symptom of the problem (e.g., a substance use disorder). We expect that, if offenders' chronic pain-related conditions were addressed, opiate and other illicit substance use would decrease. This reduction in illicit drug use may, in turn, result in reduced recidivism rates, probation violations, and drug-related arrests.

These findings should be interpreted in light of several limitations. First, participants were recruited using non-probability based sampling methods, and the two study sites (Baltimore and Dallas) are not representative of all probation settings. Therefore, these findings may not generalize to other samples of probationers. Second, our data were cross-sectional, thus

limiting any causal inference or discussion of temporality in the relationship between pain diagnoses and substance use. Third, given the relatively small sample size (and the low incidence rate of chronic pain diagnoses), it is possible that some relevant risk indicators were not detected in this study. To address this limitation, we reported marginally significant effects when *p*-values exceeded .10. Finally, a 30-day measure of chronic pain was used to categorize probationers are "exposed" or unexposed to chronic pain, while a lifetime measure of drug-related arrests was used. Although this may be viewed as a limitation, studies demonstrate that chronic pain can persist for 2–15 years (Breivik et al., 2006); therefore, we believe that we have captured the vast majority of probationers who have experienced chronic pain in the past year using this measure.

In light of these limitations, this study had several strengths. Offenders on community supervision are a largely understudied population, our knowledge of the relationship between health and crime is in its infancy, and this study provided measures to increase our knowledge of the mechanisms by which health conditions may lead to criminal behavior. Finally, this line of research has strong implications for the future of community supervision, treatment of offenders' comorbid health conditions, and the use of multidimensional treatment modalities to reduce drug-related criminal behavior (Taxman & Bouffard, 2000).

5.1. Conclusions

Future research should examine the stability of the relationship between criminal behavior (particularly, drug-related crime) and chronic pain in larger samples across more diverse criminal justice settings. If future studies demonstrate that offenders on community supervision are likely to use illicit drugs to treat an underlying medical condition, the criminal justice system should consider expanding it's role as service provider for offenders with chronic pain-related conditions. This study sets the stage for this inquiry by identifying a link between drug use (and opiate use specifically) and chronic pain, and specifying a theoretical mechanism for the relationship between chronic pain and drug-related criminal recidivism.

Acknowledgments

This study is funded by the National Institute on Drug Abuse (PIs, Walters and Taxman, R01 DA029010. The trial registration number is NCT01891656 (initiated on October 18, 2011).

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Highlights

- 18% of probationers reported suffering from chronic pain.
- Probationers who reported chronic pain were more likely to use opiates.
- Probationers who reported chronic pain were more likely to use other illicit drugs.
- Mental health conditions were more common among probationers with chronic pain.

Table 1

Variable description, N=250.

	N	%
Dependent Variable		
Chronic Pain	45	18.07
Independent Variables		
Opiate use (Past 30 days)	33	13.20
Recent Illicit drug use	109	43.60
Total drug-related arrests (Median, Range)	2(0–40)	
Covariates		
Body Mass Index (Mean, SE)	27.40 (.34)	
Tobacco use	202	81.12
Days used alcohol (Past month; Median, Range)	2 (0–30)	
Binge drinking (past 30 days; yes/no)	115	46.00
Marijuana use (past 30 days)	122	48.80
Intravenous drug use	39	15.60
Social support (Median, Range)	3.85 (.98–4.89)	
Criminogenic cognitions (Mean, SE)	2.31	(.02)
Symptoms of mental health problems (Mean, SE)	1.17 (1.16)	
Age of first arrest (Mean, SE)	20.66 (.52)	
Demographic measures		
Age (Median, Range)	33 (18–62)	
Race/Ethnicity		
White	26	11.93
Black	173	70.33
Hispanic/Latino	48	19.28
Other race	5	2.00
Gender (Male)	173	69.20
Site (Baltimore)	105	42.00

Table 2

Bivariate relationship between chronic pain, age at first arrest, opiate and other illicit drug use.

	Chronic Pain		
	Mean (SD)		*t*
	No	**Yes**	
Opiate use (past 30 days)	22(10.78)	11(24.44)	5.98*
Recent illicit drug use	137(67.16)	40(88.89)	8.47**
Total drug-related arrests	3.86(6.68)	5.80(7.68)	−1.71*
Covariates			
Body Mass Index	27.59(5.32)	26.68(5.25)	1.05
Alcohol use (Log days in past month)	1.18(1.21)	1.18(1.17)	−.003
Social support	.50(.50)	45(.50)	−.40
Criminogenic cognitions	2.33(.28)	2.20(.34)	2.65*
Symptoms of mental health problems	1.05(1.08)	1.69(.95)	−3.68***
	N	**%**	x^2
Tobacco use	160(78.82)	41(91.11)	3.62
Binge drinking (past 30 days)	100(49.02)	14(31.11)	4.76*
Marijuana use (past 30 days)	99(48.53)	22(48.89)	.002
Intravenous drug use	28(13.73)	11(24.44)	3.21
Alcohol or drug treatment history	25(12.25)	12(26.67)	6.05*
Age at first arrest	20.21(7.56)	22.87(10.45)	−1.98*
Demographic measures	**Mean (SD)**		***t***
Age	33.79(11.47)	41.16(10.52)	−3.95***
Race/Ethnicity	**No**	**Yes**	x^2
White	21(12.07)	5(11.63)	.01
Black	138(69.00)	34(75.56)	.75
Hispanic/Latino	45(22.17)	3(6.67)	5.67*
Gender (Male)	143(70.10)	29(64.44)	.55
Site (Baltimore)	75(36.76)	29(64.44)	11.61***

* $p<0.05$

** $p<0.01$

*** $p<0.001$

Note: All percentages are column proportions.

Table 3

Multivariate logistic regression assessing the relationship between age at first arrest, cumulative lifetime drug-related arrests, and chronic pain, n=246.

	Chronic Pain
	OR (95% CI)
Recent illicit drug use (non-opiate)	3.11(1.03–9.39)*
Opiate use (past 30 days)	2.37(.89–1.05)+
Total drug-related arrests	.98(.92–1.04)
Covariates	
Alcohol or drug treatment history	2.14(.88–5.22)+
Criminogenic cognitions	.13(.03–.50)**
Symptoms of mental health problems	1.47(1.02–2.14)*
Tobacco use	1.93(.55–6.73)
Age at first arrest	1.00(.95–1.05)
Demographic measures	
White race	Ref
Black race	.73(.23–2.27)
Hispanic/Latino ethnicity	.57(.11–3.00)
Site (Baltimore)	1.24(.89–5.59)
Age	1.04(.99–1.08)+

+ $p<0.10$

* $p<0.05$

** $p<0.01$

*** $p<0.001$