

Differences in Prevalence of Prescription Opiate Misuse Among Rural and Urban Probationers

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Abstract: We compared the prevalence of prescription opiate misuse among 2 cohorts of felony probationers (N = 1525). Multiple logistic regression was utilized to determine the independent correlates of prescription opiate misuse among rural (n = 782) and urban (n = 743) probationers participating in an HIV-intervention study. After adjustment for differences in demographic and drug use characteristics, rural participants were almost five times more likely than their urban counterparts to have misused prescription opiates. The prevalence of prescription opiate misuse was significantly higher among the rural probationers; however, given the paucity of illicit opiates and relatively recent emergence of prescription opiates in rural areas, rural substance abuse treatment may be ill-prepared to treat prescription opiate misuse.

Keywords: Prescription opiate, probationers, rural, urban

INTRODUCTION

Prescription opiate misuse has emerged as a major public health problem and the past several years have seen a significant increase in

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the prevalence of prescription opiate misuse in the United States (1). Opiate misuse is of particular concern given that users are often treatment refractory (2), are at increased risk for HIV/AIDS and hepatitis B and C through injection drug use (3), and are more criminally involved (4).

Treatment data indicate that rural areas may be more vulnerable to prescription opiate misuse than urban areas (5). However, there is little community-based research of prescription opiate misuse. Therefore, the purpose of the current study was to examine whether prescription opiate misuse was more prevalent among rural felony probationers compared with a sample of urban felony probationers. We hypothesized that a greater proportion of rural participants would report prescription opiate misuse compared with their urban counterparts.

METHODS

Sample

The sample consisted of 2 cohorts of felony probationers from urban Delaware ($n = 743$) and rural Kentucky ($n = 782$) who were participants in an NIDA-funded HIV intervention study with parallel approaches. The intervention and recruitment strategies for each study site are described in more detail elsewhere (6, 7). Briefly, rural participants were recruited between March 2001 and December 2004 from the probation offices in 30 counties in Appalachian Kentucky, and between February 2000 and April 2003 from the largest urban county in Delaware. The study was approved by the Institutional Review Boards at both the University of Kentucky and University of Delaware.

Measures

After consenting to participate, an interviewer-administered questionnaire ascertained data pertaining to demographics, recent (3 months prior to arrest) and lifetime drug use and treatment, criminal and sexual history, and HIV knowledge. HIV serostatus was assessed using OraSure (Bethlehem, PA), and pre- and post-test counseling was conducted in accordance with Centers for Disease Control and Prevention standards (8). In order to assess whether participants had recently used prescription opiates, they were asked "About how often did you use other non-prescribed opiates (not injected or heroin) in the last 3 months on the street, before you were arrested on the charge that resulted in this probation?" Participant compensation was \$50 for the baseline interview.

Statistical Analyses

The dependent variable of interest was self-reported prescription opiate misuse in the 3-month period prior to the participants' last arrest. Bivariate comparisons were made using chi-square and the Wilcoxon rank-sum tests for categorical and continuous variables, respectively. Multiple logistic regression was utilized to examine the independent correlates of prescription opiate misuse. A manual, stepwise elimination process was employed in which only those variables significant at the $p < 0.05$ were retained in the final multivariate model. Other variables, including age, race, and gender, were retained regardless of statistical significance. To account for potential secular trends in prescription opiate use, the multivariate model was also adjusted for the year-of-study enrollment. Finally, variance inflation factors (VIFs) were estimated for all variables in the final multivariate model to assess for the presence of collinearity. All analyses were conducted using STATA, version 8.0 (College Station, TX).

RESULTS

Of the 1525 participants, 68.9% were male and 37.5% were African American. The median age was 35.1 years (interquartile range [IQR]: 27.1–43). There were significant differences in the demographic characteristics of the rural and urban participants with regard to race, age, marital status, disability, education, sexual orientation, recent injection drug use, and recent substance use. Rural participants were more likely to be white, younger, married, receiving income from disability, and to have recently (12 months prior to arrest) injected drugs. Additionally, rural participants were significantly less likely to identify with being either gay/lesbian or bisexual. Rural participants also reported significantly ($p < 0.001$) greater use of prescription opiates (36.6% vs. 9.5%), marijuana (53.6% vs. 43.3%), and sedatives/tranquilizers (35.5% vs. 7.5%), whereas the urban participants reported significantly greater use of alcohol (68% vs. 59.2%), cocaine (46% vs. 27.7%), and heroin (20.5% vs. 1.8%).

One in 5 (20.7%) study participants reported using non-prescribed prescription opiates in the 3 months prior to their most recent arrest (Table 1). Those residing in rural counties were 9 times more likely to report prescription opiate misuse than those living in urban areas. Table 1 also shows other significant ($p < 0.05$) associations with prescription opiate misuse, including younger age, receiving unemployment benefits (UOR: 2.04, 95%, CI: 1.00, 4.41), and fewer years of education

Table 1. Correlates of prescription opiate misuse among probationers (n = 1525)

	Rx Opiate Use (n = 316)		No Rx Opiate Use (n = 1209)		Odds Ratio	95% Confidence Interval
	n	%	n	%		
Area of residence						
Rural	286	90.5	496	41	9.06	6.30–13***
Urban	30	9.5	713	59		
Gender						
Male	208	65.8	842	69.6		
Female	108	34.2	367	30.4	1.19	.92–1.55
Race						
African American	16	5.1	300	31.5		
White	300	94.9	653	68.5	11.25	6.88–18.4***
Age, median (IQR)	32.1 (25.6–40.5)	36 (28–43)	.98	.96–.99***		
Marital status						
Married	79	25.1	273	22.6	1	-
Single	117	37.1	553	45.9	.73	0.53–1.01

Divorced/Widowed/Sep	119	37.8	380	31.5	1.08	0.78-1.50
Income						
Unemployment	12	3.8	23	1.9	2.04	1-4.41*
Welfare/AFDC/SSI	48	15.2	241	20	.72	0.51-1
Disability	35	11.1	170	14.1	.76	.52-1.12
Education, median (IQR)	11 (9-12)	11 (10-12)	.93	.87-.99*		
Sexual orientation						
Heterosexual	302	95.6	1148	95.6	1	-
Gay/Lesbian	6	1.9	19	1.6	1.20	.47-3.03
Bisexual	8	2.5	34	2.8	.89	.41-1.95
Injection drug use	56	17.7	64	5.3	3.85	2.62-5.64***
Other substance use						
Alcohol	222	70.3	746	61.7	1.47	1.12-1.92**
Cocaine	157	49.7	402	33.3	1.98	1.54-2.55***
Marijuana	233	73.7	507	42.0	3.88	2.95-5.11***
Heroin	27	8.5	139	11.5	.72	.17-1.11
Sedatives	217	68.7	117	9.7	20.5	15.1-27.5***

*p < .05; **p < .01; ***p < .001.

Table 2. Independent correlates of prescription opiate misuse (n = 1525)

	Adjusted ¹ odds ratio	95% Confidence interval
Area of residence rural	4.92	2.70–8.97***
White race	2.20	1.10–4.41*
Injection drug use	1.85	1.06–3.22*
Other substance use		
Cocaine	2.19	1.50–3.18***
Marijuana	2.08	1.46–2.96***
Sedatives	8.85	6.27–12.5***

¹Adjusted for all other variables in the model, year of enrollment, age, and gender.

*p < .05; **p < .01; ***p < .001.

(UOR: .93, 95%, CI: .87, .99). Self-reported recent substance use was also associated with misuse of prescription opiates. Participants using alcohol (UOR: 1.47, 95%, CI: 1.12, 1.92), cocaine (UOR: 1.98, 95%, CI: 1.54, 2.55), marijuana (UOR: 3.88, 95%, CI: 2.95, 5.11), and sedatives/tranquilizers (UOR: 20.5, 95%, CI: 15.1, 27.5) in the past 3 months were significantly more likely to report prescription opiate misuse in the same time period.

As seen in Table 2, rural residence was independently associated with prescription opiate misuse (Adjusted OR: 4.92, 95%, CI: 2.70, 8.97), even after adjustment for race, age, other substance use, gender, and year-of-study enrollment. Other independent correlates of prescription opiate use included injection drug use, White race, and cocaine, marijuana or sedative/tranquilizer use in the 3 months prior to arrest.

DISCUSSION

The prevalence of prescription opiate misuse was significantly higher among the rural participants in this study compared with their urban counterparts. Even after adjusting for those variables that may be associated with both prescription opiate use and rural residence, rural probationers were still almost 5 times more likely than urban probationers to have reported prescription opiate use in the 3 months prior to their arrest.

The greater prevalence of prescription opiate use among the rural probationers may be partially explained by the increased availability of prescription opiates and decreased availability of heroin. When examining sources of income, more rural probationers reported receiving

welfare/AFDC/SSI or disability than did urban probationers. As a whole, the majority of the participating rural counties were considered distressed by the Appalachian Regional Commission (9), with 1 in 3 families in Appalachia receiving public assistance and/or disability in this area (10). Given these circumstances, there may be more potential for diversion of prescription opiates in this area, which leads to greater availability. However, the best explanation for why rural probationers are more likely to be using prescription opiates may be that, unlike the urban study site, heroin is not readily available in Kentucky, and in Appalachian Kentucky in particular (11).

While the association between rural residence and prescription opiate misuse was the most compelling finding in the study, other independent correlates of prescription opiate misuse warrant mentioning. Other prescription drug misuse, in particular benzodiazepine misuse, was also highly associated with prescription opiate misuse. This is of particular concern given the potential for overdose with concomitant use of benzodiazepines and opiates (12). While comorbid misuse of opiates and benzodiazepines has been described in studies of treated methadone users (13) and those receiving prescription opiates under care for chronic pain (14), few (if any) studies have found this association among community-based prescription opiate users.

One limitation of the current analysis is the lack of a measure of abuse or dependence for prescription opiates. However, among the rural participants who reported prescription opiate misuse, half were using at least once per day, and 68% were misusing prescription opiates at least several times per week, which suggests that many—if not most of participants—would likely meet the more stringent DSM-IV abuse or dependence criteria. We were also limited in that the study was cross-sectional in nature, and therefore, we could not assess the temporal relationship between the independent and dependent variables of interest. Nonetheless, given the dearth of literature on community-based prescription opiate use, the current study provides much needed stimulus for research in this area.

The findings of this study have implications for rural substance abuse treatment in particular. Treatment providers may be ill-prepared to treat opiate dependence; given the paucity of heroin in these areas (11) and the relatively recent emergence of prescription opiate misuse (1). Furthermore, it has been shown that treatment of comorbid opiate and benzodiazepine dependence is particularly challenging (15), and of those who reported prescription opiate misuse, 71% were also misusing benzodiazepines. While Kentucky has seen several private methadone clinics open in response to the prescription opiate problem, only 2 of the 30 participating study counties have a facility that administers methadone and it is

unknown what proportion of those have the capacity to treat comorbid benzodiazepine abuse.

While the current analysis provided a glimpse into the differences in prescription opiate misuse among rural and urban probationers, future research should examine whether prescription opiate misuse is indeed more prevalent among rural residents in a general population sample. Also, longitudinal studies may want to explore the pathways to prescription opiate misuse and effective treatment options for those who are dependent on prescription opiates.

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