



Published in final edited form as:

Pain Med. 2012 August ; 13(8): 1040–1048. doi:10.1111/j.1526-4637.2012.01439.x.

Denial of Prescription Opioids Among Young Adults with Histories of Opioid Misuse

Meghan Fibbi, MPH^{*}, Karol Silva, MPH[†], Kristen Johnson, MPH[‡], Debra Langer, MPH[†], and Stephen E. Lankenau, PhD[†]

^{*}Philadelphia College of Osteopathic Medicine, Philadelphia, Pennsylvania

[†]Department of Community Health and Prevention, Drexel University, School of Public Health, Philadelphia, Pennsylvania, USA

[‡]Department of Epidemiology, Drexel University, School of Public Health, Philadelphia, Pennsylvania, USA

Abstract

Objectives—An exploratory study was undertaken to examine how being denied prescription opioids to treat pain impacted the drug-using careers of young adults with a history of misuse of prescription drugs.

Design—Ethno-epidemiological methodology utilizing a cross-sectional design, semi-structured interviews, and qualitative/quantitative data analysis.

Settings—Non-clinical participants were recruited from natural settings, such as streets, parks, beaches, and college campuses, in New York City and Los Angeles during 2008 and 2009.

Participants—One hundred fifty participants aged 16 to 25 who had misused a prescription opioid, tranquilizer, or stimulant in the past 90 days.

Outcome Measures—Analyses focused on denial of opioids and associated consequences, including self-medication with prescription opioids and heroin.

Results—Thirty-four participants (22.7%) described being denied prescription opioids for the treatment of a painful condition. Current opioid misuse and current pain problems were higher in this group compared to those who had never been denied prescription opioids. Reasons for denial included being identified as a drug user by a physician, lack of health insurance, and having medication withheld by a parent or authority figure. Approximately half reported self-medicating pain with either illegally obtained prescription opioids or heroin. Self-medication often coincided with initiation of new risk behaviors and more intensive drug use.

Conclusion—Being denied prescription opioids was an important moment in the drug using careers of many study participants. Results suggest that effective pain management techniques are

Reprint requests to: Stephen E. Lankenau, PhD, Drexel University, School of Public Health, Department of Community Health and Prevention, 1505 Race Street, 11th floor, Philadelphia, PA 19102, USA, Tel: 215-762-2570; Fax: 215-762-4088; lankenau@drexel.edu.

Disclosure: The authors do not report any conflicts of interest.

needed to prevent high-risk young adults with pain problems from engaging in escalated opioid misuse and risk behaviors.

Keywords

Prescription Opioid Misuse; Heroin; Young Adults

Introduction

The misuse of prescription drugs in the United States has become an increasingly significant public health issue over the past 10 years [1,2]. As of 2009, 2.8% of individuals 12 years and older had misused prescription drugs within the past month [2]. Rates were even higher among young adults aged 18 to 25, who reported a past month prescription drug misuse rate of 6.8% [2]. Of these drugs, prescription opioids, such as hydrocodone and oxycodone, were misused more frequently than any other class of prescription medication and accounted for 75% of all prescription drug misuse [3].

Concurrent with rises in opioid misuse among adolescents and young adults have been changes in opioid prescribing practices among physicians [4]. Between 1994 and 2007, the proportion of young adults who were prescribed opioids during visits to physician offices and emergency rooms increased from 4% to 10% [5]. Young adults are increasingly prescribed opioids for both injury-related conditions, such as back pain, and non-injury related conditions, such as headaches. For instance, opioids were prescribed at 33% of visits by young adults when back pain was listed as the primary complaint [5]. The prescription rate is reportedly higher among youth with multiple pain conditions and comorbid mental health disorders [6].

Despite increases in prescribing opioids, the undertreatment of pain is a public health concern [7]. Undertreatment of pain is potentially a serious issue among individuals with histories of substance abuse or drug treatment, whereby physicians may misattribute pain complaints to an addictive disorder. For instance, a study of ambulatory AIDS patients found that individuals who reported a history of injection drug use were significantly more likely to receive inadequate treatment for their pain [8]. Moreover, a qualitative study of physician prescribing practices found that physicians tended to distrust the veracity of self-reported pain levels among adult patients with histories of substance abuse [9].

These studies suggest that aberrant behaviors, such as the misuse of prescriptions and illicit drugs, may occur among individuals with undertreated pain problems. Self-treating or self-medicating with opioids may happen among chronic pain patients who receive insufficient access to prescription opioids [10,11]. Furthermore, recent studies have found that chronic pain problems among adults are positively associated with prescription opioid misuse [12–14]. Additionally, adults with both chronic pain and a history of substance abuse are more likely to engage in prescription opioid misuse [15].

Along with comorbid pain and substance abuse histories, mental health problems have been linked to a risk for misuse of prescription opioids [16]. For instance, a study of methadone maintenance patients found that individuals with pain had more medical and psychiatric

problems and used more prescribed and nonprescribed medications, compared to those without pain [17]. A recent review of studies focused on misusers of prescription opioids found the prevalence of pain ranged from 14.5% to 61.5%, and numerous associations were observed between opioid misuse, mental health, and pain [18].

Overall, these studies—largely focused on adult populations—indicate that relationships between pain, mental health, and substance use are complex, and that prescription opioids may be increasingly used in nonmedical ways for pain or mental health problems ineffectively treated. Apart from case reports [11], we know of no studies that specifically examined the problem of under-treatment of pain among young adults and its impact on subsequent patterns of opioid misuse. Toward this end, an exploratory qualitative study was undertaken of young adults who reported current misuse of prescription drugs. The study primarily focuses on describing why some young adults in this sample were unable to access adequate pain management during their lives and on the relationship between the undertreatment of pain and subsequent trajectories of opioid misuse and other drug-related risk behaviors.

Methods

The study design was informed by an ethno-epidemiological methodology [19–21] that utilizes both quantitative data, i.e., frequencies and percentages, to describe broader patterns found within a study sample and qualitative data, i.e., narrative accounts, to provide contextualized details as reported by individual participants. This mixed-method approach has been used previously to describe risk behaviors and patterns of substance misuse among smaller samples of high-risk youth [22–25].

Study Sample

The analysis is based upon a sample of 150 young adults recruited from Los Angeles and New York City for a study on prescription drug misuse. To be eligible, participants had to be between 16 and 25 years old at the time of enrollment, and have engaged in misuse of a prescription drug at least three times in the last 90 days. For the purpose of this study, “misuse” of a prescription drug was defined as: “drugs you may have used without a prescription, in greater amounts, administered differently, more often, or longer than prescribed, or for a reason other than a doctor said you should use them” [26]. Sampling was stratified to include three types of high-risk young adults—polydrug users, homeless persons, and injection drug users (IDUs)—who are at increased risk for a range of negative health outcomes, including drug dependence, drug overdose, human immunodeficiency virus (HIV), and hepatitis C virus (HCV) [22–24]. Polydrug users were defined as having used two or more drugs (alcohol, illicit, or prescriptions) simultaneously within the past 90 days; being homeless or injecting drugs in the past 90 days were exclusion criteria for this group. Homeless persons were defined as not having a consistent residence within the past 90 days and/or sleeping on the street, in a park, or squat; injecting drugs in the past 90 days was an exclusion criterion for this group. IDUs were defined as injecting a drug within the past 90 days. Based upon these stratification criteria, homeless persons could also be polydrug users while IDUs could be both polydrug users and homeless. Eligibility was

determined through the use of a brief screening tool. For their participation in the screening process, each individual received a \$3 gift card.

Participants were identified and recruited in each city using a two-step recruitment process. First, trained ethnographers conducted a Community Assessment Process [27] to determine where eligible individuals were likely to be located. Next, ethnographers used both targeted sampling [28] and chain-referral sampling [29, 30] to identify and recruit the study sample. Using this approach, participants were recruited from natural settings across New York City and Los Angeles known to attract young adults, such as street scenes, parks, and college campuses.

All participants were recruited and interviewed between September 2008 and July 2009. The study protocol was approved by Institutional Review Boards at Drexel University, Children's Hospital Los Angeles, and National Development and Research Institutes, Inc.

Data Collection

Data were collected by ethnographers through one-on-one interviews with eligible participants. The instrument was administered on a laptop computer. Quantitative data was captured using Questionnaire Development Software (Nova Research Company, Bethesda, MD, US) and qualitative data was captured on a digital recorder. Interviews were conducted discretely in various natural setting, such as fast food restaurants and parks, and respondents received a \$25 incentive for participating.

Measures

The instrument was comprised of three modules (history of prescribed medications, history of misuse of prescription and other drugs, and demographics) that were developed from existing measures (such as the DAST-10), previous studies conducted by the principal investigator [31], and from topics that emerged during the community assessment process. Interview questions were both of a structured and unstructured nature. For instance, structured questions asked participants about demographic characteristics, lifetime misuse, recent misuse, modes of administration, and ages of initiation for prescription opioids. Furthermore, qualitative probes followed structured questions in certain instances, such as: "Have you ever taken prescription pain medication to get high or for reasons other than it was prescribed for? Tell me about that. What was the situation that led you to taking the drugs?" and "Have you ever been injured or experienced a health condition that needed pain medication, but you didn't receive it or were denied access? Tell me about that. What was the situation that led to you being unable to have access to the medication?"

Data Analysis

Following the interviews, quantitative data were uploaded from the questionnaire development software into SPSS (IBM, Armonk, NY, US). Digital recordings were transcribed and uploaded into a qualitative data analysis software, ATLAS.ti (cleverbridge AG, Cologne, Germany). Qualitative data were coded using thematic codes and analyzed section-by-section in the following areas: denial of prescription opioids, acute or chronic pain, self-medication, first episode of opioid misuse, source of illegally obtained opioids,

and motivation to use opioids. During qualitative analysis, being denied access to prescription opioids for an injury or painful medical condition emerged as an important theme.

Participants were divided into three groups based upon their history of prescription opioids: *ever* denied prescription opioids; *never* denied prescription opioids and no-past history of opioid prescriptions; and *never* denied prescription opioids and a past history of being prescribed opioids. Among those *ever* denied prescription opioids, self-medicators are defined as participants who reported treating pain with heroin or opioids after being denied a prescription opioid.

Pseudonyms were used to protect the anonymity of participants.

Results

Sample Characteristics

Overall, 34 participants (22.7%) had been denied prescription opioids one or more times during their lifetime, i.e., “ever denied” (see Table 1). Among those never denied a prescription opioid (N = 116), 37 participants had no lifetime history of an opioid prescription, and 79 participants had at least one opioid prescription during their lifetime. Participants with no-lifetime histories of opioid prescriptions were younger, more frequently Hispanic, and less frequently homeless compared to the other two groups. Participants who were ever denied prescription opioids more frequently reported histories of drug treatment, mental health care, jail, and being HCV positive compared to the other two groups.

Patterns of Drug Use

Several notable differences emerged among these three groups regarding current health, history of prescribed use, and substance misuse (see Table 2). Reporting a current pain problem was most common among those ever-denied a prescription opioid. Those ever-denied reported greater frequency of past 30-day prescription opioid misuse and having ever sniffed or injected a prescription opioid. Those ever denied also reported higher proportions of other risk behaviors involving prescription opioids, including history of daily use, ever experienced withdrawal, done anything illegal to obtain, sold opioids, and ever used an illicit drug as a substitute. Those ever denied typically initiated opioid misuse earlier than other groups. Moreover, those ever denied typically initiated opioid misuse prior to being prescribed an opioid, which is in contrast to those who were never denied but had been prescribed an opioid (N = 79). Frequent heroin use and lifetime heroin injection were more typical among those ever denied. Past 30-day heroin use was similar across all three groups. Among those ever denied, 85.3% reported a lifetime history of being prescribed opioids, which indicates that most were prescribed prescription opioids for at least one prior medical condition but denied in other circumstances.

Circumstances for Receiving an Opioid Prescription Among Ever Denied

Ever denied participants often received legitimate opioid prescriptions during adolescence, typically between the ages of 12 and 17, and prior to being denied a prescription opioid.

Reported medical conditions for receiving an opioid prescription were those common to adolescents and included bone fractures following trauma (most typical), dental procedures, burn injuries, herniated disc, appendicitis, surgery, and tendonitis. Opioids prescribed for these conditions included hydrocodone (most frequent), oxycodone (second most frequent), codeine, morphine, hydromorphone, and meperidine. Participants were commonly prescribed opioids in an inpatient hospital setting or a dentist's office. Participants generally reported positive memories surrounding their first prescribed opioid, as described by Chris, a 19-year old transgender participant:

I was prescribed Percocet [oxycodone] for the first time when I was 13 because I spilled a pot of tea on my thigh. I got 2nd degree burns and it was really painful. I was crying ... so they gave me a prescription of Percocet. It just felt so good. I remember driving home with my dad in the car and the music was playing, and I started singing a Culture Club song. I was like, "I feel so good right now."

Circumstances for Not Obtaining a Prescription Among Ever Denied

Three circumstances emerged as to why these participants (N = 34) were denied prescription opioids later in their lives: being identified as a drug user by a physician; not having health insurance; and having access limited by an authority figure, such as a parent. Half were denied prescription opioids by a physician—most commonly emergency room or free clinic physicians—and two were denied by dentists. These participants were often viewed as drug-seeking patients by a physician based on past or current participation in a methadone maintenance program. For instance, Doug, a 24-year-old homeless male, former heroin injector, and methadone patient, was denied a prescription for opioids following surgery:

I was walking out the door, and the other doctor looked at my chart and he saw I was on methadone program. They chased me down and took the script.

Similarly, Mark, a 25-year-old homeless male and former heroin injector, describes being regularly denied prescription opioids after enrolling in a methadone maintenance program:

Once you're on methadone they don't give you pain pills anymore ... I got hit by a car, they wouldn't give me any pain medication.

Approximately one-quarter of these participants (N = 8) did not have health insurance at the time of their accident or condition, which precluded access to prescription opioids. Alex, an 18-year-old homeless male, describes the impact of not having health insurance:

I broke my collarbone and I didn't have health insurance so I wasn't able to go to the hospital. I needed medication and I couldn't get it, so I had to get it other ways.

Three individuals were denied prescription opioids by an authority figure, primarily a parent or guardian, who felt the medication was unnecessary or that it might be abused. Parents used various methods to control their child's access to opioids, including not filling the prescription, asking the physician to prescribe a milder analgesic, or keeping the prescription in their control. Thomas, a 20-year-old male whose parents suspected that he might be using drugs, reported that his mother intervened by asking his dentist not to prescribe an opioid following surgery to remove his wisdom teeth:

I got my wisdom teeth taken out and my mother wouldn't let me get any Percocets [oxycodone] or anything like that. I wanted to more than anything [to use for pain], but I was being pretty closely monitored at that point.

The remaining six participants did not specify why they were denied prescription opioids. However, their current circumstances suggest they were denied for similar reasons as others in the group. Five of six were homeless, and one was an injecting drug user, suggesting that they were potentially denied a prescription because they were uninsured or identified as a drug user by a physician— similar to other homeless and IDU participants in this group.

Self-Medication Among Ever Denied

A common response among participants who were denied opioids for a painful injury or medical condition was to self-treat or self-medicate. Over half (N = 18) reported managing their pain symptoms by self-medicating, or using a prescription opioid or heroin specifically to reduce pain after they were denied a prescription opioid. Carlos, a 21-year-old male, describes how he began self-medicating with hydrocodone to relieve headaches and other pain after suffering an injury that went untreated:

I got stabbed in the head with a screwdriver [two years ago]. I get pain and headaches. Every time I go to the hospital and they do a CAT scan, they tell me there is nothing there. I told them that I need pain medication but it came up like it was lying because but they don't see any real proof. That is when I started taking the Vicodin [hydrocodone], crushing it, and sniffing it.

Significantly, nearly all of these participants had a history of misusing prescription opioids—and half had a history of heroin use—prior to self-medicating for pain. Given their previous experience misusing opioids and heroin, many had access to these drugs from friends within their social networks and began self-medicating soon after being denied prescription opioids.

Prescription Opioid Misuse Among Self-Medicators

Among self-medicators (N = 18), nearly three quarters self-medicated primarily with prescription opioids after being denied opioids. This group described engaging in risky drug using practices with prescription opioids after being denied opioids, including initiating misuse of prescription opioids, getting “more loaded” than usual, sniffing or injecting opioids, using an illegal drug as a substitute for opioids, and accepting drugs from new sources.

Most of these participants obtained prescription opioids from friends or peers—often for free—within their social networks. In some cases, some accepted prescription opioids from strangers. Sarah, a 25-year-old female, believed she was denied prescription opioids for a dental abscess because the emergency room staff identified her as a drug-seeking patient:

I have dreadlocks and tattoos on my face and they're like, 'Here's your penicillin.'

After being denied opioids by the medical staff, she accepted oxycodone from a stranger shortly after being discharged from the hospital:

[We were] outside of this gas station and we ran into this girl. We were just driving around talking but we didn't know each other. I was kind of like in pain, crying, and then he [the girl's friend] went to his mom's house and got me some oxycodone.

Heroin Use Among Self-Medicators

Five participants reported self-medicating with heroin (rather than prescription opioids) while four of these participants had used heroin prior to self-medicating. Two described the need to self-medicate for pain and the availability of heroin in their social network as key factors associated with a trajectory into heroin dependence. For instance, Rick, a 20-year old male who suffered a broken hand and back injuries following a car accident, illustrates a trajectory from injury to heroin and injection drug use. Rick was uninsured and unable to obtain a prescription for opioids following the accident. While he had previously experimented with oxycodone "once or twice," he was averse to drug use, particularly heroin. However, the pain he suffered following the accident and his inability to obtain a prescription for opioids coincided with a change in attitude toward heroin:

I was living at my friend's mom's house. He was in prison and he got out and was like, 'I got this badass heroin connection.' I was like, 'No dude, I am not fucking with that shit.' And then I got into the car accident and I was like, 'Dude, give me some fucking heroin.'

Furthermore, a dramatic change in patterns of substance use followed his inability to treat ongoing pain with prescribed opioids. He reported quickly becoming dependent on heroin and prone to heroin withdrawal, and eventually began injecting heroin and opioids, including hydromorphone and oxycodone.

Paul, a 25-year-old homeless IDU, describes another type of trajectory into heroin dependence following an on-the-job injury at the age of 19. Paul, who was also without health insurance, generated an \$8,000 dollar hospital bill and was unable to continue treatment for his injuries. He began self-medicating with heroin since he was aware of its analgesic effects after using heroin "on and off again" for 5 years prior his accident. During this period of self-medication, he reported becoming "strung out" on heroin for the first time, and from that point on, was "off to the races" with his heroin use. A year later, he entered into a drug detoxification program for heroin dependence but eventually resumed using both heroin and opioids.

Transitions from Prescription Opioids to Heroin Among Self-Medicators

As described above, self-medicating with prescription opioids was more common than self-medicating with heroin among participants denied opioids for pain. Significantly, two participants who self-medicated with prescription opioids later transitioned into using heroin. These participants, who both initially self-medicated with prescription opioids obtained from drug-using friends, described using heroin to treat pain following advice from more experienced friends. Ethan, a 20-year-old male who initiated prescription opioids misuse following a snow-boarding accident, described transitioning into heroin and injection drug use only 3 weeks after he first misused oxycodone for pain:

My friends were like, ‘I don’t have any pain pills but I have heroin.’ I was like, ‘Is it going to kill my pain?’ They said, ‘Oh, yeah.’ And that was the first time—it was China White. I got strung out that night, blew like \$300, and ended up selling everything in my house ... It was the best thing I’ve ever felt. The next day I got a lot of brown [heroin] and a lot of China and that is when I started shooting [injecting].

Ethan cites common themes reported by other participants that were associated with escalating patterns of drug use—needing to treat pain and existing connections to heroin or prescription opioids through friends. In this case, the added factor of recently initiating prescription opioids misuse all coincided with the decision to initiate heroin and injection drug use.

No Reported Self-Medication Among Ever Denied

Less than half of ever denied participants (N = 16) did not report or volunteer information about self-medicating during the interview. It is possible these participants also self-medicated with heroin or prescription opioids after being denied opioids but simply did not report it. However, several in this group described a lack of access to either prescription opioids or heroin immediately following the onset of pain. To this point, Josh, a 20-year-old male, states simply, “I was 15. I really didn’t have the resources [to acquire prescription opioids].” Thus, lack of access to opioids or heroin soon after being denied opioids may be one factor that distinguished these participants from self-medicators. Another primary difference is that twice as many self-medicators reported a current pain problem compared to those who did not report self-medicating. Hence, it possible that the injuries were not as severe or chronic among participants in this group, which made self-medicating with prescription opioids or heroin less critical.

Discussion

This exploratory study of young adults who were current misusers of prescription drugs yielded several notable findings. First, less than one quarter of young adults in the study reported being denied prescription opioids to treat a pain condition. Moreover, young adults who were denied medication tended to be members of other vulnerable populations, including injection drug users, homeless individuals, and/or uninsured persons. These individuals may have benefited from a primary care physician who could evaluate their condition, treat their pain, and closely monitor them if they were prescribed opioids [32].

Second, in nearly all cases, participants who were denied opioids and subsequently self-medicated had histories of prior misuse of opioids or heroin [15]. As a result of prior misuse, these individuals commonly knew others within their social network who could provide opioids or heroin. Consequently, once they experienced untreated pain, many knew what substances to use and where to get them. By contrast, participants who were not as well-connected to a drug-using peer network or who were more actively monitored by authority figures typically did not report self-medicating. On one hand, these findings suggest the importance of vigilant physicians or parents appropriately identifying adolescents or young adults at risk to misuse their own prescription opioids [5]. It is possible that physicians

denied opioids to study participants due to their histories of drug use and out of concern for misusing or diverting opioids [33]. However, the fact that some participants described more serious patterns of misuse following denial of pain management indicates that undertreatment of pain also poses risks [7,11].

Third, self-medicating with prescription opioids or heroin after being denied pain medication was associated with new patterns of drug use and risk behaviors in some cases [12,13]. Participants who used opioids to self-medicate for pain and later transitioned into heroin and injection drug use are notable examples. Overall, participants who reported being denied opioids reported greater risk behaviors and patterns of drug misuse than those participants who were not denied, including taking higher doses of a drug, initiating sniffing or injecting drugs, or initiating heroin use.

As reported, being denied prescription opioids was a critical period in the drug using careers for a subgroup of young adults in this sample. It was also a potential opportunity for health care providers to assess the severity of pain and substance use among these young adults. Hence, these findings highlight the importance of providing appropriate pain management therapies to adolescents and young adults with pain [7]—particularly those who have previously misused opioids and may be in need of drug treatment. The issue of addressing pain symptoms with prescription opioids in drug treatment settings, such as a methadone maintenance treatment program, is complex, and patient outcomes have not been determined in clinical trials. However, some patients enrolled in methadone treatment programs may be at relatively low risk of misuse when an opioid is prescribed for pain since participation in a drug treatment program requires the type of structure and monitoring that would be desirable when an opioid is necessary for the management of pain [16].

Limitations

This study has several limitations. First, the cross-sectional nature of the study design prevents a more complete understanding of the causal relationship between events described in this analysis, such as denial of opioids, untreated pain, self-medication, and subsequent patterns of drug use. It is likely that escalated patterns of drug use among study participants, such as frequent misuse of opioids, heroin use, and injection drug use, were related to other factors in addition to those described in this analysis, e.g., homeless, stigma, mental health problems. Nonetheless, these qualitative findings, which describe complex processes in an understudied area, may be useful for future prospective studies focusing on substance using populations. Second, while the interview guide contained questions on denial of opioids, no questions specifically focused on self-medication. Consequently, all descriptions of self-medication provided by participants were unprompted, which may have resulted in “missing data” for some. However, emergent themes, such as self-medication, commonly become a focus in qualitative research since inductive modes of data analysis frequently center on themes that are not scripted a priori in an interview guide [34,35]. Third, results are based on participants’ descriptions of events that may have occurred one or more years prior to the interview, and therefore, recollections of events may be subject to recall bias. This may be particularly true when participants describe processes such as self-medication, which may include elements of social desirability. While this limitation is potentially applicable to all

studies that rely on retrospective accounts, research indicates that drug users frequently provide reliable and valid retrospective data [36–38].

Conclusion

The results of this exploratory study indicate being denied a prescription opioids occurred frequently among young adults with a history of misuse of opioids or heroin. Significantly, self-medication with opioids commonly preceded patterns of escalated drug use and risk behaviors—including snorting or injecting prescription opioids or heroin. In some cases, the combination of untreated pain and self-medication coincided with escalated patterns of drug use. Future studies that clarify whether opioid misuse among young adults with undertreated pain is primarily a means to alleviate pain, or a sign of broader substance use problem may be of great assistance to patients, pain physicians, and drug treatment specialists.

Acknowledgments

This research was supported by a grant from the National Institute of Drug Use (R01 DA021299).

References

1. Fischer B, Bibby M, Bouchard M. Non-medical use and diversion of psychotropic prescription drugs in North America: A review of sourcing routes and control measures. *Addiction*. 2010; 105:2062–70. [PubMed: 20840172]
2. Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2009 National Survey on Drug Use and Health: Vol. I. Summary of National Findings. Rockville, MD: Office of Applied Studies; 2010. NSDUH Series H-38A, HHS Publication No. SMA 10-4586
3. Colliver, J.; Kroutil, L.; Dai, L.; Gfroerer, J. Misuse of Prescription Drugs: Data from the 2002, 2003 and 2004 National Surveys on Drug Use and Health. Rockville, MD: 2006. DHHS Publication No. SMA 06-4192; 2006: Analytic Series A-28
4. Volkow ND, McLellan TA, Cotto JH, Karithanom M, Weiss SR. Characteristics of opioid prescriptions in 2009. *JAMA*. 2011; 305:1299–301. [PubMed: 21467282]
5. Fortuna RJ, Robbins BW, Caiola E, Joynt M, Halter-man JS. Prescribing of controlled medications to adolescents and young adults in the United States. *Pediatrics*. 2010; 126:1108–16. [PubMed: 21115581]
6. Richardson LP, Fan MY, McCarty CA, et al. Trends in the prescription of opioids for adolescents with non-cancer pain. *Gen Hosp Psychiatry*. 2011; 33:423–8. [PubMed: 21749839]
7. Bell K, Salmon A. Pain, physical dependence, and pseudoaddiction: Redefining addiction for “nice” people? *Int J Drug Policy*. 2009; 20:170–8. [PubMed: 18768306]
8. Breitbart W, Rosenfeld B, Passik S, et al. A comparison of pain report and adequacy of analgesic therapy in ambulatory AIDS patients with and without a history of substance abuse. *Pain*. 1997; 72:235–43. [PubMed: 9272808]
9. Baldacchino A, Gilchrist G, Fleming R, Bannister J. Guilty until proven innocent: Qualitative study of the management of chronic non-cancer pain among patients with a history of substance abuse. *Addict Behav*. 2010; 35:270–2. [PubMed: 19897313]
10. Nicholson B, Passik SD. Management of chronic non-cancer pain in the primary care setting. *South Med J*. 2007; 100:1028–36. [PubMed: 17943050]
11. Weissman DE, Haddox JD. Opioid pseudoaddiction— An iatrogenic syndrome. *Pain*. 1989; 36:363–6. [PubMed: 2710565]
12. Barry D, Goulet J, Kerns R, Becker W, et al. Nonmedical use of prescription opioids and pain in veterans with and without HIV. *Pain*. 2011; 152:1133–8. [PubMed: 21354703]
13. Becker W, Fiellin D, Gallagher R, et al. The association between chronic pain and prescription drug abuse in veterans. *Pain Med*. 2009; 10:531–6. [PubMed: 19425211]

14. Novak S, Herman-Stahl M, Flannery B, Zimmerman M. Physical pain, common psychiatric and substance use disorders, and the non-medical use of prescription analgesics in the United States. *Drug Alcohol Depend.* 2009; 100:63–70. [PubMed: 19010611]
15. Ives T, Chelminski P, Hammett-Stabler C, et al. Predictors of opioid misuse in patients with chronic pain: A prospective cohort study. *BMC Health Serv Res.* 2006; 6:46–55. [PubMed: 16595013]
16. Rosenblum A, Joseph H, Fong C, et al. Prevalence and characteristics of chronic pain among chemically dependent patients in methadone maintenance and residential treatment facilities. *JAMA.* 2003; 289:2370–8. [PubMed: 12746360]
17. Jamison RN, Kauffman J, Katz NP. Characteristics of methadone maintenance patients with chronic pain. *J Pain Symptom Manage.* 2000; 19:53–62. [PubMed: 10687327]
18. Amari E, Rehm J, Goldner E, Fischer B. Nonmedical prescription opioid use and mental health and pain comorbidities: A narrative review. *Can J Psychiatry.* 2011; 56:495–502. [PubMed: 21878161]
19. Agar M. Recasting the “ethno” in “epidemiology. *Med Anthropol.* 1996; 16:391–403. [PubMed: 8628120]
20. Clatts MC, Welle DL, Goldsamt LA, Lankenau SE. An ethno-epidemiological model for the study of trends in illicit drug use: Reflections on the “emergence” of crack injection. *Int J Drug Policy.* 2002; 13:285–96.
21. Pach IA, Gorman EM. An ethno-epidemiological approach for the multi-site study of emerging drug abuse trends: The spread of methamphetamine in the United States of America. *Bull Narc.* 2002; 54:87–102.
22. Hathazi D, Lankenau SE, Sanders B, Jackson-Bloom J. Pregnancy and sexual health among homeless young injection drug users. *J Adolesc.* 2009; 32:339–55. [PubMed: 18692891]
23. Lankenau SE, Clatts MC, Welle D, Goldsamt LA, Gwadz MV. Street careers: Homelessness, drug use, and sex work among young men who have sex with men (YMSM). *Int J Drug Policy.* 2005; 16:10–8.
24. Lankenau SE, Teti M, Silva K, et al. Initiation into prescription opioid misuse amongst young injection drug users. *Int J Drug Policy.* 2012; 23:37–44. [PubMed: 21689917]
25. Sanders B, Lankenau SE, Jackson-Bloom J. Putting in work: Qualitative research on substance use and other risk behaviors among gang youth in Los Angeles. *Subst Use Misuse.* 2010; 45:736–53. [PubMed: 20222782]
26. Hernandez S, Nelson L. Prescription drug abuse: Insight into the epidemic. *Clin Pharmacol Ther.* 2010; 88:307–17. [PubMed: 20686478]
27. Clatts MC, Davis WR, Atillasoy A. Hitting a moving target: The use of ethnographic methods in the evaluation of AIDS outreach programs for homeless youth in NYC. *Qualitative methods in drug abuse and HIV research. NIDA Res Monogr.* 1995; 157:117–35. [PubMed: 8684434]
28. Watters J, Biernacki P. Targeted sampling: Options for the study of hidden populations. *Soc Probl.* 1989; 36:416–30.
29. Biernacki P, Waldorf D. Snowball sampling: Problems and techniques of chain referral sampling. *Sociol Methods Res.* 1981; 10:141–63.
30. Penrod J, Preston DB, Cain RE, Starks MT. A discussion of chain referral as a method for sampling hard-to-reach populations. *J Transcult Nurs.* 2003; 14:100–7. [PubMed: 12772618]
31. Lankenau SE, Sanders B, Bloom JJ, et al. First injection of ketamine among young injection drug users (IDUs) in three U.S. cities. *Drug Alcohol Depend.* 2007; 87:183–93. [PubMed: 16979848]
32. Manchikanti L, Manchukonda R, Damron KS, et al. Does adherence monitoring reduce controlled substance abuse in chronic patients? *Pain Physician.* 2006; 9:57–60. [PubMed: 16700282]
33. Arria AM, Garnier-Dykstra LM, Caldeira KM, Vincent KB, O’Grady KE. Prescription analgesic use among young adults: Adherence to physician instructions and diversion. *Pain Med.* 2011; 12:898–903. [PubMed: 21539698]
34. Agar, M. *Speaking of Ethnography.* Beverly Hills, CA: Sage; 1985.
35. Lofland, L.; Lofland, J.; Snow, D.; Anderson, L. *Analyzing Social Settings.* 4. Belmont, CA: Wadsworth; 2006.

36. Anglin D, Hser Y, Chou C. Reliability and validity of retrospective behavioral self-report by narcotics addicts. *Eval Rev.* 1993; 17:91–108.
37. Hser Y, Anglin D, Chou C. Reliability of retrospective self-report by narcotic addicts. *Psychol Assess.* 1992; 4:207–13.
38. O'Malley PM, Bachman JG, Johnston LD. Reliability and consistency in self-reports of drug use. *Int J Addict.* 1983; 18:805–24. [PubMed: 6605313]

Table 1

Demographic characteristics (N = 150)

	Total Sample (N = 150)	Ever Denied Rx Opioids (N = 34)	Never Denied Rx Opioids (N = 116)	
			No Rx Opioid History (N = 37)	Rx Opioid History (N = 79)
Mean age (years)	21.1	21.9	20.6	21.0
Gender				
Male	71.3% (107)	73.5% (25)	67.6% (25)	72.2% (57)
Female	27.3% (41)	23.5% (8)	29.7% (11)	27.8% (22)
Transgender woman	1.3% (2)	2.9% (1)	2.7% (1)	0
Sexual orientation				
Straight	70.0% (105)	70.6% (24)	64.9 (24)	72.2% (57)
Bisexual	16.0% (24)	14.7% (5)	18.9 (7)	15.2% (12)
Gay/Lesbian	10.7% (16)	11.8% (4)	10.8 (4)	10.1% (8)
Undecided/Other	2.7% (4)	2.9% (1)	5.4 (2)	1.3% (1)
Race/Ethnicity				
Non-Hispanic White	66.0% (99)	67.6% (23)	59.5 (22)	68.4% (54)
Non-Hispanic Black	4.7% (7)	5.9% (2)	2.7% (1)	5.1% (4)
Asian/Pacific Islander	2.0% (3)	0	2.7% (1)	2.5% (2)
Multiracial	21.3% (32)	23.5% (8)	21.6% (8)	20.3% (16)
Hispanic	6.0% (9)	2.9% (1)	13.5% (5)	3.8% (3)
Completed HS or GED	64.0% (96)	61.8% (21)	56.8% (21)	68.4% (54)
Currently employed	29.3% (41)	29.4% (10)	29.7% (11)	25.4% (20)
Current homeless	49.7% (74)	58.9% (20)	32.4% (12)	53.2% (42)
Current IDU	33.3% (50)	38.2% (13)	29.7% (11)	32.9% (26)
History of drug treatment	32.7% (49)	52.9% (18)	27.0% (10)	26.6% (21)
History of mental health care	74.0% (111)	88.2% (30)	56.8% (21)	75.9% (60)
History of arrest	74.7% (112)	85.3% (29)	62.2% (23)	75.9% (60)
History of jail	68.0% (102)	85.3% (29)	54.1% (20)	67.1% (53)
History of prison	8.7% (13)	8.8% (3)	5.4% (2)	10.1% (8)
Recruitment site				
New York	50.0% (75)	55.9% (19)	62.2% (23)	41.8% (33)
Los Angeles	50.0% (75)	44.1% (15)	37.8% (14)	58.2% (46)
Blood borne pathogens				
Reported HCV+	17.5% (17)	20.6% (7)	10.8% (4)	7.6% (6)
Reported HIV+	0.8% (1)	0	2.7% (1)	0

GED = general educational development test; HCV = hepatitis C virus; HIV = human immunodeficiency virus; HS = high school; IDU = injection drug user.

Table 2

Current pain problems and history of opioid use/misuse among total sample (N = 150)

	Total Sample (N = 150)	Ever Denied Rx Opioids (N = 34)	Never Denied Rx Opioids (N = 116)	
			No Rx Opioid History (N = 37)	Rx Opioid History (N = 79)
Current pain problem	39.3% (59)	64.7% (22)	10.8% (4)	41.8% (33)
Prescription opioid history				
Ever prescribed	72.0% (108)	85.3% (29)	0%	100% (79)
Age at first prescription, mean (range)	15.6 (6–24)	15.8 (12–24)	n/a	15.6 (6–24)
Prescription opioid misuse				
Age of initiation, mean (SD)	15.6 (2.9)	14.9 (2.6)	16.0 (3.3)	15.7 (2.9)
Past 30-day use	65.3% (98)	76.5% (26)	51.4% (19)	67.1% (53)
Frequent use (≥once a week)	26.0% (39)	26.5% (9)	18.9% (7)	29.1% (23)
Ever sniffed	66.4% (93)	67.6% (23)	62.2% (23)	59.5% (47)
Ever injected	32.6% (46)	38.2% (13)	21.6% (8)	31.6% (25)
Age of opioid injection initiation mean (SD)	17.8 (2.8)	18.6 (2.9)	18.0 (2.6)	17.3 (2.9)
Other risk behaviors associated with prescription opioid misuse				
Ever used daily use for a week or more	48.6% (68)	58.8% (20)	10.8% (4)	12.7% (10)
Ever experienced withdrawal	39.0% (55)	52.9% (18)	35.1% (13)	44.3% (35)
Ever done anything illegal to obtain	17.3% (26)	35.3% (12)	10.8% (4)	12.7% (10)
Ever sold prescription opioids	51.3% (77)	61.8% (21)	35.1% (13)	54.4% (43)
Ever used an illicit drug to substitute for prescription opioid	25.5% (36)	32.4% (11)	18.9% (7)	22.8% (18)
Heroin use				
Lifetime	52.0% (78)	70.6% (24)	51.4% (19)	44.3% (35)
Age of initiation, mean (SD)	16.7 (3.1)	16.9 (3.7)	17.2 (2.7)	16.7 (2.9)
Past 30-day use	31.3% (47)	32.4% (11)	32.4% (12)	30.4% (24)
Frequent use (≥once a week)	21.3% (32)	29.4% (10)	16.2% (6)	20.3% (16)
Ever injected	40.7% (61)	61.8% (21)	32.4% (12)	35.4% (28)
Age of heroin injection initiation, mean (SD)	17.3 (2.7)	17.3 (2.9)	17.6 (3.5)	17.6 (2.4)