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Pain and Motives for Use among Non-Treatment Seeking Individuals with Prescription Opioid Dependence

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Abstract

Background and Objectives—Patients with prescription opioid use disorders and co-occurring pain present a formidable challenge for healthcare providers, and little is known about patients with this dual diagnosis. This study examined the prevalence of pain and motives for use among individuals with prescription opioid dependence.

Methods—Participants (N=127) included 86 non-treatment seeking individuals with current prescription opioid dependence and 41 healthy controls. They were administered a battery of assessments to evaluate pain and substance use.

Results—Participants with prescription opioid dependence were significantly more likely than controls to report current pain (62.2% vs. 12.2%), as well as higher levels of pain interference and severity. The most common source of prescription opioids was a physician (91.3%) and the most common motive for using prescription opioids, initially and currently, was to relieve pain (70.3% and 81.0%, respectively). Motivation for subsequent non-medical use of prescription opioids included to get high (73.8%), to increase energy (71.0%), to decrease anxiety (51.2%) and to improve sleep (35.7%).

Conclusion—Pain is a significant comorbidity and motivator for the non-medical use of prescription opioids. Provider and patient education regarding the safe use of prescription opioids, as well as interventions targeting prescription opioid dependence, are needed.

Introduction

Pain is the most common medical concern reported to healthcare professionals [1]. Data from national and international community samples indicate that approximately 15–50% of individuals report experiencing chronic pain (i.e., pain that persists for three to six months or more) at some point in their lifetime [2–6]. Opioid analgesics are frequently prescribed for pain, making opioid analgesics the most commonly prescribed medication of any category in the United States[7]. While some level of tolerance and *physiological* dependence is expected from the long-term use of prescription opioids, *psychological* dependence, as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and characterized by a loss of control over use and compulsive behaviors, is a serious public health concern. As prescriptions for opioid analgesics have increased substantially over the

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past decade [8,9], so has the incidence of opioid analgesic abuse, dependence and unintentional fatalities [10–14].

In contrast to other commonly abused substances, prescription opioids are unique in that their consumption is prescribed and endorsed by health care professionals. Because of this, some individuals develop a false sense of safety regarding prescription opioids and erroneously believe that the severity and risk of negative side effects is lower with prescription opioids as compared to other substances. Non-medical prescription opioid use, however, is associated with increased rates of unintentional overdose, significant physical and mental health problems, and staggering societal cost (e.g., emergency room admissions, lost productivity) [15].

Given these concerns, patients with prescription opioid use disorders and co-occurring pain present a formidable challenge for healthcare providers, and little guidance exists in the literature to help clinicians effectively manage patients with this dual diagnosis [16]. To date, the majority of studies on opioid dependence and chronic pain focus on patients with heroin dependence in methadone maintenance treatment settings [17,18,19], or do not directly evaluate pain[20]. Studies on motivations for prescription opioid use have been largely based on high school and college samples [21–23] or do not discriminate between prescription opioid use and prescription sedative-hypnotic use [24]. Additionally, many studies investigating opioid dependence and pain do not differentiate individuals with prescription opioid dependence from those with heroin dependence [25,26]. This differentiation is important because individuals dependent on prescription opioids may differ in clinically relevant ways from individuals dependent on heroin or sedative hypnotics. For example, heroin-dependent individuals are more likely than prescription opioid-dependent individuals to use intravenous drugs and drop out of high school, whereas prescription opioid-dependent individuals are more likely than heroin-dependent individuals to also abuse prescription sedatives and psychostimulants [27,28].

Given the escalation of prescription opioid abuse and dependence, a better understanding of the presence and role of pain in individuals with prescription opioid dependence is needed to help inform screening and treatment interventions. The current study sought to address this gap in the literature by examining the prevalence of pain and motives for use among non-treatment seeking individuals with prescription opioid dependence.

Methods

Participants

Participants (N=127) included 86 non-treatment seeking individuals with current prescription opioid dependence and 41 healthy controls participating in a larger study on stress, the hypothalamic-pituitary-adrenal (HPA) axis, and prescription opioids. Participants (cases and controls) were recruited through media outlets (e.g., newspaper advertisements, Craigslist) and were initially screened over the telephone for study eligibility. Exclusion criteria for all participants included the following: pregnant or nursing, major medical problems or medications that could interfere with the HPA axis, BMI ≥ 39, and younger than 18 years old. Exclusion criteria specific to the prescription opioid group included the use of methadone in the past three months. Exclusion criteria specific to the control group included current or lifetime substance dependence (other than nicotine) and abuse (other than past alcohol abuse).

Procedure

Following a preliminary telephone screen, participants came into the office and completed a baseline visit to determine eligibility. The baseline visit consisted of a structured clinical

interview to assess substance dependence and comorbid psychiatric conditions, self-report measures assessing constructs related to opioid dependence (e.g., pain, sleep), a urine drug screen test, and a history and physical examination. Participants were compensated $50 for completing the assessment battery.

Measures

Pain—The Brief Pain Inventory (BPI) [29] is a 17-item self-report measure used to assess the intensity of pain and the degree to which pain interferes with functioning. Two subscales are generated from the BPI: 1) the *pain severity scale*, which consists of four items that assess the worst and least amount of pain experienced in the past 24 hours, average pain, and current pain; and 2) the *pain interference scale*, which consists of nine items that assess whether and how much pain has interfered with functioning (e.g., mood, sleep, ability to walk). The BPI also includes items assessing the location of the pain, and the amount and duration of relief derived from pain treatments. The West Haven-Yale Multidimensional Pain Inventory, Part I (WHYMPI)[30] consists of 20 items and was used to measure pain severity (e.g., "Rate the level of your pain at the present moment"), life interference due to pain (e.g., "How much has your pain changed your ability to participate in recreational and other activities"), affective distress (e.g., "During the past week, how irritable have you been"), social support (e.g., "How attentive is your spouse/significant other to your pain problem") and perceived life control ("During the past week, how much control do you feel that you have had over your life").

Substance Use—Substance use disorders were assessed with the Structured Clinical Interview for DSM-IV (SCID)[31]. The Timeline Follow-Back (TLFB)[32] was used to assess substance use (i.e., prescription opioids, heroin, alcohol, marijuana, and cocaine) in the one month prior to the baseline visit. For each substance assessed, two composite scores were generated: 1) percent days used during the past month, and 2) average amount of substance used per day. The Addiction Severity Index, Lite (ASI-Lite)[33] assessed areas of functioning impacted by substance use disorders: 1) medical status, 2) employment status, 3) alcohol use, 4) drug use, 5) legal status, 6) family/social status, and 7) psychiatric status. The Non-Medical Use Questionnaire (NMU)[34], a 6-item instrument, was used to assess the severity of prescription opioid use, motives for use, sources and routes of administration.

Statistical Analyses

Descriptive statistics and measures of central tendency (e.g., means, standard deviations, frequencies) were used to summarize the demographic characteristics, pain variables, opioids of choice, motives to use, and sources of prescription opioids. Independent samples t-tests and Pearson's chi-square tests were used to test differences between the prescription opioid-dependent group and the control group. Given the preliminary nature of this study, α=0.05 for all analyses.

Results

Demographics

Participants were primarily Caucasian (81.6%) with an average age of 33.9 years (*SD*=12.1). As can be seen in Table 1, individuals with prescription opioid dependence had significantly less education (χ^2= 24.7, p<.001), were less likely to be employed (χ^2= 29.7, p<.001), and evidenced higher BMI scores [t (114.5)= −3.23, p=.002)], as compared to controls.

Pain

As shown in Table 2, the prescription opioid group was significantly more likely than the control group to report a history of chronic pain treatment (χ^2= 24.7, p<.001) and to report experiencing pain on the day of the assessment (χ^2= 26.6, p<.001). In addition, the prescription opioid-dependent group reported significantly higher levels of pain severity and pain interference on the BPI [severity: t(100.6)=−9.01, p<.001; interference: t(82.6)=−8.28, p<.001)] and the WHYMPI [(severity: t(68.3)=−10.61, p<.001; interference: t(73.5)=−9.23, p<.001)], as compared to the control group. The prescription opioid dependent group also reported significantly more affective distress [(t(73)=−3.95, p< 001)] and less perceived life-control [(t(73)=3.47, p=.001)] on the WHYMPI.

Substance Use

Opioid of choice—Oxycontin® and Percocet® were the most commonly reported opioids of choice (26.7% and 25.6%, respectively). Other commonly cited opioids of choice included Lortab® (11.6%), oxycodone (8.1%), Vicodin® (7.0%), Dilaudid® (5.8%), and hydrocodone (4.7%).

Age of onset—Among individuals with prescription opioid dependence, the mean age of first use was 23.9 years (*SD*=10.4 years) and the mean age of the onset of dependence was approximately 4 years later (*M*=28.1 years, *SD*=10.8).

Addiction severity—Individuals with, as compared to without, prescription opioid dependence scored significantly higher on all seven ASI subscales: medical status [t (117.3)=−4.18, p<.001)], employment status [t (113.2)=−4.74, p<.001)], alcohol use [t (119.7)=−2.00, p=.05)], drug use [t (83.1)=−15.79, p<.001)], legal status [t (83.0)=−5.54, p<.001)], family/social status [t (109,5)=−4.87, p<.001)], and psychiatric status [t (101.0)= −7.13, p<.001)]. During the 30 days prior to study entry, individuals with prescription opioid dependence reportedly used opioids on 18.7 days (62.3%; *SD*=10.7) and consumed approximately 3.3 pills (*SD*=4.3) per day.

Motives for use—Participants reported using prescription opioids for the following reasons (endorsing all that apply): to relieve pain (81.0%), to get a high (73.8%), to gain energy (71.0%), addiction (56.0%), to decrease anxiety (51.2%), to improve sleep (35.7%), because prescription opioids are safer than street drugs (28.6%), experimentation/curiosity (21.4%), and to counteract the effects of other drugs (7.1%). When asked about motives for using prescription opioids for the *first* time, the large majority (70.3%) reported using in order to relieve pain (e.g., headache, tooth extraction, surgery, broken bone). Eleven participants (29.7%) reported using prescription opioids for the first time in order to get “high” or for experimentation purposes.

Sources—Participants reported the sources from which prescription opioids had ever been obtained (endorsing all that apply): doctor (91.3%), friend (81.0%), acquaintance (39.3%), boyfriend/girlfriend (23.8%), parent (18.1%), sexual partner (15.5%), sibling (13.3%), roommate (13.1%), husband/wife (4.8%), drug dealer (2.4%), other family member (2.4%), internet (2.4%), and other (2.4%).

Co-occurring Psychiatric Disorders

Rates of current (i.e., past 6 months) comorbid substance use disorders among individuals with prescription opioid dependence included the following: alcohol (14.1% dependence; 10.6% abuse), sedatives (14.1% dependence; 9.4% abuse), marijuana (1.2% dependence; 10.6% abuse), and cocaine (5.9% dependence; 1.2% abuse). Consistent with the exclusion

criteria for the study, no participants in the control group evidenced current substance abuse or dependence.

Among individuals with prescription opioid dependence, rates of current comorbid psychiatric disorders, included the following: panic disorder (20.0%), agoraphobia (17.6%), generalized anxiety disorder (14.1%), major depressive disorder (12.9%), attention deficit hyperactivity disorder (9.4%), social phobia (9.4%), PTSD (9.4%), obsessive-compulsive disorder (7.1%), antisocial personality disorder (8.2%), bipolar I (2.4%), and specific phobia (1.2%). Among individuals in the control group, 7.3% of met criteria for generalized anxiety disorder.

Discussion

The findings from this study demonstrate that pain is a common and significant problem among individuals with prescription opioid dependence. The majority (62%) of participants reported experiencing pain on the day of assessment, and almost one-third reported a history of chronic pain treatment. This is the first study to our knowledge that describes pain prevalence, location, severity and functional interference in a sample of non-treatment seeking prescription opioid-dependent individuals. Previous research demonstrates that chronic pain is associated with increased risk of relapse among individuals with heroin dependence[17] and possibly among those with prescription opioid dependence[35]. Thus, it is important that health care providers assess and address co-morbid pain conditions in patients seeking treatment for prescription opioid dependence.

Consistent with the general population, the most commonly reported area of pain involved the back (96.2%). The severity of pain was clinically significant, resulting in functional impairment in a variety of areas, including general activity, mood, vocational and interpersonal functioning, sleep, concentration and appetite. Because of opioid's analgesic properties, the motives for use are often complex, as patients may use opioids for euphoric, positive reinforcing effects (e.g., to get high), or negative reinforcing effects (e.g., to relieve physical pain or negative affect) [36]. Rigg and colleagues in 2010 found that among a diverse sample of prescription drug abusers (including opioid and sedative-hypnotic abusers), the top three motives for prescription drug abuse were to "get high" (positive reinforcement), "to sleep" (negative reinforcement) and "for anxiety/stress" (negative reinforcement) [23]. In the current sample, pain was the most commonly cited motivation for using prescription opioids the first time (70%) as well as currently (81%). Other common motives were to "get high" (74%), "gain energy" (71%), "addiction" (56%), "decrease anxiety" (51%), and "improve sleep" (36%). In contrast to previous studies of mixed samples of prescription drug users, finding from the current study indicate that pain is a unique motivator for use in the prescription opioid-dependent population.

Research among heroin dependent and methadone-maintained patients demonstrate a strong association with sleep impairment [37–42]. The results of this study highlight that "improving sleep" was an important motivator for prescription opioid use among the current sample. It is also known that pain and sleep are closely-linked, interrelated conditions and that chronic opioid use can alter sleep processes [43]. Further studies evaluating sleep among prescription opioid-dependent individuals and the impact of sleep on pain, recovery and relapse are warranted.

The large majority of prescription opioid-dependent individuals in this study reported being introduced to opioid analgesics by a physician (91.3%) for pain management. These finding highlight the need for continued physician education and training, particularly among physicians who regularly prescribe opioid analgesics (e.g., dentists, pain management

specialists, primary care providers). Development and dissemination of standardized patient information detailing the potential risks of misusing opioids and how to properly store and dispose of medications is critical. This is especially true for opioid analgesics with the highest abuse liability - oxycodone and hydrocodone products - which represent eight of the top ten preferred opioid compounds among patients in the current study. Fortunately, the Food and Drug Administration is developing a new Risk Evaluation and Mitigation Strategy (REMS), which will become effective in 2012. The REMS will include physician training, patient counseling and other risk reduction measures [44].

Several limitations of the study warrant consideration. The findings are based on self-report measures, which may introduce bias. Additionally, the sample consisted of non-treatment seeking individuals and may not generalize to other populations. Although the recruitment of the cases and controls was identical, the control group was different from the prescription opioid dependent group in level of education, employment, prevalence of other psychiatric disorders and body mass index. Because the groups were not significantly different in age, ethnicity and gender, the control group information was included to provide a descriptive comparison for the prescription opioid dependent group. Although we did collect information about lifetime prevalence of other substance use disorders in the prescription opioid-dependent population, we did not collect information on age of onset of other substance use disorders. This information would be helpful in differentiating whether the prescription opioid-dependent individuals had a primary substance use disorder and then developed prescription-opioid dependence, or whether they developed substance use problems after they were introduced to prescription-opioids. Information on the order of onset of substance abuse problems might provide a strong rationale for the current practice of screening for current substance use patterns when prescribing prescription opioids.

Despite these limitations, the current study addresses a growing public health problem and increases awareness regarding the link between prescription opioid dependence and pain. The findings are clinically relevant and suggest important areas for screening, prevention and treatment intervention. Opioids remain one of the most commonly used treatments for patients suffering from chronic pain. With improvements in prescriber and patient education, development of opioid and non-opioid medications with less abuse liability, improvements in non-pharmacologic interventions for pain, and management of co-morbid conditions, pain can be effectively treated without jeopardizing good clinical care [45].

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Table 1

Demographic Characteristics and Addiction Severity (N=127)

	Prescription Opioid Group		Control Group	
	n	Mean (SD) or %	n	Mean (SD) or %
Age	86	35.4 (12.0)	41	32.4 (12.1)
Gender, % Male	86	48.8%	41	46.3%
Race, % Caucasian	86	82.6%	41	80.5%
Education, % Some College **	86	53.5%	41	97.6%
Relationship Status, % Single	86	61.6%	41	51.2%
Employment Status, % Employed **	86	32.6%	41	80.5%
Body Mass Index *	86	26.4 (5.3)	41	23.9 (3.4)
Addiction Severity Index				
Medical **	84	0.23 (0.34)	40	0.05 (0.13)
Employment **	84	0.44 (0.43)	40	0.20 (0.14)
Alcohol *	84	0.11 (0.12)	40	0.07 (0.07)
Drugs **	84	0.22 (0.13)	40	0.00 (0.00)
Legal **	84	0.12 (0.19)	40	0.00 (0.00)
Family/Social **	84	0.22 (0.18)	40	0.12 (0.05)
Psychiatric **	84	0.17 (0.02)	40	0.18 (0.04)

* p<.05,

** p<.001.

Note. Two participants in the prescription opioid group and one participant in the control group were missing ASI data.

Table 2

Pain and the Interference of Pain

	Prescription Opioid Group		Control Group	
	n	**Mean (STD) or %**	**n**	**Mean (STD) or %**
Current Pain **	82	62.2%	41	12.2%
Chronic Pain Treatment[a], **	86	30.2%	41	0.0%
Primary Pain Location				
Head	79	15.2%	40	5.0%
Cervical *	79	20.3 %	40	2.5%
Thoracic **	79	48.1%	40	7.5%
Lumbar	79	27.8%	40	12.5%
Lower Extremity *	79	31.6%	40	5.0%
Brief Pain Inventory				
Pain Severity **	82	3.3 (2.7)	41	0.4 (0.7)
Pain Interference **	81	2.7 (2.8)	41	0.1 (0.3)
West Haven Yale Multidimensional Pain Inventory				
Severity **	65	3.0 (1.7)	13	0.4 (0.5)
Interference **	65	2.4 (1.6)	12	0.4 (0.3)
Support	60	2.6 (2.1)	10	3.0 (1.5)
Life-Control *	64	3.3 (1.6)	11	5.1 (1.2)
Affective Distress **	64	3.0 (1.4)	11	1.2 (1.0)

[a]History of chronic pain treatment.

*p< .05,

**p<.001

N ranges from 10 to 86 because of missing data.