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## Prescription Opioid Aberrant Behaviors: A Pilot Study of Gender Differences

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### Abstract

**Objectives**—Patients prescribed opioids often display one or more aberrant prescription use behaviors (e.g., requesting early refills, borrowing medication from family), which raise concern among health care professionals. Little is known about gender differences in specific types of aberrant behaviors or gender-specific predictors of such behaviors. The current study aimed to begin addressing this gap in the literature

**Methods**—A battery of anonymous, self-report assessments was administered to 121 (49 men, 72 women) chronic pain patients enrolled in an outpatient pain management clinic. The majority of participants were Caucasian women with an average age of 51.6 years (SD = 13.2).

**Results**—Significantly more men than women were taking a prescribed opioid (91.7% vs. 77.8%,  $p = .05$ ). Women were significantly more likely than men to hoard unused medication (67.6% vs. 47.7%,  $p = .04$ ) and to use additional medications to enhance the effectiveness of pain medication (38.8% vs. 20.0%,  $p = .04$ ). A trend towards men using alternative routes of administration (e.g., crushing and snorting pills) more often than women was observed (8.9% vs. 1.5%,  $p = .08$ ). Among men, high rates of aberrant prescription use behaviors were associated with current alcohol use and the use of oxycodone and morphine. Among women, use of hydrocodone was associated with high rates of aberrant prescription use behaviors.

**Discussion**—Some aberrant prescription use behaviors are common among chronic pain patients and may be gender-specific. Predictors of aberrant prescription use behaviors may also differ by gender. Additional research is needed to help identify aberrant prescription use behaviors that best predict gender-specific risk for developing opioid abuse or dependence.

### Keywords

aberrant behaviors; non-medical use; prescription opioids; opiates; gender

### Introduction

Prescription opioid non-medical use, abuse and dependence are on the rise (1). Data from the 2002–2004 National Survey on Drug Use and Health (NSDUH;  $N = 91,823$ ) estimates that approximately 10 million individuals have used prescription opioids non-medically in the past

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year (2). Recent data also show that among individuals who initiate illicit drug use for the first time, more people initiate the use of prescription opioids than any other drug (3). Emergency department (ED) visits related to prescription drug use, an indication of misuse, have increased substantially over the past few years. In 2005, almost 600,000 people were treated in EDs across the country for non-medical use of prescription drugs, with 23% more women than men being admitted to the hospital for this reason (3). From 2004 to 2005, ED visits related to narcotic analgesics rose 21% with the most commonly reported narcotics being hydrocodone, oxycodone, and methadone (3).

In a similar vein, rates of DSM-IV (4) prescription opioid abuse and dependence have increased (see Table 1 for diagnostic criteria). Data from two large national surveys, the 1991–1992 National Longitudinal Alcohol Epidemiological Survey ( $N = 42,862$ ; 5) and the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC,  $N = 43,093$ ; 6) found that rates of prescription opioid abuse or dependence tripled over the ten year span (7). As can be seen in Table 1, the diagnosis of substance dependence includes physiological tolerance and withdrawal, both of which are expected in patients taking long-term opioid therapy. While it is beyond the scope of this paper, it deserves mentioning that questions have been raised regarding the most appropriate way to apply the DSM-IV criteria to opioid use disorders and whether, for example, the criteria of physiological dependence and tolerance should be weighed less than other criteria in making a determination of opioid dependence (8–9).

### Gender and Prescription Opioids

For most substances of abuse (e.g., nicotine, alcohol, illicit drugs), men consistently demonstrate higher rates of use, abuse and dependence as compared to women (10–13). In contrast, the data regarding prescription opioids is equivocal. Some epidemiologic studies indicate that women and men, as well as teenage boys and girls, are equally likely to use prescription opioids non-medically (3,7,14–15). Examining data from the 2003 NSDUH ( $N=55,023$ ), Tetrault and colleagues (13) reported that while men were significantly more likely than women to report past year non-medical use of prescription opioids (5.2% vs. 4.5%), no significant differences in rates of past year non-medical use of other potentially abuseable prescription medications (e.g., sedatives, stimulants, tranquilizers) were revealed.

Among treatment-seeking samples, the findings regarding prescription opioid abuse are also mixed. A study of 157 addiction treatment programs ( $N = 27,816$ ) found that the majority of patients (69%) who abused OxyContin® (Purdue Pharma, Stamford, CT), an extended release form of oxycodone, were men (16). In contrast, Rosenblum et al. (17) investigated past month prescription opioid abuse among patients ( $N = 5,663$ ) at 72 methadone maintenance treatment programs and found that women were more likely than men to report past month abuse (70.2% vs. 65.3%). Data from the Researched Abuse, Diversion, and Addiction-Related Surveillance (RADAR) system, which compiles data from methadone maintenance treatment clinics, law enforcement, poison control centers, and other “key informants” across the country, indicates that about 65% of OxyContin® abusers are men (18). While the reasons for these discrepancies in the literature are unclear, they may be due, in part, to the various populations (e.g., methadone maintenance clinic patients, college students), type of prescription opioids studied, and the taxonomy of terms (e.g., misuse, non-medical use, abuse) employed to evaluate the problem (8–9,14,19).

### Chronic Pain

Prescription opioids and chronic pain are intimately linked, as opioid medications are one of the most common means of treating pain (20). Both national and international data indicate high rates of chronic pain (i.e., pain that persists for three to six months or more), ranging from

15% to 50% in community samples (21–24). In the 2000 Danish National Health and Morbidity Survey ( $N = 10,066$ ), women had a 1.2 – 1.6 higher odds of reporting chronic pain than did men (23). In comparison to men, women typically report more frequent and more intense pain, pain in a greater number of locations throughout the body, longer lasting pain, and more interference with daily activities as a result of pain (21,26–29). Women also have higher rates of chronic pain conditions as compared to men including, for example, musculoskeletal pain, osteoarthritis, rheumatoid arthritis, irritable bowel syndrome, and fibromyalgia (29–37). These higher rates of pain and pain syndromes among women warrant careful attention among health care providers, and do not necessarily represent a “red flag” for nonmedical use.

### Aberrant Behaviors

Behaviors related to using a prescribed medication in a way other than it was intended (e.g., unapproved dose escalations, concurrent use of alcohol, requesting early refills) are cause for concern. Patients using opioids often display one or more aberrant prescription drug use behaviors (38–41). While one study of aberrant prescription drug use-related behaviors among chronic pain patients failed to find significant gender differences in overall rates (39), a more recent study of gender differences in specific aberrant behaviors of 185 chronic pain outpatients (41) found several gender disparities. Specifically, males were more likely than females to display at least one aberrant prescription drug use-related behavior (51% vs 34%) and rates of overdose and death were significantly higher in males than in females. Rates of alcohol abuse were higher in males than in females at the trend level ( $p = .07$ ). Furthermore, risk factors for engaging in aberrant prescription drug use behaviors were gender-specific. Among men, aberrant prescription drug use-related behaviors were more likely to be associated with a family and personal history of alcohol abuse. In contrast, among women, depression, a history of childhood sexual abuse, and a family history of prescription drug abuse were more likely to be associated with aberrant behaviors (41). No other study to our knowledge has examined gender differences in specific types of aberrant prescription drug use-related behaviors or gender-specific predictors of such behaviors.

The current study aimed to expand upon previous research by investigating gender differences in prescription opioid-related aberrant behaviors among chronic pain patients. Specifically, gender differences in a) rates of prescription opioid-related aberrant behaviors, and b) correlates of aberrant prescription drug use-related behaviors among chronic pain patients were examined.

## Materials and Methods

### Participants

Participants were 121 individuals (49 men, 72 women) receiving outpatient treatment at a university hospital pain management clinic. Patients were approached by research staff in the waiting room or examination rooms before any procedures for pain treatment were conducted. Participants were informed about the purpose of the study and interested individuals were asked to complete an anonymous battery of self-report assessments during the office visit. Study staff instructed participants not to write their names, initials, date of birth or any other identifying information on the materials. Participants or staff placed completed packets in a locked data collection box in the pain clinic. Participants' were compensated for their time with a \$10 gift certificate to a local household goods store.

### Setting

The study was conducted at an academic hospital pain management clinic. The clinic employs a multidisciplinary approach to the treatment of chronic pain and is staffed by a team of a) physicians who are board certified in anesthesiology with subspecialty certification in Pain

Management, b) a pain psychologist and c) registered nurses. In addition, clinic staff work closely with specialists in physical and occupational therapy, psychiatry, neurosurgery, orthopedics and physical medicine. Opioid medication agreements are routinely employed. Approximately 4,700 patients are seen annually at the pain management clinic (2007 patient enrollment = 4,697). Examination of demographic characteristics of a sample of patients recently treated at the study site ( $N = 4,848$ ) confirmed that the current sample is representative of patients who are typically seen at the clinic.

## Assessments

**Patient characteristics**—Demographic characteristics and pain history (e.g., number of years in pain, location of pain, current pain medication regimen) were assessed with a form created for this study.

**Aberrant behaviors**—A modified version of the Pain Medication Questionnaire (PMQ; 42), a 26-item survey that screens for opioid medication misuse, was utilized. It was modified to include the following behaviors that have been shown in the literature to be related to risk of developing abuse or dependence: selling prescription medication, forging prescriptions, using alternative routes of administration, and obtaining prescription pain medication from the internet or other illicit sources (41,43–44).

**Other substance use**—Participants completed the Schedule of Alcohol and Drug Use (SADU; 45), which assesses past month use of alcohol, nicotine, marijuana, cocaine, heroin, non-prescribed “downers” and hallucinogens. For each substance, participants indicated their level of use in the past month on a 5-point Likert-scale (0 = never to 4 = daily).

## Statistical Analyses

Analysis of variance (ANOVA) tests were used to examine gender differences in continuous variables. Categorical variables were assessed using the Pearson chi-square statistic. For these tests, Cramér’s  $V$ , which ranges from 0 to 1, was reported as a measure of the strength of association between categorical variables. Where cell sizes were  $\leq 5$ , Fisher’s Exact Test was reported. In order to reduce the data, the behaviors derived from the PMQ (see Table 4) were averaged into a single, continuous indicator of aberrant behaviors, termed the PMQ Total. These behaviors were selected because they are potential indicators of increased risk of opioid abuse or dependence (41,43–44). Pearson product-moment, Spearman rho, and partial correlation analyses were used to assess the degree of association between the PMQ Total score and theoretically relevant variables reflecting demographic characteristics, pain characteristics, and other substance use. Analyses assessing aberrant prescription drug use-related behaviors included only those participants ( $N = 115$ ) who endorsed current or lifetime use of prescription opioids. Given the small sample size and preliminary nature of the study, alpha was set at .05 for all analyses.

## Results

### Demographic Information

Table 2 presents demographic information by gender. As noted, significant gender differences in employment and relationship status were revealed. Follow-up tests indicated a trend for more women than men to be unemployed [ $\chi^2(1) = 3.29, p = .07$ , Cramér’s  $V = .22$ ]. Significantly more men than women were married (Fisher’s Exact Test,  $p = .003$ , Cramér’s  $V = .35$ ).

### Pain Characteristics

Table 3 presents self-reported pain characteristics by gender. On average, participants reported experiencing chronic pain for 10 years. The most common pain problems involved lower extremity, cervical spine, or arthritic conditions. No significant gender differences in pain characteristics were observed.

### Prescription Opioid Medication Regimens

As can be seen in Table 3, the majority (83.3%) of chronic pain patients were currently taking a prescribed opioid. Significantly more men than women reporting currently taking a prescribed opioid (Fisher's Exact Test,  $p = 0.05$ , Cramér's  $V = 0.18$ ). Comparison of individuals who were vs. were not currently taking a prescription opioid revealed no other significant differences in demographic (i.e., age, race, marital status, education, employment) or pain characteristics (i.e., length of pain, severity of pain).

The most commonly reported opioids were hydrocodone products [31.4%; e.g., Vicodin® (Abbott Laboratories, Abbott Park, Illinois), Lortab® (Mallinckrodt, Hazelwood, MO)], oxycodone products [30.8%; e.g., OxyContin® (Purdue Pharma, Stamford, CT), Percocet® (Endo Laboratories, Chadds Ford, PA)], and methadone (20.0%). There was a trend for more men than women to report taking oxycodone products [ $\chi^2(1) = 2.87$ ,  $p = 0.09$ , Cramér's  $V = 0.16$ ], and for more women than men to report taking fentanyl products, such as Duragesic® (Ortho-McNeil, Raritan, NJ; Fisher's Exact Test,  $p = 0.08$ , Cramér's  $V = 0.17$ ).

### Aberrant Behaviors

Table 4 presents rates of PMQ behaviors by gender. A significant amount (43.8%) of participants reported taking prescription pain medications when feeling anxious, sad or needing to sleep. Over half (52.6%) reported taking prescription pain medications more often than prescribed and hoarding unused medications (59.8%). Other behaviors commonly endorsed included taking additional medications (such as sedatives) to enhance the effectiveness of pain medications (31.3%) and running out of prescription pain medications early and needing early refills (31.3%). Over one-third of the sample (37.5%) felt they may be dependent on their prescription pain medication.

Less frequent behaviors endorsed included using alcohol to help control pain (7.9%), obtaining pain medications from more than one doctor in order to have enough (8.0%), borrowing pain medication from family or friends (5.3%), selling prescription medication (1.8%), and forging a prescription in order to get pain medications (1.8%). Three percent of patients reported purchasing pain medications from the internet or other non-medical sources, and 4.4% reported using their medication in alternative routes of administration, such as crushing and snorting the medication.

**Gender**—Examination of gender differences revealed that significantly more women than men endorsed hoarding unused prescription opioids [ $\chi^2(1) = 4.41$ ,  $p = 0.04$ , Cramér's  $V = 0.20$ ] and using additional medications (e.g., sedatives) to enhance the effectiveness of pain medication [ $\chi^2(1) = 4.43$ ,  $p = 0.04$ , Cramér's  $V = 0.20$ ]. A trend was revealed for more men than women to endorse administering prescription opioids via an alternative route (e.g., crushing and snorting) (Fisher's Exact Test,  $p = .08$ , Cramér's  $V = .18$ ). In fact, 9% of men surveyed endorsed having used an alternative route of prescription opioid administration.

### Other Substance Use

Rates of other substance use in the past month did not differ significantly by gender. The most commonly reported substances used were alcohol (30.0%) and cigarettes (31.7%). Less than

3% of participants endorsed having used marijuana or non-prescribed sedative medications (e.g., diazepam). No participants endorsed use of cocaine, amphetamines, heroin or hallucinogens.

### Gender-Specific Correlates of Aberrant Behaviors

Correlational analyses (see Table 5) were conducted to examine the gender-specific relationships between prescription opioid aberrant behaviors (i.e., the PMQ Total) and the following theoretically relevant variables: demographic characteristics, pain characteristics (e.g., years of chronic pain, effectiveness of pain treatment), type of prescription opioid, and other substance use (i.e., current alcohol or cigarette use).

**Demographics**—Among women, an inverse relationship between education level and the PMQ Total score was observed ( $r = -.31, p = .01$ ). No demographic characteristics were associated with the PMQ Total score among men.

**Pain characteristics**—Among both men and women, neither the length of chronic pain nor the effectiveness of pain treatment was significantly related to the PMQ Total score.

**Type of prescription opioid**—Among men, oxycodone products and morphine were significantly correlated with the PMQ Total score. Among women, only hydrocodone products were significantly associated with the PMQ Total score. No other significant associations between type of prescription opioids and aberrant behaviors were revealed.

**Other substance use**—Past month use of alcohol, as measured by the SADU, was significantly related to the PMQ Total score among men, but not women. Thus, men who demonstrated higher rates of recent alcohol use and abuse were more likely to engage in prescription opioid aberrant behaviors. Past month cigarette use, also measured by the SADU, was unrelated to the PMQ Total score among men or women.

## Discussion

In this study, gender differences in chronic pain patients' prescription opioid use, aberrant prescription drug use-related behaviors, and correlates of aberrant behaviors were preliminarily examined. Aberrant prescription drug use-related behaviors among pain patients are understudied, yet clinically very important because such behaviors may indicate an increased risk for abuse or dependence. One recent study examining the NSDUH data found that nearly 13% of individuals engaged in non-medical use of prescription opioids met criteria for an opioid use disorder (2), but more research is needed to help clarify the nature of this link. Furthermore, the identification of aberrant prescription drug use-related behaviors has important implications for both patients and prescribers. For example, patients' pain may be undertreated if physicians or health care providers are overly cautious in prescribing opioids (14). Alternatively, physicians may alter their practices as increased knowledge is gained about the prevalence of gender-specific risk factors of prescription opioid-related aberrant behaviors among chronic pain patients.

The majority of patients (83.3%) in the study were currently taking a prescribed opioid. This is consistent with previous findings (90%) in a similar study (38). Men were significantly more likely to be prescribed opioid medication as compared to women. This finding is in contrast to other studies reporting that women are more likely to be prescribed an opioid medication (46–49). One possible explanation for this difference is the setting. The aforementioned studies examined participants on college campuses, in methadone clinics, and in large community



samples, while the current study examined patients enrolled in an academic medical outpatient pain clinic.

Additionally, our study found that men were more likely to be taking morphine and oxycodone products, while women were more likely than men to be taking hydrocodone products. Similarly, data from the 2003 NDSUH also reported significantly higher rates of past year use of oxycodone and morphine among men as compared to women (13). The reason for the observed gender difference in prescribing practices is unclear, but several possibilities include perceived efficacy of the opioids, type of pain, or other comorbid psychiatric or medical conditions. Research in this area is needed to help determine whether there are significant gender differences in abuse liability among various prescription opioids. A recent study by Walsh and colleagues (50) investigated relative abuse liability of oral oxycodone, hydrocodone and hydromorphone. No significant differences in a variety of parameters were revealed (e.g., subjective ratings of liking and “high”, physiological effects such as oxygen saturation and miosis), however the sample was mostly male and, therefore, it was not feasible to examine gender differences. Extending the work by Walsh et al., for example, to explore gender differences in abuse liability may provide important information to guide physician decisions about the most appropriate medications for a particular patient, especially those with histories of substance use disorders.

Overall levels of aberrant behaviors were examined using the PMQ and, consistent with previous findings, a number of patients reported incorrectly using their opioid medications or engaging in other behaviors which present cause for concern (38,40–41). Gender comparisons of specific aberrant prescription drug use-related behaviors revealed several significant differences. Specifically, women were more likely to hoard unused medications and to use additional medication to assist with analgesic effects, while men were more likely to use medication via an alternative route (e.g., crushing and snorting). The high rate of hoarding medication (67.6%) among women is concerning because these unused medications may be unsupervised (e.g., kept in a medicine cabinet or purse) and accessible by other family members, including children and adolescents. The practice among some women of taking additional medications to enhance the effectiveness of pain medications is also disconcerting, given the potential for drug interactions and accidental overdose.

Previous studies demonstrate that prescription opioid-related aberrant behaviors correlate with abuse and dependence of other substances. Individuals who abuse prescription opioids typically have high rates of other substance use and substance use disorders (13,16,40,47,51–53). In the current study, past month alcohol use was significantly correlated with the degree of aberrant behaviors endorsed for men only. The low rates of other substance use endorsed among patients in this study, most likely a function of the setting, education and age level of the patients, may have influenced the findings. Despite the low rates of illicit substance use, 40% of patients believed they may be dependent on their medication.

Further examination of correlates of prescription opioid-related aberrant behaviors revealed significant gender differences by type of medication prescribed. For men, the use of oxycodone products or morphine was associated with an increased number of aberrant prescription use behaviors. Among women, however, the use of hydrocodone products was associated with an increased number of aberrant prescription use behaviors. As previous research has clearly documented that oxycodone and hydrocodone products are, in comparison to other opioids (e.g., fentanyl, morphine), associated with the highest number of ED visits (14), patients prescribed these medications should be carefully screened and monitored. Consistent with previous research (40), pain characteristics, such as years of chronic pain or effectiveness of treatment, were not significantly related to aberrant prescription drug use-related behaviors.

A critical question for the field is whether or not aberrant drug use-related behaviors predict subsequent development of an opioid use disorder or other deleterious effects. As has been shown in previous studies and in the current investigation, aberrant drug use-related behaviors are common among chronic pain patients (40). This raises questions about their predictive validity as indicators of dependence. Furthermore, it is not clear which behaviors are the most important to monitor and address among patients, and if those are gender-sensitive. Compton et al. (43) examined responses regarding “problematic” medication use among chronic pain patients and found that some behaviors endorsed were more indicative of addiction (i.e., using multiple providers, obtaining medication from family, frequent loss of prescriptions or medications, forging prescriptions, or obtaining prescriptions from illegal sources). Likewise, Kahan et al. (44) suggested that alternative routes of administration and illicitly obtaining opioids are more predictive of opioid dependence than other behaviors. A small study examining psychiatric comorbidity in a Veteran’s Administration sample of patients with chronic non-cancer pain found that younger age and a history of substance use disorders was associated with prescription opioid abuse (39). None of these studies, however, reported on gender differences in predictors of misuse; this is clearly an area with screening and detection implications.

More recently Turk et al. (40) reviewed data published from 1966 – 2007 to identify predictors of chronic pain patients at risk of misusing prescription opioid medications. Based on their systematic review of the literature, Turk et al. concluded that no single predictor or even set of factors reliably predicts future misuse or abuse (40). Across all studies, however, the strongest predictor of misuse was a personal history of alcohol or illicit drug use. Moderate predictors of misuse included younger age, history of legal problems, and a positive urine toxicology screen. Pain severity was consistently unrelated to risk of prescription opioid misuse.

### Limitations

Several limitations should be considered. The sample size was small and data collection relied on self-report measures. The sample was well-educated with a mean age of 52 years, and therefore results may not generalize to less educated or younger populations. Because the study was anonymous, we were unable to examine physician practices with individual patients to determine, for example, if physicians were less likely to prescribe opioids with higher abuse liabilities to patients deemed at higher risk for abuse. The study was not accompanied by a clinical interview to assess opioid use disorders or comorbid psychiatric diagnoses. Urine toxicology screens were not conducted. Future research would benefit from including these assessments. Finally, it is unclear whether some of the behaviors endorsed by patients represent pseudoaddiction (i.e., behaviors that are phenotypically similar to those engaged in by individuals with substance use disorders but that are due to insufficient pain treatment and will resolve once the pain is relieved). Future research will benefit from inclusion of physician ratings and urine toxicology screens.

With regard to future research, examining the influence of gender on physicians’ prescribing practices could provide more useful information and help shed light on the current findings. Furthermore, identification of specific prescription opiates that predispose patients to a higher likelihood of aberrant prescription drug use-related behaviors, opioid abuse or dependence would be helpful. Important questions about the relationship between aberrant behaviors and the subsequent development of opioid use disorders remain. If a patient demonstrates aberrant behaviors, how likely is opioid abuse or dependence in the future, for whom is that risk amplified, and what role does gender play?



## Summary

The findings from this pilot study indicate that a substantial proportion of chronic pain patients engage in aberrant prescription opioid behaviors, which range along a continuum of severity. A small percentage of pain patients engage in more severe behaviors, such as forging prescriptions and using alternative routes of administration. Gender differences in several aberrant prescription opioid behaviors were revealed. In addition, predictors of aberrant behaviors among men and women differed, suggesting the potential benefit of gender-specific assessment and monitoring practices.

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**Table 1**

**DSM-IV Definition of Substance Abuse and Dependence**

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Criteria for Substance Abuse

A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12 month period:

- 1 recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home
- 2 recurrent substance use in situations in which it is physically hazardous
- 3 recurrent substance-related legal problems
- 4 continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance

B. The symptoms have never met criteria for Substance Dependence for this class of substance.

Criteria for Substance Dependence

A. maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

- 1 tolerance, as defined by either of the following:
    - a. a need for markedly increased amounts of the substance to achieve intoxication or desired effect
    - b. markedly diminished effect with continued use of the same amount of the substance
  - 2 withdrawal, as manifested by either of the following:
    - a. the characteristic withdrawal syndrome for the substance
    - b. the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
  - 3 the substance is often taken in larger amounts or over a longer period than was intended
  - 4 there is a persistent desire or unsuccessful efforts to cut down or control substance use
  - 5 a great deal of time is spent in activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances), use the substance (e.g., chain-smoking), or recover from its effects
  - 6 important social, occupational, or recreational activities are given up or reduced because of substance use
  - 7 the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine-induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption)
- 

Note. DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

**Table 2**

## Demographic Characteristics

| Characteristic                   | Men           | Women         | Total          |
|----------------------------------|---------------|---------------|----------------|
|                                  | <i>n</i> = 49 | <i>n</i> = 72 | <i>N</i> = 121 |
| Age, <i>M</i> (SD)               | 52.9 (10.1)   | 50.8 (15.0)   | 51.6(13.2)     |
| Education                        |               |               |                |
| % Did not graduate high school   | 10.2          | 8.3           | 9.1            |
| % Graduated high school or GED   | 20.4          | 20.8          | 20.7           |
| % Some college                   | 12.2          | 22.2          | 18.2           |
| % Graduated college or higher    | 57.1          | 48.6          | 52.1           |
| Relationship Status              |               |               |                |
| % Single, never married          | 6.1           | 20.8          | 14.9           |
| % Married                        | 71.4          | 34.7          | 49.6           |
| % Separated, divorced, widowed   | 40.3          | 18.3          | 31.4           |
| % Unmarried, Living with partner | 4.1           | 4.2           | 4.1            |
| Race                             |               |               |                |
| % Caucasian                      | 85.7          | 72.2          | 77.7           |
| % African American               | 10.2          | 20.8          | 16.5           |
| % Hispanic                       | 0.0           | 1.4           | 0.8            |
| % American Indian or Asian       | 0.0           | 2.8           | 1.7            |
| % Multiracial                    | 2.0           | 1.4           | 1.7            |
| Employment                       |               |               |                |
| % Unemployed                     | 20.4          | 45.1          | 35.0           |
| % Employed                       | 30.6          | 31.0          | 30.8           |
| % Retired                        | 49.0          | 23.9          | 34.2           |

\*\*  
*p* < .01.

Table 3

## Pain Characteristics

| Characteristic  | Men           | Women         | Total          |
|---|---------------|---------------|----------------|
|   | <i>n</i> = 49 | <i>n</i> = 72 | <i>N</i> = 121 |
| Years of chronic pain, <i>M</i> (SD)                          | 9.3 (7.8)     | 9.8 (8.7)     | 9.64 (8.3)     |
| Current level of pain, <i>M</i> (SD) <sup><i>a</i></sup>      | 3.94 (1.6)    | 3.90 (1.4)    | 3.92 (1.5)     |
| Effectiveness of treatment, <i>M</i> (SD) <sup><i>b</i></sup> | 3.0 (1.4)     | 2.8 (1.6)     | 2.9 (1.6)      |
| % Pain Condition  |               |               |                |
| Lower extremity   | 44.7          | 32.9          | 37.6           |
| Cervical (neck)   | 25.5          | 22.9          | 23.9           |
| Arthritis/Osteoarthritis                                      | 17.0          | 22.9          | 20.5           |
| Upper extremity   | 14.9          | 15.7          | 15.4           |
| Thoracic (upper back)   | 10.6          | 11.4          | 11.1           |
| Headache  | 10.0          | 10.6          | 10.3           |
| Pelvic  | 8.5           | 11.4          | 10.3           |
| Fibromyalgia  | 6.4           | 11.6          | 9.5            |
| Abdominal   | 4.3           | 5.7           | 5.1            |
| % Taking a prescription opioid <sup>**</sup>                  | 91.7          | 77.8          | 83.3           |
| Type of Prescription Opioid Currently Taking                  |               |               |                |
| % Hydrocodone Products  | 34.7          | 29.2          | 31.4           |
| % Oxycodone Products <sup><i>t</i></sup>                      | 39.6          | 25.0          | 30.8           |
| % Methadone   | 18.8          | 20.8          | 20.0           |
| % Morphine  | 4.6           | 6.9           | 10.0           |
| % Fentanyl <sup>*</sup>                                       | 0.0           | 6.9           | 4.2            |
| % Hydromorphone   | 4.2           | 1.4           | 2.5            |
| % Codeine   | 2.1           | 1.4           | 1.7            |
| % Buprenorphine   | 0.0           | 1.4           | 0.8            |

<sup>*a*</sup> Current level of pain rated on a 7-point Likert scale from 0 = no pain to 6 = very intense pain.

<sup>*b*</sup> Effectiveness of pain treatment was rated on a 7-point Likert scale from 0 = no reduction to 6 = almost pain free.

\*\*  
*p* = .04

\*  
*p* = .07

<sup>*t*</sup>  
*p* = .09



Table 4

## Pain Medication Questionnaire (PMQ) Behaviors

| Behavior or Characteristic  | Men  |  | Women |  | Total p-value |      |
|---|------|--|-------|--|---------------|------|
|   | %    |  | %     |  | %             |      |
| 1. I take pain medication when I feel anxious or sad, or when I need help sleeping.                                   | 40.9 |  | 45.6  |  | 43.8          | .63  |
| 2. I drink alcohol to help control my pain.   | 8.7  |  | 7.4   |  | 7.9           | .53  |
| 3. I borrow pain medication from friends or family to get relief.   | 2.2  |  | 7.4   |  | 5.3           | .22  |
| 4. I get pain medications from more than one doctor in order to have enough.  | 6.8  |  | 8.8   |  | 8.0           | .49  |
| 5. I think I may be too dependent on my pain medication.  | 45.5 |  | 32.4  |  | 37.5          | .16  |
| 6. Family members have obtained pain medications for me from their own doctors.                                       | 2.2  |  | 1.5   |  | 1.8           | .65  |
| 7. At times, I need to take pain medication more often than it is prescribed.   | 56.5 |  | 50.0  |  | 52.6          | .49  |
| 8. I save any unused medication I have in case I need it later.   | 47.7 |  | 67.6  |  | 59.8          | .04* |
| 9. At times, I run out of pain medication early and have to call my doctor for refills.                               | 37.8 |  | 26.9  |  | 31.3          | .22  |
| 10. I find it useful to take additional medications (such as sedatives) to help my pain medication work better.       | 20.0 |  | 38.8  |  | 31.3          | .04* |
| 11. In the past year, I have accidentally misplaced my prescription for pain medication and had to ask for another.   | 6.5  |  | 6.0   |  | 6.2           | .60  |
| 12. I have sold my prescription medications.  | 2.2  |  | 1.5   |  | 1.8           | .65  |
| 13. I have forged a prescription in order to get the medication I needed.   | 2.2  |  | 1.5   |  | 1.8           | .65  |
| 14. I have obtained prescriptions off the internet or other non-medical "street" source.                              | 2.2  |  | 2.9   |  | 2.7           | .65  |
| 15. I have used my prescription in a different way than instructed by my doctor (e.g., crushing and snorting a pill). | 8.9  |  | 1.5   |  | 4.4           | .08* |

Note. *N* ranged from 112 – 114 because of missing data.

**Table 5**

Correlations Between Aberrant Behaviors, Pain Characteristics, and Other Substance Use

|  | Men               | Women            |
|--|-------------------|------------------|
|  | PMQ Total         | PMQ Total        |
| Years of pain                                | -.07              | -.17             |
| Effectiveness of pain treatment <sup>a</sup> | -.29 <sup>t</sup> | -.17             |
| Use of oxycodone products                    | .35 <sup>*</sup>  | .11              |
| Use of hydrocodone products                  | .27 <sup>tt</sup> | .27 <sup>*</sup> |
| Use of morphine                              | .34 <sup>*</sup>  | -.11             |
| Current alcohol use <sup>b</sup>             | .51 <sup>**</sup> | .06              |
| Current cigarette use <sup>b</sup>           | .22               | -.04             |

<sup>a</sup>Effectiveness of pain treatment was rated on a 7-point Likert scale from 0 = no reduction to 6 = almost pain free.

<sup>b</sup>Current = during the past month.

\*\*  
 $p < .001$

\*  
 $p < .05$

<sup>t</sup>  
 $p = .06$

<sup>tt</sup>  
 $p = .08$