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Characteristics and Correlates of Men and Women with Prescription Opioid Dependence

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Abstract

Despite the fact that important gender differences in drug and alcohol use have been previously reported, little research to date has focused on gender differences with regard to nonmedical prescription opioid use. This study preliminarily examined the presenting characteristics and correlates (e.g., age of onset, route of administration, motives for using, method of introduction) of men and women with prescription opioid dependence. Participants were 24 (12 men, 12 women) non-treatment seeking individuals at least 18 years of age with current (i.e., past 12 months) prescription opioid dependence who participated in an in-depth interview. The average age of onset of prescription opioid use was 22.2 years ($SD = 8.5$). In comparison to men, women were approximately six years older when they initiated prescription opioid use, but were only three years older when they began to use prescription opioids regularly (i.e., weekly), suggesting an accelerated course of disease progression among women. Over half of the sample (61.5%) endorsed chewing and almost half (45.8%) endorsed crushing and snorting prescription opioids. Men were significantly more likely than women to crush and snort prescription opioids (75.0% vs. 16.7%; $p = 0.01$). Women were significantly more likely than men to be motivated to use prescription opioids in order to cope with interpersonal stress, and to use them first thing in the morning ($ps = 0.04$). Concomitant alcohol and other drug use were common among both men and women. The findings highlight clinically relevant gender differences and may help enhance the design of gender-sensitive screening and treatment interventions for prescription opioids.

Keywords

prescription opioids; opiates; prescription drugs; gender; non-medical use

1. Introduction

The nonmedical use of prescription opioids is increasing at an alarming rate. The National Survey on Drug Use and Health (NSDUH; $N=68,736$) estimates that approximately 4.7 million individuals 12 years of age and older used prescription opioids nonmedically in the previous month, and approximately 1.7 million individuals meet criteria for dependence or abuse (SAMHSA, 2009). The National Longitudinal Alcohol Epidemiological Survey

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(NESARC; $N=43,093$) estimates that rates of prescription opioid abuse and dependence tripled over a ten year span (Blanco et al., 2007). More recent data show that, among all illicit substances, pain relievers are the second most commonly initiated substance, following closely behind marijuana. Similarly, the number of people admitted for treatment of nonmedical use of prescription opioids increased by 400% between 1999 and 2008 (SAMHSA, 2010).

Due to the alarming increase in nonmedical prescription opioid use, some researchers have focused on smaller samples (rather than large-scale national surveys) in order to obtain more in-depth information on nonmedical use, examining factors such as the history of use, route of administration, most commonly used opioids, and motives for using. For example, Passik, Hays, Eisner, and Kirsh (2006) obtained detailed information from approximately 100 individuals seeking treatment for prescription drug abuse. The results indicated that a majority of the sample reportedly obtained a legitimate prescription for pain from a primary care physician. Hydrocodone and oxycodone products were the most commonly abused prescription opioids, and 80% of the sample reportedly altered the delivery of the drug by, for example, chewing, snorting, or injecting the medication. While this investigation provides rich details about factors involved in the nonmedical use of prescription opioids, it fails to consider gender differences that may be informative for prevention and clinical care.

1.1 Gender Differences in the Nonmedical Use of Prescription Opioids

Research demonstrates important gender differences with regard to alcohol and drug use. Men and women have been found to differ in motives for using substances (e.g., men use substances more often for pleasurable aspects, whereas women use substances more often to deal with negative emotions) and consequences associated with use of substances (e.g., female smokers often experience more severe lung damage than male smokers) (Brady, Back & Greenfield, 2009). Physiological gender differences (e.g., body fat percentages, metabolic rate, concentration of gastric dehydrogenase, and hormonal fluctuations) also put women at increased risk for medical problems associated with substance use. These physiological differences likely contribute to the “telescoping” phenomenon, a term used to describe the fact that women have been shown to progress faster than men from onset of regular use of a substance to the time in which problems develop from use (Hernandez-Avila, Rounsaville, & Kranzler, 2004).

Despite these important gender differences in substance use parameters, little research to date has investigated gender differences regarding prescription opioids. Using data from national surveys, Colliver and colleagues (2006) found a gender by age interaction in prevalence rates of abuse/dependence. Compared to males, females aged 12–17 were more likely to meet criteria for prescription opioid abuse or dependence (1.4% v. 0.8%), whereas females aged 18–25 were less likely to meet criteria for prescription opioid abuse or dependence (1.1% v. 1.4%). In contrast, men and women aged 26 or older evidenced similar rates of abuse or dependence (0.4% for women v. 0.5% for men). Studies investigating gender differences in risk factors for prescription opioid nonmedical use in the general population also reveal important differences among men and women. Although men and women share a number of risk factors (e.g., younger age, use of other substances), men and women also demonstrate sexually dimorphic risk factors. For example, psychological distress and cigarette smoking are risk factors for prescription opioid nonmedical use among women, but not men (Back et al., 2010; Tetrault et al., 2008).

Finally, preliminary research examining gender differences in the use of prescription opioids by individuals with chronic pain reveals important differences. Compared to men, women are significantly more likely to hoard unused medications (67.6% women vs. 47.7% men) and use additional medications (e.g., sedatives) to enhance the effectiveness of prescription

opioids (38.8% women vs. 20.0% men) (Back, Payne, Waldrop, Smith, Reeves, & Brady, 2009). A trend toward men being more likely than women to use an alternative route of administration (e.g., crushing and snorting) has also been shown (8.9% men vs. 1.5% women, $p = 0.08$; Back et al., 2009). Similar to research conducted in the general population, Jamison and colleagues (2010) found that risk factors for the misuse of prescription opioids differ for men and women with chronic pain. Risk factors for men included legal and behavioral problems, whereas risk factors for women included emotional issues.

The purpose of the current study was to add to the limited extant data on gender and prescription opioids. Specifically, this study preliminarily examined gender differences in the following among individuals with prescription opioid dependence: history of use, route of administration, most commonly used opioids and most common times when opioids are consumed, motives for using, method of introduction to prescription opioids, and concomitant substance use.

2. Material and Methods

2.1 Participants

Participants were 24 non-treatment seeking individuals (12 men, 12 women) with current prescription opioid dependence. Participants were recruited via newspaper advertisements and flyers posted in local health clinics, and were invited to participate in a single in-depth interview. The main objective of the interview was to obtain information to help inform the design of a NIH-sponsored laboratory investigation to examine stress- and cue-induced craving among individuals with prescription opioid dependence. IRB-approved informed consent was obtained before any study procedures occurred, and participants were fully informed about the purpose of the study.

2.2 Procedure and Assessments

Individuals were screened over the telephone and if eligible, were invited to come into the office to participate in a group or individual interview. Inclusion criteria were broad and included being 18 years of age or older and meeting criteria for prescription opiate dependence in the past 12 months. Eighteen interview sessions lasting 60 to 90 minutes were conducted. The number of participants in each interview ranged from one to four (determined by participants' scheduling availability), with the large majority (77.8%) of the interviews consisting of one participant. Advantages of using small groups or individual interviews include the fact that each participant has more time to discuss his or her views and experiences, participants may be less hesitant to discuss stigmatized behaviors and issues such as drug abuse, and participants who are less confident or articulate may be more engaged during the interviews. Interviews were lead by the first author and a research assistant, and participants were compensated \$20 for their time.

When participants arrived at the clinic, items from Substance Use Disorders module of the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 2002) were used to assess prescription opioid dependence. Then, participants responded to questions elicited using a 31-item, semi-structured interview that was created for the purposes of this study. The same questions were used in each interview. This allowed for a degree of standardization across groups and facilitated the analysis of the data by allowing for direct comparisons of discussions from interview to interview. The interview consisted of a set of open- and closed-ended questions concerning the following topics: demographic characteristics (i.e., age, gender, race), prescription opioid use history (e.g., age of onset, age of regular use, method of first introduction), route of administration (i.e., oral, crush and

snort, chew, inject), reasons for using, time of day that prescription opioids were typically consumed, paraphernalia associated with prescription opioid use that serve as triggers for craving or use (e.g., pill bottles, pill crushers, glass of water, spoon), the most common prescription opioids used, other substances used, and common situations and settings under which prescription opioids were ingested. Interviews were audio recorded and transcribed by a research assistant. After reviewing in detail the interview transcripts, a coding frame was generated to help summarize themes and organize the findings. Transcripts were coded by the first author and a research assistant. Any areas of discrepancy were discussed until an agreement was reached.

2.3 Statistical Analyses

Independent Samples *t*-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 (Cramér, 1999). Where cell sizes were ≤ 5 , Fisher's Exact Test was reported. Given the small sample size and preliminary nature of the study, alpha was set at .05 for all analyses.

3. Results

3.1 Demographic Information

The average age was 41.6 ($SD = 9.8$) and the majority of participants (66.7%) were Caucasian. Approximately 29.2% were African American and 4.2% Hispanic. No significant gender differences in age or race were revealed.

3.2 Age of First Use and Regular Use

Table 1 includes the average age of onset of first use (22.2 years) of prescription opioids and the age at which regular (i.e., weekly) use commenced (28.7 years). As can be seen, women were on average six years older than men when they first used prescription opioids, but were only three years older than men when they began to use them regularly.

3.3 Route of Administration

Examination of various routes of administration used to ingest prescription opioids revealed that all participants were taking prescription opioids orally in pill form, over half (61.5%) were chewing the pills, and almost half (45.8%) were crushing and snorting the pills. One participant reported mixing routes of administration, "Because if you eat them they last longer. They take longer to get into your system, but they last longer. So I would just eat them for the length and then I would crush and sniff for the speed." As shown in Table 1, men reported significantly higher rates of crushing and snorting pills as compared to women (75.0% vs. 16.7%; Fisher's Exact Test, $p = 0.01$, Cramér's *V* = 0.59). Men also reported higher rates of injecting prescription opioids but this difference did not reach statistical significance. Some women showed no interest in injecting needles, making comments like "I'm too scared of needles to inject them."

3.4 Most Commonly Used Opioids

The most commonly used prescription opioids were OxyContin® (56.5%), Lortab® (54.2%), Vicodin® (29.2%) and Percocet® (41.7%). No significant gender differences in the use of specific types of opioids were revealed.

3.5 Motives for Use

Motives for prescription opioid use were examined and the majority of both men and women indicated that they use prescription opioids in order to increase their energy levels and “get things done.” One participant described prescription opioids as, “a burst of energy, just a feeling of exhilaration, just a feeling that you could conquer the world, that you could do everything you needed to do that day in one day and then some.” Another participant stated, “It seems like they energize me, give me a lot more energy and seems like they sharpen my thought process, and it makes me more ‘on’ and ‘good’ I guess.”

In comparison to men, women were significantly more likely to report using prescription opioids in order to cope with interpersonal stress (27.3% men vs. 72.7% women; Fisher’s Exact Test, $p = .04$, Cramér’s $V = 0.46$), such as arguments with others or family conflict. One female participant stated, “When I came home there was a huge argument and...from my head to my toes I wanted nothing more than to get high, and I knew that once I got high I would be able to deal with the situation in a better way.” Another female participant stated, “like when me and her got in a fight, or I get in a fight with my Dad, I’m like, ‘Alright, I’m just going to take a happy pill.’” More women than men reported using prescription opioids secondary to negative affect, such as regret, remorse, shame or anger (18.2% men vs. 54.5% women; Fisher’s Exact Test, $p = 0.09$, Cramér’s $V = 0.38$). One female participant commented, “It helps mentally...your mind’s thinking of other things and you don’t have time to sit and maybe dwell on things you shouldn’t be... it helps.” Compared to women, more men reported using prescription opioids for physical pain (Fisher’s Exact Test, $p = 0.09$, Cramér’s $V = 0.45$) and for the pleasurable effects of the drug (Fisher’s Exact Test, $p = 0.09$, Cramér’s $V = 0.44$). Of note, 70.8% of the sample (83.3% men, 58.3% women) endorsed suffering from chronic pain. Finally, a quarter of men, and no women, reported using prescription opioids to enhance sexual intimacy.

3.6 Introduction to Prescription Opioids

When asked how participants were first introduced to prescription opioids, the majority of men and women reported that they first received prescription opioids from a physician (58.3% men, 83.3% women, $p > .05$). A number of participants remarked they had suffered a physical injury (e.g., broken limb) or had a necessary medical procedure performed (e.g., wisdom teeth removal) and legitimately needed the analgesic at that time, but that they continued to use opioids for other reasons after the pain subsided. For example, one participant was in a motorcycle accident and related that physical pain, “got me started using but the fact that it made me feel so much better intensified the pleasure I got from using.” Another participant related the following: “In the beginning, it killed the pain and it didn’t bother me. I didn’t have cravings for it or anything like that. When I couldn’t stand the pain, I would take a pill. And then one day, I woke up and took a pill; there was no pain though....It sneaks up on you, it grabs you without notice...I didn’t know I was becoming addicted when I became addicted.” Another participant commented on how common it was for people to become introduced to prescription opiates through physicians: “People think if doctors prescribe it, it’s safe or you can’t ever have a problem with it. It’s always the same, every story that I know, everybody that I know that takes pills. It’s always the same. The doctor started them off, the pain stopped, they wanted to be happy, and they got hooked.”

The second most common source included family or friends (45.5% men, 16.7% women, $p > .05$). One participant described how he and another friend share supplies: “He’ll get his prescription on the 15th (of the month) and I get mine on the 30th (of the month). I’ll run out and he’ll come to me and me come to him. So we all keep each other going, you know.” No participants reported first being introduced to prescription opioids via a drug dealer or via the Internet. One participant indicated that he had searched for prescription opioids on the

Internet but knew that he could obtain them cheaper via other routes, while a second participant related concern that he would be caught if he purchased them via the Internet.

3.7 Time of Use

Finally, we inquired about the most common time of day when subjects consumed prescription opioids. As illustrated in Figure 1, all of the women in our sample endorsed using prescription opioids first thing in the morning (Fisher's Exact Test, $p = 0.04$, Cramér's $V = 0.41$). Indeed, some women reported storing their prescription opioids beside their bed and using them before they even get out of bed in the mornings. One participant stated that prescription opioids help her "get started, like coffee" in the morning, while another woman indicated that she takes them during the first couple hours of being awake in order "to get through life, to be a normal person, to feel well." A male participant described taking prescription opioids first thing in the morning as "like drinking two cups of coffee in like thirty seconds. Yeah, you're instantly awake." It was suggested by participants that the intensity of the first dose in the morning is the strongest because of the time that has passed since the last dose. In comparison to women, significantly more men endorsed using prescription opioids in the early evening (63.6% men vs. 16.7% women; $p = 0.04$, Cramér's $V = 0.48$), generally after getting home from work or when they were making plans to go out later in the evening.

3.8 Other Substance Use

Concomitant alcohol and other drug use were common. As can be seen in Table 1, 70.0% of participants endorsed smoking cigarettes and almost half endorsed using other illicit drugs (e.g., cocaine, heroin). Notably, only a minority of participants (25.0% men, 8.3% women) reportedly used heroin and this was not significantly different by gender. One participant stated, "I was addicted to heroin for about a year and a half and it started by using Oxy's. I started using just the Oxy's and the Oxy's turned into heroin."

4. Discussion

Rates of prescription opioid nonmedical use continue to rise, and little is known about how to best screen and treat individuals with prescription opioid use problems. A better understanding of characteristics and correlates associated with prescription opioid use problems is needed in order to enhance the design of interventions and provision of care. Research on other substances of abuse, such as alcohol and cocaine, demonstrate clinically-relevant, gender-specific differences in a number of areas, including rates of use and treatment seeking, reasons for use, methods of initiation, physiological consequences, and treatment outcome (Brady et al., 2009). The current study expands the limited data available on gender-specific differences with regard to prescription opioids, as such information is needed to help address this growing public health problem.

Several important gender differences in prescription opioid use patterns and motives of use were observed. Men were more likely than women to consume prescription opioids by alternative routes, particularly crushing and snorting the pills. In fact, the large majority of men in the sample (75%) endorsed crushing and snorting pills and 42% of men endorsed injecting prescription opioids. The more rapid routes of delivery most often chosen by men may speak to differences in the reasons for using prescription opioids. Both pharmacological and nonpharmacological motives are involved in the acquisition and maintenance of drug dependence. Treatments that seek to be effective need to adequately address both sets of motives, and be able to tailor treatment to the primary motive when appropriate. In the current study, examination of motives for using prescription opioids also revealed differences between men and women. Women were more often motivated by negative

reinforcement processes and nonpharmacologic reasons, such as coping with interpersonal stress (73%) and negative affect (55%). This finding is in agreement with previous research investigating gender-specific motives to use other substances, including cocaine, alcohol and nicotine. Several studies have shown that women are more likely to use alcohol to help quell emotional pain or negative affect, whereas men are more likely to use alcohol to enhance pleasurable emotions or conform in social groups (Annis & Graham, 1995; Schall, Weede, & Maltzman, 1991). In addition, research shows that men may use substances more often than women for the direct pharmacologic effect. For example, men's smoking behavior may be more influenced by nicotine than women's smoking behavior (Perkins 1996; Perkins 2008; Perkins, Dunny, & Caggiula, 1999). These gender-specific motives provide information that may be used for tailoring screening and intervention efforts. In addition, psychotherapeutic and pharmacologic interventions should be tailored to address concurrent mood or anxiety disorders among women, in particular, as these may substantially increase risk of use or relapse (Greenfield & Pirard, 2009).

A particularly unique aspect of this study is the data collected regarding the time of day that prescription opioids are most commonly consumed. Notably, the large majority of both men and women in the sample related using prescription opioids first thing in the morning in order to increase their energy levels and "get things done." Consuming prescription opioids was likened to consuming coffee in the morning. Women, however, were significantly more likely than men to use prescription opioids first thing in the morning. Some women even noted that they consumed prescription opioids each morning before getting out of the bed. Men, on the other hand, were significantly more likely than women to use in the early evening, typically when they were getting home from work and making plans to go out later in the evening. This information is useful clinically because it provides critical information about high-risk times and settings for men and women. For example, clinicians may need to help female patients modify their sleeping environment or early morning routine to decrease likelihood of use first thing in the morning, schedule female patients for early morning appointments, and help women develop healthier ways to increase energy levels.

The average age of onset of prescription opioids was 22.2 years, which is similar to recent NSDUH data that showed the average age of onset to be 21.2 among 2.9 million prescription opioid users (SAMHSA, 2010). Although no statistically significant gender differences in age of onset or age of regular use was observed, it is notable that women were on average six years older than men when they first used prescription opioids, but were only three years older than men when they began to use them regularly. This finding suggests there may exist an accelerated progression of prescription opioid use among women. This phenomenon, referred to as "telescoping," has been previously shown among men and women across a variety of substances (e.g., Johnson, Richter, Kleber, McLellan, & Carise, 2005; Piazza, Vrbka, & Yeager, 1989). Telescoping highlights the clinical significance of early screening and early intervention among women in order to minimize the progression of the disease and the concomitant negative consequences of the disease. Telescoping suggests that the window of opportunity for preventing progression from use to dependence is smaller for women.

When asked how men and women were first introduced to prescription opioids, the majority related that they first received them from a physician. In each instance, subjects reported receiving opioids from the physician in order to treat a physical injury (e.g., broken limb from a motorcycle accident) or because of a medical procedure they underwent (e.g., having wisdom teeth removed, abortion). However, as time passed and physical pain receded, subjects continued to take the medication for other reasons. An important task for the field will be to develop screening measures that can better assist physicians in determining which patients are at highest risk for later misuse of prescription opioids (Butler, Budman,

Fernandez, & Jamison, 2004). Alternative compounds with less abuse liability and more effective psychotherapeutic means of treating pain will also assist. In the current sample, 71% endorsed suffering from chronic pain. However, it is unclear what role the chronic use of prescription opioids and potential hyperanalgesia may play, as well as issues related to pain sensitivity and perception of pain. While subjects endorsed having chronic pain, many related that pain was not the reason why they were using prescription opioids. Similar to previous research (McCabe & Boyd, 2005; McCabe, Cranford, Boyd, & Teter, 2007), another common source of prescription opioids included family and friends. As such, patients receiving prescription opioid medications need to be educated about the dangers of sharing their medications with others, and about proper storage and disposal techniques.

Rates of other substance use were high among men and women in the study, highlighting the need for a thorough assessment at the time of treatment entry. In addition, patients need to be warned against the consequences, possibly fatal, of combining prescription opioids with other substances. Of note, few individuals reported concomitant use of heroin. The data suggests that there may be distinct subgroups of opiate users, with little overlap between heroin and prescription opioid dependent individuals. However, further research with larger samples sizes is needed to further investigate this issue.

In summary, a number of gender differences were observed which may have implications for the design of gender-sensitive screening, prevention and clinical interventions. Namely, motives for using prescription opioids, high-risk times of consumption, and routes of administration varied significantly by gender. The findings should be tempered by the fact that the sample size was small and generalizability is limited. In addition, the current findings may be limited because some research suggests that individuals are hesitant to report stigmatized behaviors in less-private settings, such as focus groups. This assumption is not always the case, however (Kitzinger, 1999), and the majority of the interviews in the current study consisted of only one individual. Future research with a larger, more representative sample and more anonymous reporting of behaviors is needed to confirm the findings. Despite these limitations, the findings add to the limited data available regarding prescription opioid dependence and gender, and may help alert clinicians to issues that should be targeted in the assessment and treatment planning for men and women with prescription opioid dependence.

Research Highlights

- Almost half (46%) of subjects endorsed crushing and snorting prescription opioids.
- Men were more likely than women to crush and snort prescription opioids.
- Women were more likely than men to use opioids to cope with interpersonal stress.
- Women were more likely than men to use opioids to cope with negative affect.
- More women than men used prescription opioids first thing in the morning.

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Figure 1.
Time of Prescription Opioid Consumption by Gender
** $p < .05$, * $p = .09$.

Table 1**Prescription Opioid Use Characteristics by Gender**

	<u>Men</u>	<u>Women</u>	<u>Total</u>
	<i>n</i> = 12	<i>n</i> = 12	<i>N</i> = 24
Characteristic			
<i>History of Prescription Opioid Use^a</i>			
Age of first use onset, M (SD)	19.2 (8.4)	25.0 (7.9)	22.2 (8.5)
Age of regular use onset, M (SD)	27.3 (10.7)	30.0 (6.9)	28.7 (9.01)
<i>Route of Administration</i>			
Orally by pill	100.0%	100.0%	100.0%
Crush and Snort	75.0%	16.7%	45.8% **
Chew	57.1%	66.7%	61.5%
Inject	41.7%	16.7%	29.2%
<i>Triggers/Motives for Prescription Opioid Use</i>			
Energy	83.3%	100.0%	91.7%
Interpersonal Stress	27.3%	72.7%	50.0% **
Pain	100.0%	66.7%	83.3% *
Withdrawal Symptoms	45.5%	50.0%	47.8%
Negative Affect	18.2%	54.5%	36.4% *
Pleasure/Euphoria ^b	100.0%	66.7%	82.6% *
Enhance Sexual Intimacy	25.0%	0.0%	12.5%
<i>Other Substance Use</i>			
Alcohol	50.0%	33.3%	41.7%
Marijuana	41.7%	16.7%	29.2%
Other Illicit Drugs	54.5%	41.7%	47.8%
Cigarettes	55.6%	81.8%	70.0%

**
p < .05,

*
p ≤ .09.

^aFor questions regarding age of onset, one outlier was removed therefore the *N*=23.

^b Although the percentages of men and women using for pain and for pleasure/euphoria are the same, the total percentages are different because data was missing for one person with regard to pleasure/euphoria.