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## Prescription drug abuse: from epidemiology to public policy

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## ABSTRACT

Prescription drug abuse has reached an epidemic level in the United States. The prevalence of prescription drug abuse escalated rapidly beginning in the late 1990s, requiring a significant increase in research to better understand the nature and treatment of this problem. Since this time, a research literature has begun to develop and has provided important information about how prescription drug abuse is similar to, and different from the abuse of other substances. This introduction to a special issue of the *Journal of Substance Abuse Treatment* on prescription drug abuse provides an overview of the current status of the research literature in this area. The papers in this special issue include a sampling of the latest research on the epidemiology, clinical correlates, treatment, and public policy considerations of prescription drug abuse. Although much has been learned about prescription drug abuse in recent years, this research remains in early stages, particularly with respect to understanding effective treatments for this population. Future research priorities include studies on the interaction of prescription drugs with other licit and illicit substances, the impact of prescription drug abuse across the lifespan, the optimal treatment for prescription drug abuse and co-occurring conditions, and effective public policy initiatives for reducing prescription drug abuse.

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## 1. Introduction

Markers of public health impact ranging from incidence to mortality indicate that the abuse of prescription drugs has reached an epidemic level. The National Survey on Drug Use and Health (NSDUH) estimated that more than 16.7 million people 12 and older in the United States abused prescription drugs in 2012, with almost 2.6 million people meeting criteria for a diagnosis of a substance use disorder related to prescription drugs (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013a, 2013b). This reflects an increase of 250% in prescription drug abuse over the previous 20 years (Substance Abuse and Mental Health Services Administration, 1998, 2013a). Treatment admissions for substance use disorder services for prescription opioids alone increased more than 5-fold from 2000 to 2010 in the U.S. (SAMHSA & Center for Behavioral Health Statistics and Quality, 2014), with some regions experiencing more than a 770% increase in admissions (SAMHSA & Center for Behavioral Health Statistics and Quality, 2013). During that time, accidental prescription opioid overdoses increased

almost 400%, surpassing accidental overdose deaths from heroin, cocaine, and other stimulants combined (Calcatera, Glanz, & Binswanger, 2013).

The rapid escalation of this problem initially far outpaced clinical research on its nature and on interventions to prevent and treat prescription drug use disorders. However, in recent years, a research base on prescription drug abuse has begun to take shape. The aim of this special issue of the *Journal of Substance Abuse Treatment* is to highlight a sampling of the latest research on prescription drug abuse. The articles in this issue address a range of topics, highlighting the state of the science from perspectives such as epidemiology, clinical correlates, treatment outcomes, and public policy considerations. For the purpose of this special issue we use the term *prescription drug abuse* to encompass a range of potential patterns of non-medical use of prescription drugs, including using a prescribed medication at a higher dose or greater frequency than instructed by the prescriber, or using without a legitimate prescription (see Compton & Volkow, 2006).

## 2. Epidemiology of prescription drug abuse

The prevalence of prescription drug abuse increased dramatically and rapidly in the U.S. in the late 1990s through the mid-2000s, with some plateau since that time at approximately 2.3–2.8 million initiators of prescription drug abuse annually (SAMHSA, 2013b). In

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2012, prescription drugs were second only to marijuana in prevalence of both illicit use and drug use disorders (SAMHSA, 2013b). Opioids are the most commonly abused type of prescription drug and appear to be the largest contributor to these increases. The number of adults abusing prescription opioids increased from 4.9 million in 1992 to almost 12.5 million in 2012 (SAMHSA, 1998, 2013a) and the rate of treatment receipt for prescription opioid use disorders now is second only to alcohol (SAMHSA, 2013b). After opioids, the most commonly abused prescription drugs in the U.S. are tranquilizers (6 million people in 2012) and stimulants (3.3 million) (SAMHSA, 2013a). Although much of the attention in both the research literature and the media has focused on the abuse of prescription opioids and stimulants, this problem encompasses the range of psychotropic medications that provide potentially reinforcing effects. For example, Malekshahi, Tioleco, Ahmed, Campbell, and Haller (2014) found that 17% of inpatients sampled at a substance use disorder treatment facility had abused antipsychotic medications, such as quetiapine.

Variability in definitions of prescription drug abuse and in the availability of specific types of prescription drugs limits the ability to compare across countries. Although the U.S. appears to have the highest prevalence of prescription drug abuse internationally, significant rates of prescription opioid abuse have been reported in countries, such as Canada, New Zealand, and India, among others (Dengenhardt et al., 2008). For example, a large population-based study in Canada suggested that almost 5% of the population abused opioids in the previous year (Shield, Jones, Rehm, & Fischer, 2013). The prevalence of prescription drug abuse appears to vary based on the availability of medications with abuse potential, including the legal availability of these medications, proximity to areas producing these medications, and availability of alternative substances of abuse (Dengenhardt et al., 2008).

In the U.S., increasing rates of prescription drug abuse have paralleled increases in the prescription of these medications. In 2012, there were as many opioid prescriptions written (259 million) as there were adults in the U.S. (Paulozzi, Mack, & Hockenberry, 2014). Prescriptions for opioids have increased significantly in adult (Mazer-Amirshahi, Mullins, Rasooly, van den Anker, & Pines, 2014a) and pediatric emergency departments (Mazer-Amirshahi, Mullins, Rasooly, van den Anker, & Pines, 2014b), as well as in ambulatory settings (Olfson, Wang, Iza, Crystal, & Blanco, 2013). A study of trends in prescription medication use and abuse among college students found evidence for significant increases in prescriptions for stimulants and decreases in opioid prescriptions among college students from 2003 to 2013; during that time, rates of stimulant abuse increased, while rates of opioid abuse decreased (McCabe, West, Teter, & Boyd, 2014).

Large epidemiologic studies suggest that Native Americans and Caucasians have the highest rates of prescription drug abuse (Huang et al., 2006; SAMHSA, 2013a). Individuals with prescription drug abuse are younger and less likely than those without this problem to be married, and prescription drug use disorders co-occur at very high rates with other substance use disorders and psychiatric illnesses (Huang et al., 2006). Although data from the NSDUH suggest that there are similar rates of prescription drug abuse between those living in rural relative to urban settings (Wang, Becker, & Fiellin, 2013), prescription drug abuse appears to be more prevalent in rural than urban areas among adolescents (Havens, Young, & Havens, 2011).

Several studies have identified gender differences in prescription drug abuse. For opioids, the higher prevalence in men observed across many substances of abuse appears to be smaller, with some studies reporting slightly higher prevalence among men, and others suggesting a similar prevalence in men and women (Back, Payne, Simpson, & Brady, 2010; Green, Grimes Serrano, Licari, Budman, & Butler, 2009; Parsells Kelly et al., 2008; Tetrault et al., 2008). This may reflect the fact that women are more likely to be prescribed an opioid than men (Parsells Kelly et al., 2008), or may reflect other factors that are unique

to prescription drugs. For example, abusing prescription medication may be perceived as “safer” than abuse of illicit drugs (Fleary, Heffer, & McKyer, 2013; Mateu-Gelabert, Guarino, Jessell, & Teper, 2014). In fact, women are more likely than men to abuse prescription opioids in a manner more consistent with their prescribed use, such as first receiving opioids via a legitimate prescription and using only via the intended route of administration (oral or sublingual) (Back et al., 2010; McHugh et al., 2013).

### 2.1. Impact Across the Lifespan

Much like for other drugs of abuse, the primary developmental risk period for the onset of prescription drug abuse is during adolescence (McCabe, West, Morales, Cranford, & Boyd, 2007). Data from the 2013 Monitoring the Future Study—an annual survey of 8th, 10th, and 12th graders and young adults in the U.S.—reported alarmingly high rates of nonmedical use of prescription drugs, particularly stimulant and opioid medications. Opioids were the most commonly abused medications, with almost 13% of 12th graders reporting lifetime prescription opioid abuse (McCabe, West, Teter, & Boyd, 2012). Abuse of prescription stimulants was as common as lifetime medically approved use (9.5%; McCabe & West, 2013), and abuse of benzodiazepines was also high (7.5%; McCabe & West, 2014). As with adults, Caucasians and Native Americans have higher rates of prescription drug abuse relative to other racial and ethnic groups (McCabe, Cranford, & West, 2008), and gender differences in the prevalence of prescription drug abuse are small (McCabe et al., 2008; SAMHSA, 2013b). Rates of abuse are even higher among college students, with data from the Monitoring the Future Study suggesting that 23% of college students had a lifetime history of prescription drug abuse (Johnston, O'Malley, Bachman, & Schulenberg, 2007).

Certain risk factors are associated with prescription drug abuse among youth. Youth and adolescents with other substance use disorders are more likely to abuse prescription drugs (McCabe, Boyd, & Teter, 2005; Whiteside et al., 2014). In a study of youth presenting to emergency departments, Whiteside et al. found that those with prescription drug abuse were more likely to have a number of risk factors, including poor school performance, interpersonal violence, and other substance use. Among adolescent offenders, prescription drug abuse is associated with exposure to violence, co-occurring psychiatric disorders, and delinquent behavior (Drazdowski, Jaggi, Borre, & Kliever, 2014).

Relatively little research has focused on issues related to the impact of prescription drug abuse across other specific life stages. For example, few studies have examined prescription drug abuse in reproductive age or pregnant women. Martin, Longinaker, and Terplan (2014) found that despite a relatively constant rate of admissions of pregnant women to substance use disorder treatment settings from 1992 to 2012, the prevalence of pregnant woman seeking treatment specifically for prescription opioid abuse increased 14-fold. Prescription drug abuse may be more prevalent among rural pregnant women (Shannon, Havens, & Hays, 2010). Given the importance of treatment for pregnant women to both the health of the mother and of the developing fetus, more research with this subgroup is needed.

It appears that prescription drug abuse is less common in older adults relative to other age groups (Huang et al., 2006). However, the prescription of potentially addictive medications (particularly opioids and benzodiazepines) is highly prevalent in this group (Shannon et al., 2010), highlighting the importance of better understanding the potential abuse of prescription medications among older adults. For example, benzodiazepine dependence appears to be common—and underrecognized—among adults 65 and older (Simoni-Wastila & Yang, 2006; Voyer, Preville, Cohen, Berbiche, & Beland, 2010).

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