

Factors influencing the selection of hydrocodone and oxycodone as primary opioids in substance abusers seeking treatment in the United States



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ABSTRACT

The purpose of the present study was to identify the factors that influence the selection of hydrocodone and oxycodone as primary drugs of abuse in opioid-dependent subjects ($n = 3520$) entering one of 160 drug treatment programs around the country. Anonymous, self-administered surveys and direct qualitative interviews were used to examine the influence of demographic characteristics, drug use patterns, and decision-related factors on primary opioid selection. Our results showed that oxycodone and hydrocodone were the drugs of choice in 75% of all patients. Oxycodone was the choice of significantly more users (44.7%) than hydrocodone (29.4%) because the quality of the high was viewed to be much better by 54% of the sample, compared to just 20% in hydrocodone users, who cited acetaminophen as a deterrent to dose escalation to get high and hence, its low euphoric rating. Hydrocodone users were generally risk-averse women, elderly people, noninjectors, and those who prefer safer modes of acquisition than dealers (ie, doctors, friends, or family members). In contrast, oxycodone was a much more attractive euphorogenic agent to risk-tolerant young, male users who prefer to inject or snort their drugs to get high and are willing to use more aggressive forms of diversion. Prevention and treatment approaches, and pain physicians, should benefit from these results because it is clear that not all drug abusers share the same characteristics, and the decision to use one drug over another is a complex one, which is largely attributable to individual differences (eg, personality, gender, age, and other factors).

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1. Introduction

Prescription opioid abuse has reached epidemic levels in the past 15 years [4,17,20,23,24,26,28,30,32,33,44]. While most opioid classes have seen increases in their misuse, hydrocodone and oxycodone products are by far the most prevalent drugs of choice among prescription opioid abusers [2,7,12,21,27,37,42,45]. Given that a percentage of any prescribed opioid is diverted for misuse [6,13,29], it follows that there are large amounts of hydrocodone and oxycodone readily accessible to those who choose to misuse them because they are the 2 dominant opioids used for pain management within general medicine and dentistry [19,37,41]. Accessibility, coupled with the high affinity of hydrocodone and oxycodone for the μ -opioid receptor mediating pain relief and euphoria, would seemingly be able to fully explain their popular-

ity. However, despite reports of pharmacological, physiological, and subjective similarities between oxycodone and hydrocodone in preclinical and clinical laboratory studies [34,40,46], evidence is emerging that suggests there are differences between those who use oxycodone and hydrocodone products. For example, it has been shown that, despite its very high abuse rates among prescription opioid abusers, hydrocodone is viewed as less attractive than oxycodone by active abusers when measured by the Opioid Attractiveness Scale [3]. Oxycodone users are also more likely to tamper with their drugs in order to inhale or inject their drug, a concern that led to the introduction of an abuse-deterrent formulation for OxyContin (Purdue Pharma, Stamford, CT, USA) [11].

Understanding differences between those who select hydrocodone and oxycodone as their drug of choice for nontherapeutic purposes is important for 2 reasons: 1) given their indication for acute pain, established safety profiles, and well-entrenched role in pain medicine, physicians may benefit from a characterization of risk factors for those likely to abuse one drug over another [5,26,43], particularly when deciding what prescription opiate

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would best fit the patient at hand; and 2) understanding the motivational differences between those who abuse either drug could better inform prevention and treatment strategies. In the present study we used quantitative methods (ie, a standardized, self-administered survey used extensively in past research [9–11,14]) to better understand the similarities and differences between hydrocodone and oxycodone users in 3520 patients entering drug treatment programs around the country with a *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV) diagnosis of prescription opioid dependence. However, as an important adjunct, we also used an ethnographic approach to mitigate the limitations of any structured survey, particularly an anonymous, self-administered one, such as incomplete or ambiguous answers and an inability to ask follow-up questions.

2. Methods

2.1. Study sample

The term “Key Informants” has been used for decades in sociological research [18,22,31,39], and in this study, is defined as treatment center directors or their designees, who had daily contact with patients who met DSM-IV criteria for opioid abuse/dependence. This on-going nation-wide survey, termed the Survey of Key Informants’ Patients (SKIP) program, is a key element of the postmarketing surveillance system: the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS) system [8]. Briefly, SKIP consists of over 150 treatment centers, both public and privately funded, and balanced geographically with urban, suburban, and rural patients. Each treatment center was asked to recruit patients/clients to complete an anonymous survey who: 1) were 18 years or older; 2) met DSM-IV criteria for substance abuse with a primary drug that was a prescription opioid; and 3) used prescription opioid drugs to get high within 30 days of entering treatment. Due to the strict requirements placed on adolescent research that include parental consent and careful monitoring of the adolescent patient’s privacy, those under the age of 18 years were not included in the study program to ease the burden of program administration on the vast network of Key Informants.

To supplement and add context to the structured SKIP survey, we recruited 200 patients who had previously completed the SKIP survey and indicated by a mail-in postcard provided with the survey that they were willing to give up their anonymity to participate in a follow-up study, dubbed Researchers and Participants Interacting Directly (RAPID). Based on the reflexive nature of ethnographic research, the purpose of this program was 2-fold: 1) to be able to contact participants with questions that can be answered within a short time period to establish real-time data; and 2) to quickly ask follow-up questions based on SKIP and RAPID analyses. Participants were directed to a brief online survey, and upon completion of SKIP and RAPID data analyses, follow-up questions were developed and e-mailed to participants to further expand upon results found in these surveys.

2.2. Patient/subject confidentiality

Completed SKIP survey instruments were identified by a unique case number and sent directly to Washington University in St. Louis by the respondent. Key Informants did not see the detailed responses of their patients/clients and there was no link between the data provided in the SKIP and RAPID programs. Protocols were approved by the Washington University in St. Louis Institutional Review Board.

2.3. Measures

2.3.1. Primary opioid

SKIP respondents were asked to identify the opioid used most in the past 30 days to get high (ie, their primary drug) stratified by opioid compound (buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, oxymorphone, tapentadol, tramadol). To assess satisfaction with an individual’s actual primary drug, respondents were asked “If cost, availability and access to opioids was not a problem, and you could have any opioid drug you wanted, which would you prefer?” Respondents then wrote in their “preferred opioid,” which was grouped into one of the following categories: hydrocodone, oxycodone, high potency opioids (hydromorphone, oxymorphone, methadone, morphine and fentanyl), other opioids (buprenorphine, tapentadol, and tramadol), and illicit opioids (opium, heroin).

2.3.2. Sociodemographic variables

The SKIP survey included the following sociodemographic variables: 1) sex (male/female); 2) age (continuous then subsequently divided into 1 of 4 groups; 18–24, 25–34, 35–44 and 45 years and over); 3) race/ethnicity (White, African American, Latino/a, other race); 4) area of residence (large urban, small urban, suburban, rural); 5) source of income (employed, public assistance, friends/family, other); 6) health care coverage (none, private/dependent, Medicare/Medicaid/military, other); and 7) level of education completed (“some college” or higher level, any level below “some college”).

2.3.3. Primary drug abuse patterns

Variables on the SKIP survey relating to an individual’s use of their primary drug included: routes of administration (oral [swallow/chew/sublingual]; inhalation [snort/smoke]; injection); methods of diversion (friend/relative; dealer; doctor; emergency department; stole; forged prescription); intent of opioid use (alter mood/escape from life/get high; treat pain; treat other medical or psychiatric issues; other); and the single, main reason for primary drug selection (makes me feel better than other drugs; easiest to get; safer to use than other drugs; only thing available; cheapest; other). Respondents were also asked for the average amount of money spent per week to obtain their primary drug.

2.3.4. RAPID survey

Respondents were asked to name their primary opioid of abuse and then describe in an open-ended format why they chose that particular opioid as their primary drug. To assess exposure and decision-making factors related to a variety of opioid types, respondents were then asked if they had ever abused any hydrocodone, oxycodone, hydromorphone, fentanyl, buprenorphine, or tapentadol products. For each drug endorsed that was not their primary drug, respondents were then asked to describe why that drug was not, or did not become, their primary opioid of abuse.

2.3.5. RAPID follow-up

Based on SKIP and RAPID analyses, respondents were re-contacted by e-mail to answer 2 follow-up questions: “If a drug was available that contained 100% hydrocodone, and NO combination drug (ie, acetaminophen, ibuprofen), would you be more likely, less likely, or no more or less likely to use hydrocodone to get high?”; and “Has the change in formulation of OxyContin, in which the pill is harder to crush and dissolve, made you more likely, less likely, or no more or less likely to use OxyContin to get high?” Respondents were then asked, in an open-ended format, to explain their answers in their own words.

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