Illicit use of pharmaceutical opioids among young polydrug users in Ohio

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ABSTRACT

This study, conducted in Columbus, Ohio, identified the predictors of current (past 30 day) illicit use of pharmaceutical opioids among young individuals ($n = 402$) with a history of MDMA/ecstasy use who were recruited in 2002–2003 using respondent-driven sampling. To be eligible, participants had to be 18–30 years old, not involved in a drug abuse treatment, and report MDMA/ecstasy use at least once in the past 6 months. About 81% reported lifetime, and more than 31% reported current illicit use of pharmaceutical opioids. Logistic regression analysis revealed that illicit use of pharmaceutical tranquilizers and pharmaceutical stimulants were the strongest predictors of illicit use of pharmaceutical opioids. Risk of pharmaceutical opioid use was also greater among those who had higher levels of depressive symptoms and reported current use of hallucinogens and inhalants. Our findings suggest that the non-medical use of pharmaceutical opioids is a part of polydrug use practices that often incorporate illicit use of other prescription drugs. The observed relationship between depressive symptoms and illicit use of pharmaceutical opioids may have important implications for prevention programming and should be examined in future research.

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1. Introduction

Illegal use of pharmaceutical drugs has been identified as one of the fastest growing forms of drug abuse in the U.S., with pain relievers showing the highest prevalence rates of non-medical use among all other therapeutic classes of prescription drugs (SAMHSA, 2006). According to the National Survey of Drug Use and Health, in 2004 approximately 2.4 million people aged 12 years or older initiated illicit use of prescription opioids, which exceeded the numbers of new marijuana users (2.1 million) (SAMHSA, 2006). Similar to other drugs of abuse, rates of non-medical use of pharmaceutical opioids are higher among young adults than any other age group. In 2006, 25.5% of individuals between ages 18 and 25 reported lifetime, and 4.9% past month, illicit use of pharmaceutical opioids (SAMHSA, 2007).

Consistent with the increasing trend of non-medical use, U.S. population-based community surveys have shown that rates of past-year prevalence of prescription opioid abuse and dependence more than doubled between 1991–1992 and 2001–2002 (McCabe, Cranford, & West, 2008). The Treatment Episode Data Set has also shown significant increases in treatment admissions involving pharmaceutical opioids, especially among people between 20 and 30 years of age (SAMHSA, 2004). However, National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data suggest that in 2001–2002, only about 16% of those with past-year pharmaceutical opioid abuse and about 59.5% of those with past-year dependence disorder, utilized substance abuse treatment (McCabe et al., 2008).

To develop appropriate prevention and treatment programs, more research is needed to understand the population of illicit users of pharmaceutical opioids (Zacny et al., 2003). Research has shown that non-medical users of pharmaceutical opioids are very diverse in terms of socio-demographic characteristics, drug use trajectories, and patterns of other drug use. For example, a recent study in South Florida described a trend of significant "invasion" of prescription drugs, including pharmaceutical opioids, into the local club drug subculture (Kurtz, Inciardi, Surratt, & Cottler, 2005). Prescription drug abuse has also been documented among drug-involved street-based sex workers (Surratt, Inciardi, & Kurtz, 2006). A study based on the National Addictions Vigilance Intervention and Prevention Program that used a sample of 3821 individuals, identified six groups of illicit pharmaceutical opioid users that differed in terms of drug use practices, social and demographic characteristics, and recent medical and psychological problems (Green & Butler, 2008). A study based on qualitative data collected for the Ohio Substance Abuse Monitoring Network also identified several distinct groups of users, including a group of new generation users, all between 19 and 23 years of age, who displayed two distinct patterns of non-medical use of pharmaceutical opioids. A group of "heavy" users developed more destructive patterns of use, became addicted to pharmaceutical opioids, and eventually transitioned to heroin. A group of "occasional" users differed from young "heavy" users and other groups in that they reported less social dysfunction and traumatic experiences while growing up, and were better adjusted in their current social situations (Daniulaityte, Carlson, & Kenne, 2006).

Previous research has shown that illicit use of pharmaceutical opioids and other prescription drugs is strongly associated with other

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drug use behaviors (Boyd, Esteban McCabe, & Teter, 2006; Inciardi, Surratt, Martin, & Gealt, 2004; McCabe, Boyd, & Teter, 2005; McCabe, Teter, & Boyd, 2005; McCabe, Teter, Boyd, Knight, & Wechsler, 2005; Sung, Richter, Vaughan, Johnson, & Thom, 2005). Furthermore, data obtained from the NESARC show that the majority (about 74%) of individuals with past-year pharmaceutical opioid use disorder also met DSM-IV criteria for an additional past-year substance use disorder (McCabe et al., 2008).

This study aims to identify the socio-demographic and drug-related predictors of illicit use of pharmaceutical opioids among 402 young adults recruited for a longitudinal study of MDMA/ecstasy use in Columbus, Ohio. The study described here uses data collected through the baseline structured questionnaire.

2. Methods

The 402 participants in this study were recruited between May 2002 and June 2003 in the Columbus, Ohio, area to participate in a natural history study examining MDMA/ecstasy and other drug use practices among young adults (Carlson, Wang, Falck, & Siegal, 2005). To be eligible for the study, participants had to be between 18 and 30 years old, Ohio residents, not involved in formal drug treatment within the past 30 days, able to provide an address and telephone number for follow-up interview-contact information, and report having used MDMA/ecstasy at least once in the past 6 months. In addition, subjects who reported having used MDMA/ecstasy within 3 days prior to the baseline questionnaire were rescheduled to help minimize the potential effects of the post-MDMA use wash-out period affecting the interview (Curran & Travill, 1997).

Participants were recruited using respondent-driven sampling (RDS), a modified form of snowball or chain-referral sampling. In RDS, a financial reward is given to a participant for each potentially-eligible peer that he/she refers. To impose a form of rationing on recruitment, a limited number (e.g., 3) of referral coupons is used. This strategy helps prevent the emergence of semi-professional recruiters and to reduce the effects of volunteerism (Heckathorn, 1997; Heckathorn, Semaan, Broadhead, & Hughes, 2002). Sampling "seeds" were identified at dance clubs, music festivals, raves, on the streets, and other venues as well as through the networks of consultants. We attempted to diversify the "seeds" in terms of gender, ethnicity, age, and experience with MDMA/ecstasy to speed up the recruitment process and the convergence of sample compositions (Wang et al., 2005). Each respondent was given $15 for an eligible peer referred to the project.

Informed consent was obtained from participants following a protocol that was approved by the University's Institutional Review Board. Participants were compensated $50 for the time they spent responding to the 2–3 h baseline interview. The baseline questionnaire was largely interviewer-administered and covered a variety of topics including, but not limited to, socio-demographic and drug use characteristics, adverse consequences associated with drug use, treatment history, and depressive symptoms measured using the Beck Depression Inventory (BDI-II). The BDI-II measures the severity of symptoms of depression that have occurred in the 2 weeks prior to its administration (Beck, Steer, & Brown, 1996). The instrument consists of 21 items, and scores can range from 0 to 63, with higher scores reflecting a greater severity of symptoms.

Statistical analysis was conducted using SPSS. Univariate statistics were used to describe socio-demographic and drug use characteristics. Logistic regression analysis was used to identify factors related to illicit use of pharmaceutical opioids. Prior 30 day use of marijuana was measured as: 0—"no use;" 1—"non-daily use;" 2—"daily use." Prior 30 day use of cocaine (including crack), heroin, methamphetamine, pharmaceutical stimulants, pharmaceutical tranquilizers, hallucinogens (LSD and psilocybin mushrooms), and inhalants (amyl and butyl nitrites, others) were measured as: 0—"no use;" 1—"use." Alcohol use

was measured by the number of days of "drunkenness" in the previous 30 days (0—"none;" 1—"≤mean days (9 or less);" 2—">mean days (10 or more)").

3. Results

The majority of the participants were White, and almost 11% were African American. About 35% were females, and the majority were between 18 and 25 years old (Table 1). More than half reported they were currently enrolled in school (204 in college and 10 in high school). About 17% of the study participants had been to a professional substance abuse treatment program at least once in their lifetime. The majority of the sample had BDI-II scores suggesting none or minimal depressive symptomatology, and about 15% of the sample had BDI-II scores indicating moderate or severe depressive symptoms (Table 1).

Lifetime and prior 30 day drug use characteristics are presented in Fig. 1. About 81% of the sample reported lifetime non-medical use of any pharmaceutical opioid (e.g., Vicodin®, OxyContin®, etc.), and 31% reported current use (within 30 days prior to the study). Overall, illicit use of other drugs was common among the study participants. The majority of the sample (about 87%) reported marijuana use in the 30 days prior to the interview, and 53% were daily marijuana users (20+ days in the past 30 days). About 87% reported drinking alcohol to the point of intoxication at least once in the past 30 days, and 27% of the sample reported getting drunk on 10 or more days. Nearly half of the sample had used MDMA/ecstasy on 10 or fewer occasions in their lifetime, 17.2% reported using on 21–50 occasions, and about 15% reported using MDMA/ecstasy on more than 50 occasions.

Results of the logistic regression are presented in Table 2. The Hosmer–Lemeshow test ($X^2 = 5.42$, $df = 8$, $p = 0.71$) suggests that the model fits the data well. Five of the 17 variables showed significant association with pharmaceutical opioid use ($p \leq 0.05$).

The odds of pharmaceutical opioid use among those who also reported illicit use of pharmaceutical tranquilizers (e.g., Xanax®, Valium®) was much higher, compared with those who did not use tranquilizers (OR = 6.43, 95% CI: 3.36–12.31). The odds of pharmaceutical opioid use was also higher among those who reported illicit use of pharmaceutical stimulants (e.g., Ritalin®, Adderall®) in the 30 days prior to the study, compared with those who did not use stimulants (OR = 2.90, 95% CI: 1.33–6.32). Increased risk of using pharmaceutical opioids was also associated with use of hallucinogens (OR = 2.02, CI: 1.03–3.94) and inhalants (OR = 2.26, CI: 1.01–5.06). African Americans had a lower risk of pharmaceutical opioid use than Whites, although the association was not statistically significant

Table 1
Characteristics of the study participants, $n = 402$.

Variable	n	(%)
Gender		
Men	258	(64.2)
Women	144	(35.8)
Ethnicity		
White	330	(82.1)
African American	43	(10.7)
Other	29	(7.2)
Age		
18–19	146	(36.3)
20–25	222	(55.2)
26–30	34	(8.5)
Education		
School enrollment	204	(50.7)
Not in school	198	(49.3)
Treatment		
Never	332	(82.6)
At least once	70	(17.4)
Depression (BDI scores)		
None or minimal (0–19)	343	(85.5)
Moderate or severe (20+)	58	(14.5)