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Combinations of Prescription Drug Misuse and Illicit Drugs among Young Adults

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Abstract

Background—Prescription drug misuse remains a critical drug trend. Data indicate that young adults in nightlife scenes misuse prescription drugs at high rates. As such, continued surveillance of the patterns of prescription drug misuse among young adults is necessary, particularly assessments that spotlight specific areas of risk, such as polydrug use.

Methods—Prevalence and correlates of recent combinations of prescription drugs and other substances among urban young adults recruited at nightlife venues using time-space sampling are assessed via prevalence estimates and logistic regression analyses.

Results—Overall, 16.4% of the sample reported combining illicit drug use with prescription drug misuse. Of those who reported any prescription drug misuse, 65.9% used prescription drugs in combination with at least one of the illicit drugs assessed. The most common combination was marijuana, followed by alcohol, cocaine, ecstasy, and psychedelics. Being male and identifying as gay, lesbian, or bisexual predicted the combination of prescription drugs with ecstasy, cocaine, and psychedelics.

Conclusions—Rates of combining alcohol and illicit drug use with prescription drug misuse were high, especially among men and those identified as a sexual minority. These rates are alarming in light of the host of negative health outcomes associated with combining prescription and illicit drugs.

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Contributors :

- Brian Kelly is the P.I. of the study and is responsible for the conceptualization of the study design and writing the paper.
- Brooke Wells is the primary research scientist tasked with the oversight of all data collection. She also contributed to the writing of the paper.
- Mark Pawson contributed to the writing of the paper
- Amy LeClair contributed to the sampling of human subjects and survey staff direction.
- Jeffrey Parsons is a Co-Investigator of the study and contributed to its design and implementation.

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Keywords

prescription drugs; polydrug use; young adults; nightlife

1. INTRODUCTION

The misuse of prescription drugs has emerged as a major trend over the past decade. Rates of prescription drug misuse have been reported as highest among 18-25 year olds (SAMHSA, 2010). Young adults involved in nightlife scenes exhibit especially high rates of prescription drug misuse (Kelly et al., 2013). They have also been found to have high rates of alcohol and illicit drug use (Parsons, Kelly, & Wells, 2006; Wells et al., 2010). In this regard, the combination of prescription drugs with other substances, i.e. polydrug use, may be a particular issue in this population, which is of considerable concern given its health implications.

1.1 Polydrug Use and Its Consequences

The combination of psychoactive drugs has numerous health implications. Polydrug use has been linked to increased levels of intoxication and a greater likelihood of overdose (Collins, Ellickson, & Bell, 1998; Midanik, Tam, & Weisner, 2007). Additionally, studies have identified negative physical and psychological effects from polydrug use including drug dependence (Leri, Bruneau, & Stewart, 2003), decreased cognitive functioning (Dillon, Copeland, & Jansen, 2003), and psychiatric comorbidity (Lynskey et al., 2006). Moreover, research has shown that polydrug use exacerbates problems associated with impaired driving (Thombs et al., 2009). Polydrug use with prescription drugs is of particular concern in light of a majority of prescription drug related emergency room visits and prescription drug overdoses that involve another substance (Cone et al., 2004; SAMHSA, 2011). The literature on polydrug use with prescription drugs among young people is currently underdeveloped relative to the recent growth of this drug trend. While studies indicate combination prescription drug misuse among high risk youth populations (Lankenau et al., 2012), research on more general youth populations as well as of specific illicit drugs remain understudied.

1.2 Current Study

Studies indicate that young adults in urban nightlife may be at increased risk for prescription drug misuse (Kelly et al., 2013). Yet, it remains unclear how combinations of prescription drugs with other substances are occurring within this population. This paper describes patterns of polydrug use with prescription drugs among young adults in nightlife scenes in New York. Specifically, we examine the prevalence of combinations of prescription drug misuse with alcohol and illicit substances during the previous six months. Additionally, we assess the influence of demographic factors on patterns of polydrug use. We assess these patterns among both the general sample and those specifically reporting prescription drug misuse. In sum, this short communication provides an overview of the patterns of polydrug use with prescription drugs among young adults in nightlife scenes.

2. METHODS

The field survey was intended to assess the patterns and prevalence of prescription drug misuse in combination with other substances among young adults in nightlife scenes. The inclusion criteria for this study were young adults (18-29) found in nightlife venues in New York. The examination of young adults in nightlife scenes permits us to focus our sampling methods on nightlife social venues.

2.1 Sampling

Time-space sampling was originally developed to capture hard-to-reach populations (MacKellar, Valleroy, Karon, Lemp, & Janssen, 1996; Muhib et al., 2001; Stueve, O'Donnell, Duran, San Doval, & Blome, 2001), but is also useful for generating estimates of venue-based populations (Parsons, Grov, & Kelly, 2008). As a nightlife population, we can use nightlife venues as our basic unit of sampling to systematically generate our sample. We captured a range of variability through randomizing 1) the venues attended and 2) the days/times attending the venues.

We randomized “time” and “space” using an enumerated sampling frame of venues and times of operation. To construct the sampling frame, ethnographic fieldwork allowed us to identify “socially viable” venues for a range of nightlife scenes for each day of the week. A venue was deemed “socially viable” if regular young adult patron traffic existed on that given day of the week. Venues primarily included bars, clubs, lounges, and performance venues. For each day of the week, each socially viable venue was assigned a number. Using a random digit generator, a random number was drawn, corresponding to a particular venue on a particular day. This process ultimately yielded our schedule for each month.

At the venue, staff attempted to survey as many individuals as possible through the course of the survey shift. Each surveyor approached a potential subject, identified themselves, described the study, and requested verbal consent for participation in the anonymous survey. If the patron refused, the refusal was noted and the individual's age, gender, and ethnicity were estimated. For those consenting, the survey's introduction was administered by staff and individuals self-reported sensitive information directly onto survey software on an iPod Touch®. Field staff members were trained not to administer surveys to individuals visibly impaired by intoxication.

2.2 Measures

Respondents were asked to state their age, a continuous variable. They were asked whether they identified as Latino, and then self-reported the racial group they most identified with: White, Black, Asian, Native American, Multiracial, or Other. They self-reported gender as Female, Male, Transgender, or Other. Individuals who identified as transgender or reported “Other” gender, were excluded from regression analyses due to low sample sizes, although we report their prevalence within the text below. Subjects also self-identified their sexual orientation – Straight, Gay/Lesbian, Bisexual, Queer or Other – which was then recoded as either heterosexual or gay/lesbian/bisexual/queer.

Participants self-reported the number of days of prescription drug misuse in the last six months, which was dichotomized: those who misused prescription drugs and those who did not. For those who reported any prescription drug misuse, they reported whether or not they had combined prescription drugs with certain illicit drug types (marijuana, cocaine, methamphetamine, ecstasy, psychedelics, ketamine, and heroin) or alcohol during the previous six months.

2.3 Sample

Using these measures, we surveyed 1,653 young adults (77.6% response rate). Due to small cell sizes, we removed 48 participants who self-reported having ‘other’ sexual identity as they are difficult to group with either heterosexuals or those claiming a sexual minority identity, and removed 79 participants with missing data on the outcomes, for an analytic sample of 1,526. Women were more likely than men to consent (82.2% vs. 74% consent rate, $\chi^2(1) = 28.54, p < .001$). There was no difference in response rate according to sexual

identity. People of color were more likely than Whites to consent (84.3% vs. 73.5%, $\chi^2(1) = 46.53$, $p < .001$). Sample characteristics are in Table 1.

3. Results

Of the 1,526 respondents, 378 (24.8%) reported any prescription drug misuse in the past six months. Of those who reported prescription drug misuse in the past six months, 91.1% also reported illicit drug use (compared to 67.6% of non-prescription drug users; $\chi^2(1) = 79.31$, $p < .001$). In the full sample, 16.4% of young adults misused prescription drugs in combination with at least one of the seven illicit drugs, with 14.8% combining with marijuana, 7.4% combining with cocaine, 0.3% combining with methamphetamine, 0.7% combining with heroin, 5.9% combining with ecstasy, 3.5% combining with psychedelics, and 1.8% combining with ketamine. Approximately 17.9% reported combining alcohol with prescription drugs, although an error with survey skip patterns led this question to be asked only to those reporting illicit drug use (because 91.1% of those with prescription drug misuse reported illicit drug misuse, this error resulted in 35 participants not being asked the question about combining alcohol with prescription drugs). Among those who reported misuse of prescription drugs, 65.9% misused prescription drugs in combination with at least one illicit drug, with 59.2% of them combining with marijuana, 29.8% combining with cocaine, 1.3% combining with methamphetamine, 2.7% combining with heroin, 23.7% combining with ecstasy, 14.4% combining with psychedelics, and 7.3% combining with ketamine. About 71.2% of prescription drug misusers combined prescription drugs with alcohol. Although not included in the logistic regression analyses, we report that of the 8 transgendered people, 2 combined any drug with prescription drug misuse (25%) and of the 22 “other” gender subjects, 5 reported any prescription and illicit drug combination (22.7%).

Demographic predictors were entered into a series of multivariate logistic regressions with the dichotomous illicit drug and prescription drug combination variables. Because of the small number of respondents who combined prescription drugs with methamphetamine and heroin, logistic regression analyses were not conducted with these outcomes. We assessed these combinations across the full sample as well as specifically among prescription drug misusers. Age was not associated with any combination outcomes. Among the full sample, sexual minority identity predicted higher odds of combined prescription drug misuse with cocaine, ecstasy use and psychedelic use. Racial minority identities were associated in some instances with lower odds of particular types of combination use, although those of mixed or other racial identity reported higher odds of combination prescription misuse with cocaine. Specifically considering those who reported misuse of prescription drugs, male gender and sexual minority identity predicted combined prescription drug misuse with cocaine, ecstasy use, and psychedelic use. No factors were associated with any combined use of ketamine and prescription drugs.

4. DISCUSSION

Our study highlights the prevalent combination of illicit drugs with prescription drugs among young adults. The combination of prescription drug misuse with illicit drugs was quite prevalent in nightlife scenes (16.4%). An overwhelming majority – over 9 out of 10 – of young adults who misuse prescription drugs also use illicit drugs. Of concern is that two-thirds of prescription drug misusers also indicated that they had combined prescription drugs with an illegal drug. This coheres with other studies of prescription drug misusers that have found high prevalence of polydrug use (Lankenau et al., 2012), but extends those findings beyond high risk youth to socially involved youth. The significance of this pattern lies in the fact that polydrug use typically increases intoxication and enhances the probability of overdose (Collins et al., 1998; Midanik et al., 2007). The availability of alcohol in these

nightlife settings may further exacerbate such problems when such polydrug use occurs within these settings. Our estimate of 17.2% of young adults combining alcohol and prescription drugs is likely an underestimate, and thus this issue remains a significant concern.

Having a sexual minority identity was the demographic characteristic most strongly associated with higher odds of combinations of prescription drug misuse with illicit drugs. Research has shown that sexual minority youth are more likely to use drugs in general compared to their heterosexual counterparts (Marshall et al., 2008; Talley, Sher, & Littlefield, 2010). It is notable that sexual minority young adults have higher odds of combinations of prescription drugs with cocaine, ecstasy, and psychedelics in particular, given the association of club drugs with gay nightlife scenes (Green, 2003; Parsons, Kelly, & Wells, 2006). While health promotion efforts have been devoted to reducing the burden of substance use among sexual minorities, prescription drug use presents another area in need of attention.

While men in general were not more likely to combine prescription drugs and illegal drugs, among prescription drug misusers, males have higher odds of combining these substances with illicit drugs, notably cocaine, ecstasy and psychedelics. This suggests that male prescription drug misusers may benefit from targeted health promotion messages regarding the harms associated with polydrug use.

4.1 Limitations

While informative, the limitations of these data should be considered. Because of the venue-based assessment, the survey was brief, thus limiting the information collected. In particular, the data do not provide details on specific prescription drugs (e.g. Oxycontin, Adderall, Xanax, etc...) misused and their combination with illicit drugs. In addition, although subjects were asked to self-report behaviors on a secure device, the public setting may have introduced a social desirability bias. Further, an error with the survey skip pattern led us to only assess the combination of alcohol and prescription drugs among subjects reporting illicit drug use. However, this error likely yields an underestimate of the prevalence of this combination, and thus future surveys may find this combination more prevalent. Finally, as we sampled from nightlife venues, we may have oversampled people who are more frequent nightlife participants.

4.2 Conclusions

The findings reported in this paper indicate that young adults in nightlife scenes are a population at risk for polydrug use with prescription drugs, and thus potentially the negative outcomes associated with polydrug use. In particular, sexual minority youth and males report high odds of combinations of prescription drug misuse with illicit drugs. This population would benefit from targeted health promotion efforts that focus on awareness of problems associated with polydrug use and minimizing the harms associated with these patterns of polydrug use with prescription drugs. Further research is needed on the motivations underlying polydrug use with prescriptions as well as the contexts that shape polydrug practices.

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Highlights

- Young adults in nightlife scenes have a relatively high prevalence of combining prescription drugs with illicit drugs.
- Sexual minority youth have higher odds of combining prescription drugs with illicit drugs.
- Among prescription drug misusers, males have a higher odds of combining prescription drugs with illicit drugs.

Table 1

Descriptive Statistics of Demographics

	M	SD
Average Age	24.29	2.67
Gender	n	%
Male	801	52.5
Female	700	45.9
Transgender	8	0.5
"Other Gender"	22	1.4
Sexuality	n	%
Gay/Lesbian/bisexual	535	35.8
Heterosexual	961	64.2
Race/Ethnicity	n	%
White	898	61.2
Black	104	7.1
Latino	212	14.4
Asian/Pacific Islander	91	6.2
Mixed/Other	163	11.1
	n	%
Misused Prescription Drugs in the Last Six Months	378	24.8
	M	SD
Number of Days of Prescription Drug Misuse in the last Six Months (of 378 people reporting use)	16.19	32.15
Specific Rx Combinations	Total Sample n=1,503	Among Rx Users n=378
	%	%
Any Illicit Drug + Rx Drugs	16.4	65.9
Alcohol + Rx Drugs ¹	17.9	71.2
Marijuana + Rx Drugs	14.8	59.2
Cocaine + Rx Drugs	7.4	29.8
Methamphetamine + Rx Drugs	0.3	1.3
Heroin + Rx Drugs	0.7	2.7
Psychedelics + Rx Drugs	3.5	14.4
Ketamine + Rx Drugs	1.8	7.3
Ecstasy + Rx Drugs	5.9	23.7

¹ Alcohol and Rx drug combination only reported by those reporting the use of an illegal drug

Table 2

Demographic Predictors of Any Past Year Combination Rx + Illicit Drug Use

	Full Sample (n = 1,503)					Rx Drug Misusers (n = 378)				
	Rx + Marijuana	Rx + Cocaine	Rx + Ecstasy	Rx + Psychedelic	Rx + Ketamine	Rx + Marijuana	Rx + Cocaine	Rx + Ecstasy	Rx + Psychedelic	Rx + Ketamine
Age	.99 (.93-1.04)	1.02 (.94-1.10)	.96 (.88-1.04)	.97 (.87-1.08)	.97 (.84-1.12)	1.00 (.92-1.08)	1.04 (.95-1.13)	.96 (.87-1.06)	.98 (.87-1.11)	.98 (.84-1.15)
Race/Ethnicity										
White	--	--	--	--	--	--	--	--	--	--
Black ⁺	.65 (.34-1.25)	.23 (.054-.940)	.40 (.12-1.32)	--	--	.79 (.31-2.00)	.26 (.06-1.19)	.53 (.15-1.93)	--	--
Latino	.82 (.53-1.28)	.67 (.36-1.28)	.38 (.16-.90)	.53 (.20-1.39)	.84 (.24-2.98)	.85 (.46-1.58)	.80 (.39-1.64)	.43 (.17-1.07)	.64 (.23-1.76)	.99 (.27-3.60)
API	.38 (.16-.89)	.52 (.18-1.46)	.45 (.14-1.47)	.49 (.12-2.10)	1.99 (.56-7.13)	.35 (.12-1.02)	.61 (.18-2.03)	.48 (.13-1.81)	.54 (.11-2.60)	2.99 (.72-12.5)
Mixed/Other	1.49 (.98-2.26)	1.76 (1.04-2.98)	1.54 (.85-2.77)	1.38 (.65-2.96)	2.34 (.88-6.22)	1.09 (.60-2.01)	1.48 (.79-2.78)	1.27 (.65-2.47)	1.08 (.48-2.45)	1.95 (.71-5.36)
Gender										
Male	--	--	--	--	--	--	--	--	--	--
Female	.91 (.68-1.22)	.68 (.45-1.02)	.69 (.44-1.09)	.61 (.34-1.09)	.70 (.32-1.56)	.74 (.48-1.13)	.55 (.34-.89)	.59 (.36-.99)	.52 (.28-.99)	.68 (.30-1.56)
Sexual Identity										
Straight	--	--	--	--	--	--	--	--	--	--
LGB	1.19 (.88-1.61)	1.67 (1.12-2.51)	1.86 (1.18-2.91)	1.90 (1.07-3.37)	1.35 (.61-3.01)	1.17 (.75-1.82)	1.81 (1.12-2.92)	1.92 (1.15-3.20)	1.96 (1.05-3.66)	1.23 (.532-2.86)

Note: All Odds Ratios reported are Adjusted Odds Ratios. The bolded Odd Ratios are statistically significant at the *p*<.05 level.