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Alcohol, drugs, and condom use among drug offenders: An event-based analysis

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Abstract

Background—Studies of the association between substance use and condom use in specific sexual encounters often do not separate the effects of alcohol and different types of drugs. Because the pharmacological effects and social settings of various substances differ, their effects on unprotected intercourse may vary as well.

Goal—This study examined the relationship between alcohol and drug use and the use of condoms in sexual encounters with casual partners in a high-risk population of drug offenders

Design—Participants in court-ordered drug diversion programs (n=536; 26% female) completed a questionnaire in which they reported on the circumstances of their most recent sexual encounter with a casual partner.

Results—In multivariate logistic models, alcohol use in conjunction with sex was not related to decreased condom use in either men or women. Amphetamines (smoked or injected) were associated with decreased condom use, while cocaine, marijuana, and orally-administered amphetamines were not significantly associated with condom use.

Conclusions—In this high-risk sample, links between substance use and unprotected sex differ with type of drug used.

Keywords

alcohol; drugs; unprotected sex; condom use

1. Introduction

Although sexual risk taking is frequently linked to alcohol and other substance use, the nature of this relationship and the influence of confounding variables are not clearly understood (Leigh and Stall, 1993; Leigh, 2002), and research on this link has shown inconsistent findings (for reviews, see Dingle and Oei, 1997; Donovan and McEwan, 1995; Halpern-Felsher, Millstein, and Ellen, 1996; Leigh, 2002; Leigh and Stall, 1993; Rhodes and Stimson, 1994; Weinhardt and Carey, 2000). In many studies on this topic, general substance use measures (for example, quantity or frequency of use) are simply correlated with general measures of risky sexual behavior (for example, frequency of unprotected intercourse). A more targeted

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approach uses information about substance use and unprotected sex in a specific sexual encounter. This event-specific method ensures that substance use and unprotected sex occurred on the same occasion, thus strengthening (but not guaranteeing) causal inferences.

Studies on substance use and unprotected sex in discrete events often incorporate measures of alcohol use, but measures of drug use (particularly of specific drugs) are less common (for review, see Leigh, 2002). Several studies have found that substance use (including alcohol or other drugs) at the time of a sexual encounter is not significantly associated with condom use in that encounter in such varied samples as drug users (Rosengard et al., 2006; Watkins et al., 1993), teenagers (Palen et al., 2006; Rosenthal, Smith, and deVisser, 1997), college students (Senf and Price, 1994; Freimuth et al., 1992), young adults (Santelli et al., 1997; Leonard and Ross, 1997), and female clients at a sexually transmitted diseases (STD) clinic (Weinstock et al., 1993). However, substance use was associated with nonuse of condoms in several male samples, including a national sample of young men (Ku, Sonenstein, and Pleck 1993) and male clients of an STD clinic (Weinstock et al., 1993). In a study of men who have sex with men (MSM), substance use was associated with unprotected receptive anal intercourse with a non-main partner, but not with penetrative intercourse or with unprotected sex with a main partner (Stueve et al., 2002). In these studies, information about which substances were used in the sexual encounter is not reported; and all substances, including alcohol, are combined in a single predictor variable.

Several event-level studies have distinguished between types of substances when investigating the association between substance use and condom use in sexual encounters. Using data from a national survey, Schafer, Blanchard & Fals-Stewart (1994) found that people who used any drug (not including alcohol) at the most recent sexual encounter with a new sexual partner were less likely to use condoms than were non-users. Street youth who used marijuana in a recent sexual encounter were less likely to use condoms, but those who used crack were more likely to use condoms (Bailey, Camlin, and Ennett, 1998). Marijuana use with sex was also associated with decreased condom use at a recent sexual encounter among adolescents in detention (Kingree and Betz, 2003; Kingree, Braithwaite, and Woodring, 2000; Kingree and Phan, 2002) and among MSM (Clutterbuck et al., 2001), but was unrelated to condom use among young heterosexual adults (Brodbeck, Matter, and Moggi, 2006). In a sample of female drug users, condom use at a recent sexual encounter was not significantly associated with use of alcohol, injection drugs, crack, or noninjection drugs before sex (Tortu et al., 2000), while a study of drug injectors suggested decreased condom use when both sexual partners were using crack with sex (Friedman et al., 1999). Event-level studies of MSM have found more unprotected receptive anal intercourse among men who used stimulants before sex (Colfax et al., 2004; Mansergh et al., 2006), as well as no effects for drugs other than alcohol (Venable et al., 2004).

The objective of this paper is to examine the associations between substance use and unprotected intercourse in a sample of drug offenders. Because of the varied drug experience in this sample, there is a significant amount of drug use reported before sexual activity, and we can examine the role of drugs of different classes.

2. Methods

2.1 Participants

Individuals who were enrolled in eight court-ordered drug diversion programs in the Los Angeles metropolitan area participated in the study between 1999 and 2002 (n=536, 26% female). These individuals were referred to education and treatment programs in lieu of prosecution for drug offenses including minor possession and driving under the influence. Drug diversion education classes were randomly chosen from a list of classes provided by program

administrators who agreed to provide recruitment access. Nearly all (98%) of the program attendees approached agreed to participate and completed the questionnaires. Characteristics of the sample are shown in Table 1.

2.2 Materials and procedure

Participants were informed that participation in this study was completely voluntary, that the assessments had nothing to do with their involvement in the drug diversion program, that they could withdraw from the study at any time without penalty, that their responses were completely anonymous, and that choosing to not participate would not adversely affect their completion of their program in any way. No names appeared on the questionnaire, and to ensure anonymity, verbal rather than written consent was used.

Participants completed assessments in rooms provided by the drug diversion program providers located at various provider sites. An anonymous paper-and-pencil questionnaire was administered that contained questions about a variety of aspects of substance use and sexual behavior, along with demographic variables. In one portion of the questionnaire, participants were asked to think about the most recent time that they had sexual intercourse with a casual partner, defined as “someone to whom you are not emotionally committed, including casual acquaintances, one night stands, sex for pay, etc.” Several questions about the encounter followed, including alcohol consumption “before or during sex”; number of cans/bottles of beer, glasses of wine, and drinks of liquor consumed; drug use before or during sex; type of drugs used; the characteristics of the sexual partner (paid, just met, acquaintance, steady partner, fiancé, spouse); and condom use. To specify the drugs used, participants could check any of a list of drugs including marijuana, cocaine (powder or injected), crack, speed (smoked, injected, or oral), heroin (smoked or injected), poppers, ecstasy, other club drugs, or “other.” Participants were paid \$5.00 for their participation. The procedures were approved by the Institutional Review Boards at the University of Washington and UCLA.

2.2 Data analysis

For bivariate relationships between substance use and condom use, odds ratios and confidence intervals (CIs) were calculated; for multivariate analyses, multivariate logistic regression was used. In logistic regression analyses, the outcome variable was condom use in the sexual event, with predictor variables representing substance use in the event and age included as a control variable (see Table 2 and Table 3 for predictor variables). Predictor variables were entered simultaneously, and analyses were conducted separately by gender. Interactions of different drug types were not assessed given small *ns* in some cells.

3. Results

Condom use and substance use at the most recent sexual encounter with a casual partner are shown in Table 1. Combining alcohol with other drugs was common: 73% of men who reported using drugs in this event also drank alcohol, and 62% of men who drank also used drugs. 67% of women who used drugs also drank alcohol, and 46% of women who drank also used drugs. The most common combinations were alcohol and marijuana (21%), alcohol and cocaine (11%), alcohol and amphetamine (13%), marijuana and amphetamine (8%), and marijuana and cocaine (5%).

Although the questionnaire instructed participants to report on an encounter with a casual partner, 28% of men and 33% of women reported that their partner on this occasion was a steady girlfriend/boyfriend, fiancée/fiancé, or spouse. The following analyses are limited to those who stated that their partner was casual (254 men and 88 women).

Bivariate analyses showed that drinking alcohol before or during the sexual encounter was not associated with decreased condom use in men or women. Condoms were used by 52% of men who drank before sex and by 56% of those who did not drink before sex (OR = .85; 95% CI = .51, 1.44). Among women, 47% of both drinkers and nondrinkers used condoms (OR = 1.00; 95% CI = .43, 2.32). Condoms were used by 48% of men who used drugs before sex and by 59% of those who did not use drugs before sex (OR = .63; 95% CI = .39, 1.03); in women these percentages were 43% and 48%, respectively (OR = .82; 95% CI = .35, 1.92).

In an initial multivariate model with age, drinking before sex, and drug use before sex as predictors of condom use in the sexual event, drinking with sex was not related to decreased condom use in either men or women, but men were less likely to use condoms if they had used drugs in conjunction with the sexual encounter (Table 2). Similar results were obtained in a model in which number of drinks consumed, rather than a dichotomous drinking variable, was used as a predictor (OR for number of drinks; men: OR = .99; 95% CI = .94, 1.02; women: OR = .94; 95% CI = .87, 1.02).

In order to disentangle the association of different kinds of drugs, we estimated a second model with the different drug classes as predictors, along with age and drinking. Men who used amphetamine (smoked or injected) in conjunction with the sexual encounter were less likely to use condoms, while cocaine, marijuana, and orally-administered amphetamine were unrelated to condom use (Table 3). Results for women were similar, but because of a small sample size for women (n=79), the parameters for women were unstable. Odds ratios for heroin use among men and oral amphetamines among women could not be estimated; in the full sample (analyses not shown), participants who used heroin were less likely to use condoms, but this association did not reach significance (OR=.19; 95% CI .02, 1.71). In this analysis of the full sample, interactions of drug measures with gender were nonsignificant.

4. Discussion

In this sample of drug offenders, men and women who drank alcohol in conjunction with a recent sexual encounter with a casual partner were no less likely to use condoms than were those who did not drink during the encounter. This finding is consistent with a recent meta-analysis of the association between drinking and condom use in sexual encounters, which reported that drinking was linked to decreased condom use only in first sexual encounters in adolescents, not in recent encounters among adults (Leigh, 2002). Men who used drugs during the encounter were less likely to use condoms than those who did not; among women, a trend toward decreased condom use was not statistically significant. When specific drugs were examined, people who used amphetamines (smoked or injected) with the encounter were less likely to use condoms, while the use of cocaine, marijuana, and orally-administered amphetamines were not significantly associated with condom use.

The association of specific drugs to decreased condom use might be due less to the actual drugs used than to the type of individual who uses them. For example, studies of drug users have reported that users of more stigmatized drugs had more sexual risk behavior in general (Flom et al., 2001), and that injectors were less likely to always use condoms than non-injectors (Siegal et al., 1996).

Schafer et al. (1994) reported that people who used drugs and did not use condoms in a recent sexual encounter showed higher levels of impulsivity, risk-taking, and sensation-seeking than people who used condoms or did not use drugs in the event. Thus, lifestyle factors such as a propensity to risk-taking, sensation-seeking, or unconventionality might lead to both drug and unprotected sex in these events, and a link between drug use and unprotected sex might represent these lifestyle factors rather than a pharmacological effect of drugs.

Variations in the pharmacological effects of different substances might affect their use in sexual situations and also their effects on sexual behavior. For example, crack cocaine has been associated with trading sex for drugs (Edlin et al., 1994; Marx et al., 1991), and among MSM, nitrites (Ostrow et al., 1990; Ostrow et al., 1993) and methamphetamine (Colfax et al., 2004; Mansergh et al., 2006) may serve as triggers for risky sex. Heroin may reduce sexual interest and ability, while methamphetamine and cocaine are associated with increased sex drive (Zule and Desmond, 1999; Rhodes and Quirk, 1998). Differences in pharmacological effects, situations of use, and reasons for use may lead to different relationships between these drugs and risky sexual activity.

The study's limitations include the potential for retrospective biases that might encourage people to respond in a way that justifies past risky behavior by attributing it to substance use. Although the survey was completely anonymous, the setting in a drug diversion program, and the use of paper-and-pencil questionnaires that could be seen by study staff, could have led to underreporting. The relatively small, and overwhelmingly male, sample made analyses of gender differences difficult; moreover, men and women may differ on their reporting of sensitive behavior. We did not obtain information on the gender of the sexual partner in the recent sexual encounter, and an unknown proportion of offenders may have had same-sex partners; the findings cannot address potential differences in the drug-sex nexus by sexual orientation. Although this sample of offenders in court-ordered drug education programs displayed considerable drug use, their characteristics may not be representative of other drug users, especially those who committed more serious offenses and were thus not eligible for diversion.

Links between substance use and sexual behavior are part of a context that incorporates elements of personality, pharmacology, situation, and relationships (Fortenberry, 1995; Kraft, Rise, and Traeen, 1990). If the use of certain drugs is linked to unprotected intercourse, drug-using populations are a target for interventions that address the practice of safer sex along with secondary prevention of alcohol and other substance abuse. Moreover, differences in the associations of different drug types to unprotected intercourse can guide the focus of such interventions.

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Table 1
Sample characteristics: Demographics, substance use, criminal history, and sexual behavior

	Women (n=138)	Men (n=398)
Age (median)	30	30
Ethnic background (%)		
White	42	40
African-American	14	5
Latino	33	41
Asian American	6	7
Other	5	7
Number of convictions for offenses related to substance use (%)		
None	23	17
1	67	61
2	6	12
3 or more	3	10
Current offense (%)		
Drug possession	55	49
Driving under influence of alcohol	17	25
Driving under influence of another drug	9	7
Sale of illegal drug	1	6
Number of sexual partners in previous year (%)		
None	10	7
1	44	37
2–3	26	27
4 or more	20	29
Most recent sexual encounter with a casual partner (%)		
Used condom	40	49
Drank alcohol before or during encounter	58	67
Number of drinks consumed (median)	4	6
Used drugs before or during encounter	41	57

Table 2
Alcohol and drug use as predictors of condom use in sexual encounter

	Crude		Adjusted ^I	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Women (n=89)				
Age (in years)	.97	.93, 1.02	.97	.92, 1.02
Drank before sex	1.0	.43, 2.32	1.22	.51, 2.92
Used drugs before sex	.82	.35, 1.92	.80	.34, 1.89
Men (n=267)				
Age (in years)	.97	.95, .99	.97	.94, .99
Drank before sex	.85	.50, 1.44	.86	.50, 1.48
Used drugs before sex	.63	.39, 1.03	.59	.36, .98

Note: for all drug variables, 0=no, 1=yes

^I Adjusted for all other predictors

Table 3

Alcohol and drug classes as predictors of condom use in sexual encounter

	Percent using substance	Crude		Adjusted ^I	
		Odds Ratio	95% CI	Odds Ratio	95% CI
Women (n=79)					
Age (in years)		.97	.93, 1.02	.95	.90, 1.0
Drank alcohol	65.0	1.0	.43, 2.32	1.23	.43, 3.5
Used heroin	3.7	1.12	.15, 8.33	.68	.04, 11.6
Used amphetamines (smoked or injected)	13.4	.66	.20, 2.19	.53*	.13, 2.11*
Used amphetamines (oral)	3.7	.36	.04, 3.57		
Used cocaine or crack	8.5	.83	.17, 3.91	1.15	.18, 7.4
Used marijuana	19.5	.74	.25, 2.15	1.06	.30, 3.72
Men (n=239)					
Age (in years)		.97	.95, .99	.97	.94, 1.0
Drank alcohol	72.0	.85	.50, 1.44	.71*	.39, 1.28*
Used heroin	1.6	.37	.08, 2.38		
Used amphetamines (smoked or injected)	16.1	.37	.19, .73	.31	.14, .66
Used amphetamines (oral)	8.5	.72	.31, 1.67	.94	.34, 2.57
Used cocaine or crack	17.3	.69	.37, 1.30	.66	.32, 1.35
Used marijuana	28.0	1.26	.75, 2.13	1.4	.74, 2.63

^I Adjusted for all other predictors

* Predicted failure perfectly

Note: for all drug variables, 0=no, 1=yes