



Drinking and condom use: Results from an event-based daily diary in clients of a sexually-transmitted disease clinic

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Introduction

Although it is often assumed that drinking alcohol interferes with condom use, most studies on this topic do not meet the conditions required for causal interpretation. Establishing a causal association between drinking and high-risk sex requires at least two conditions: alcohol activity must precede sexual activity, and confounding variables must be controlled. Most studies of the alcohol-unsafe sex relation do not meet these conditions. Studies that correlate measures of overall substance use and risky sexual behavior do not control for confounding personality variables such as impulsivity or sensation-seeking that may drive both behaviors, nor do they establish that the alcohol use and the risky sex occurred on the same occasion. The "critical incident" technique, in which respondents report on a single event, does not eliminate the possibility of confounding personality characteristics nor does it capture the typical behavior pattern of an individual if the encounter chosen does not represent the respondent's usual behavior.

In this study, we examined the association of drinking to condom use using data from a diary study of alcohol use and sexual encounters. This method, by gathering information on multiple sexual encounters from each person, establishes the temporal relationships between drinking and condom use and controls for individual differences by holding them constant in a within-subjects analysis. It also minimizes recall bias, since respondents report on each sex occasion within 24 hours of its occurrence.

Sample

Participants (n = 167) were recruited from a sexually-transmitted disease clinic. To ensure that potential participants were at risk and to ensure sufficient within-subject variability in alcohol consumption and condom use for the analyses, respondents were selected who:

- were unmarried, and not in a steady monogamous relationship of longer than six months duration
- had had sex on at least four occasions in the last two months
- had drunk alcohol on at least four occasions in the past two months
- had sex after drinking alcohol at least once in the last two months
- had used a condom at least once in the last year (but not always)

Respondent characteristics

- Average age: 26.3 (sd = 4.3; range = 19 - 35)
- Ethnicity: 69% white, 13% African-American, 18% other
- Median lifetime partners: females, 17; males, 20
- Age at first intercourse: females, 15.7 (sd = 2.1); males, 15.5 (sd = 3.0)
- Drinking in last 12 months: 79% weekly; 18% monthly, 3% less often
- Binging (5+ drinks) in last 12 months: 30% weekly, 17% monthly, 45% yearly, 9% not in last year
- Used condoms in last 2 months: 19% always, 50% sometimes, 14% rarely, 16% never
- Ever diagnosed with an STD: females, 46%; males, 17%

Procedure

Participants completed daily diaries, in which they reported their alcohol use and sexual behavior, for 8 weeks. They were told that the study was designed to examine daily patterns of a variety of health-related behaviors. It included questions on smoking, diet, dental care, exercise, seatbelt use, sleeping patterns, drug and alcohol use and sexual behaviors. Completing the diary took about 5 minutes each day.

Up to three sexual encounters and three drinking occasions could be reported each day. Participants who reported sexual activity were asked details including the time the encounter began, type of sex, type of partner, whether a condom was used, whether other methods of birth control or disease prevention were used, and whether the encounter began at a bar or party. For each drinking occasion, respondents reported on details including the number of drinks consumed, and the time drinking began and ended.

Participants were paid \$2 for each daily report completed, with a \$3 bonus for each week with no missing days, plus a total of \$25 for completing longer surveys at enrollment and after the 8 weeks of daily diaries.

Analysis

Drinking episodes were matched with sexual encounters if drinking occurred within 4 hours before sexual activity started. The amount of alcohol consumed was calculated by converting amounts of beer, wine and liquor consumed to standard drinks (= 4 oz. wine, 12 oz. beer, or 1 oz. spirits) and summing across beverages.

The number of occasions of sexual intercourse reported for the eight weeks ranged from 0 to 85 per participant (median of 6 occasions). Of all the occasions reported, 40% were condom-protected, 25% were preceded by alcohol use, 75% took place with a steady sexual partner, and 25% took place with a casual partner.

Results

First, we calculated the proportion of times condoms were used for vaginal intercourse 1) when intercourse was preceded by alcohol use and 2) when it was not preceded by alcohol use. Paired t-tests comparing these proportions within subjects showed no tendency for drinking to reduce condom use; in fact, there was a non-significant trend toward *more* condom use in encounters preceded by drinking with casual partners.

Proportion of occasions in which a condom was used, by prior alcohol use

	n	Alcohol		t	p (2-tailed)
		Alcohol	No Alcohol		
Casual partners					
All	49	.62	.55	1.24	.22
Men	27	.68	.61	.99	.47
Women	22	.53	.46	.74	.33
Steady partners					
All	92	.41	.42	-.74	.33
Men	39	.44	.43	.65	.52
Women	53	.38	.42	-1.24	.22

To perform more detailed analysis of both person-level and event-level variables, we constructed a random-effects multi-level logit model to predict the probability of condom use. We first analyzed a simple model in which condom use was predicted from drinking before sex (an event-level variable; coded yes/no). The odds of condom use were not significantly different for drinking vs. non-drinking events (Odds ratio [OR] = 1.18, 95% confidence interval [CI] .85, 1.64); similar results were obtained when we ran this analysis separately for men and women. When condom use was predicted from number of drinks consumed, there was a significant effect for men only (OR = 1.16, 95% CI 1.06, 1.28), such that men were more likely to use condoms when drinking before sex.

Finally, we specified models, separately for men and women, that included additional individual and situational variables that might affect condom use: use of other contraceptives, partner type (casual or steady), and whether the encounter was the first sex with that partner, with age included as a control variable. To investigate whether drinking was associated with condom use differently for steady and casual partners, we included an interaction term of Drink X Partner Type. Results (below) indicated that, for men, condom use was more likely with casual and first-time partners, and was less likely when other contraceptive methods were used at the time of intercourse; older men were also less likely to use condoms than younger men. For women, only use of other contraception was significantly associated with condom use at the event.

Multivariate predictors of condom use, by gender

	Women (n = 80)		Men (n = 87)	
	Odds	95% CI	Odds	95% CI
Age (in years)	1.01	.90, 1.13	.84	.74, .96
Other contraception	.04	.02, .08	.07	.03, .18
First sex w/ this partner	1.28	.49, 3.30	2.52	1.00, 6.33
Partner type	1.61	.77, 3.38	3.70	1.49, 9.16
Drinking before sex	.77	.47, 1.26	1.54	.70, 3.36
Drinking x partner type	2.60	.87, 7.78	.62	.19, 1.97

Conclusions

These results do not support the notion that alcohol causes people to engage in sexual risk that they would avoid when sober; instead, sexually-experienced adults tend to follow their usual pattern of condom use, regardless of alcohol use. These findings suggest that the links between alcohol use and sexual risk-taking that have been established in other published work may be artifacts of confounding with individual differences, including use of other methods of contraception and, for men, sex with a relatively unknown partner.

Supported by Grants AA09701, K02 AA0183, and AA013688 from the National Institute of Alcohol Abuse and Alcoholism