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Alcohol and Drug Use and Related Consequences among Gay, Lesbian and Bisexual College Students: Role of Experiencing Violence, Feeling Safe on Campus, and Perceived Stress

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Abstract

Objective—To examine differences between gay, lesbian, and bisexual (GLB) and non-GLB university students in alcohol and other drug use (AOD) and related consequences as well as the relevance of violence, perceived safety, and stress to any such differences in AOD use and related concerns.

Methods—A random representative sample of university students (N=988) were recruited via email for an online survey. Linear regression models assessed associations between identifying as GLB and AOD use and related consequences.

Results—Regression models (adjusted for gender) indicated that, in comparison to heterosexual students, GLB students were more likely to report recent illicit drug use (AOR = 2.0; 95% CI: 1.1–3.9), more frequent negative AOD consequences ($\beta = 5.5$, SE=1.4, $p < 0.0001$), and having seriously thought about/attempted suicide due to AOD use in the past year (AOR=6.6; 95% CI: 3.0–14.3). Study findings also suggested that violence, safety, and stress variables partially contribute to AOD use and related concerns among GLB students.

Conclusions—Findings highlight the need for future efforts to investigate and address mechanisms, including aspects of campus life, which contribute to AOD related risks among GLB students.

Keywords

alcohol use; drug use; substance use; college students; GLBT; victimization; stress; campus environment

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BACKGROUND

High rates of alcohol and other drug (AOD) use among college students have been well documented (Johnston, O'Malley, & Bachman, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2009) and such use has been found to be greater among gay, lesbian and bisexual (GLB) college students in comparison to heterosexual students (e.g. McCabe, Boyd, C., & d'Arcy, 2003; Eisenberg & Wechsler, 2003; Ford and Jasinski, 2006). College students who use AOD experience a variety of consequences such as academic impairment (Perkins, 2002), campus security and police involvement (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002), suicide attempts (Perkins, 2002), unprotected sex (Hingson, et al., 2002), and assault and injuries (Hingson, Heeren, Winter, Wechsler, 2005). Research on consequences of AOD use specifically among GLB college students has been more limited; however, existing findings suggest that GLB students experience these consequences related to AOD use at a greater extent compared to their heterosexual counterparts (McCabe et al., 2003).

Research that has investigated experiences of GLB students in college campuses suggests a need for considering unwelcoming aspects of campus environment as potential factors that may explain greater AOD use and consequences among GLB students. Studies among college and other school populations have shown higher rates of harassment, reported fear for safety (Rankin, 2003), and victimization from violence (Garcia, Adams, Friedman, & East, 2002; Williams, Connolly, Pepler, Craig, 2003) among GLB students compared to heterosexual students. Such negative experiences on campus may likely heighten stress and increase AOD use among GLB students, given that such experiences have been associated with AOD use among other populations (e.g. Kirillova, Vanyukov, Kirisci, & Reynolds, 2008; Matto, Miller, Spera, 2007; Reed, Amaro, Matsumoto, & Kaysen, 2009). However, a paucity of research has examined the role of such variables in contributing to the high rates of AOD use and related consequences found among GLB students on college campuses.

To contribute to the literature on this important health topic, the specific goals of the current study were to: 1) examine whether GLB students report greater experiences of victimization, lower levels of perceived safety, and higher stress levels compared to non-GLB students, and 2) assess whether GLB students report greater AOD use and consequences, and the contribution of these violence and stress related variables (victimization, perceived safety, and stress) to any increased AOD use and/or AOD related consequences among GLB students.

METHODS

Procedure

This cross sectional study assessed alcohol or drug (AOD) use and related consequences among college students attending a large, urban university in Boston. A random sample was drawn from all enrolled undergraduate students and invited to participate via email. Data were collected using a web-based survey from January to March of 2005. Participants who completed the survey received a \$10 voucher. The study was approved by the University's Institutional Review Board.

Sample

Of the 2600 students invited to participate in the study, 1070 gave informed consent and completed the survey (i.e., response rate is 41%). A minority of participants who reported "other" category for the item on sexual orientation were deleted from the study (n=82), for a final sample size of 988. Students who were missing data on sexual orientation did not vary significantly on demographics or relevant study characteristics.

Measures

Sexual orientation was measured as heterosexual/straight, bisexual, lesbian/homosexual/gay, and other. Age was measured continuously and dichotomized as under 21 versus 21 and older, based on legal drinking age. Race/ethnicity (White, Asian, Hispanic, Black, or other), gender (female or male), and nativity (US born versus non-US born) were also assessed.

Alcohol use (past 30 days) measured any versus no alcohol use (Core Alcohol and Drug Survey; Presley, Meilman, & Lyster, 1994). The Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985) assessed heavy episodic drinking: those having 5 or more drinks in one sitting for males and 4 or more drinks for females over a typical week were grouped as such drinkers, given biological differences in metabolism of alcohol (Wechsler et al., 1995).

Illicit Drug use (past 30 days) reflected the frequency of each of the following drugs: marijuana, cocaine, amphetamines, sedatives, hallucinogens, opiates, inhalants, designer drugs, steroids and other illegal drugs (Core Alcohol and Drug Survey; Presley et al., 1994). Two variables were created reflecting summary scores of the following: 1) the number of drugs reported in the past 30 days for each participant, and 2) the frequency of use for each drug reported in the past 30 days for each participant.

Consequences of AOD use in the past year were measured by the Rutgers' Alcohol Problem Index (RAPI; White & Labouvie, 1989), a 23-item screening tool for assessing AOD consequences, modified to include both alcohol and drug use related consequences. The measure uses a 5 point Likert scale. A total score was created. Cronbach's alpha for this total RAPI score was 0.93 for the overall sample.

Items related to suicide (past year) due to AOD use asked participants how often they have thought about or seriously tried to commit suicide due to AOD use with a 5 point Likert scale ranging from "never" to "10 or more times" (Core Alcohol and Drug Survey; Presley et al., 1994).

Sexual violence was measured using positive responses from either of two items: 1) forced sexual touching or fondling (past year) or 2) sexual assault or date rape (past year). Participants also were asked about physical violence and physical threats in the past year (yes/no). No differences were observed in outcomes by type of violence; one composite variable was created to reflect whether students reported any physical or sexual violence or threats of physical violence in the past year.

Safety Perception assessed whether participants feel safe on campus (yes/no) (Core Alcohol and Drug Survey; Presley, et al., 1994). Stress (past month) was measured using the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), a measure assessing how often participants report feeling aspects related to stress (e.g. confidence to handle problems, ability to overcome difficulties).

Statistical Analyses

Crude and adjusted logistic and linear regression models were subsequently used to assess the relation between GLB identification to: substance use (past 30 day alcohol use, binge drinking, any illicit drug use, frequency and number of drugs used), consequences of AOD use, whether participants thought about or attempted suicide, perceived safety, perceived stress, and violence variables. Demographic variables associated with GLB identification in bivariate analyses at $p < 0.1$ were included in all adjusted regression analyses.

To explore whether safety, stress, and violence may be potential mediators, the relation between GLB identification and AOD use/related consequences was examined by further adjusting for

perceived safety, stress, and violence variables found to be significantly related to both GLB identification and AOD use and consequences ($p < 0.05$). This “fully adjusted” analysis was performed in order to determine whether such variables may partially explain increased AOD use and related consequences among GLB students.

RESULTS

Demographics and GLB Identification

A total of 42 participants identified themselves as either bisexual ($n=24$, 57%), lesbian, homosexual or gay ($n=18$, 43%). The majority (56%) were under 21 years old, US born (89%), and just under half (41%) were male. Most (62%) were of White race/ethnicity, followed by Asian (15%), Hispanic (10%), Black (6%), and other (5%). Just over half (59%) were female and 41% were male. No differences in demographics were observed by GLB identification.

Experiences of Violence, Perceived Safety on Campus, and Stress: Relation to GLB Identification and AOD Use

Findings from logistic and linear regression models adjusted for gender indicate that, compared to heterosexual students, GLB students were more likely to report threats or experience of physical and sexual violence ($AOR=2.3$; 95%CI: 1.2–4.5), were less likely to report feeling safe on campus ($AOR=0.2$; 95%CI: 0.1–0.6), and reported greater perceived stress ($\beta = 1.0$, $SE=0.4$, $p=0.007$). (Table 1). Notably, these variables (not feeling safe on campus, threats or experience of physical and sexual violence, and greater perceived stress) were also all significantly and positively associated with AOD use and consequences among participants (all $p's < 0.05$).

GLB identification in Relation to AOD Use and Related Consequences & the Contribution of Violence, Safety, and Stress Variables to Increased AOD use and Related Consequences

In logistic and linear regression models adjusted for gender, compared to heterosexual students, GLB students were more likely to report any illicit drug use in the past 30 days ($AOR = 2.0$; 95%CI: 1.1–3.9), more frequent use of illicit drugs in the past 30 days ($\beta = 0.4$, $SE=0.9$, $p=0.0002$), a greater number of illicit drugs used in the past 30 days ($\beta = 2.2$, $SE=0.6$, $p=0.0007$), more frequent negative consequences to AOD use ($\beta = 5.5$, $SE=1.4$, $p<0.0001$) and having seriously thought about or attempted suicide due to AOD use in the past year ($AOR=6.6$; 95%CI: 3.0–14.3). (Table 2). In the fully adjusted models (also adjusted for whether students feel safe on campus, experiences of violence, and perceived stress), most findings remained significant. All effect estimates were reduced in the fully adjusted models compared to the models only adjusted for gender, suggesting that violence, safety, and stress variables partially contribute to AOD use and related concerns among GLB students (Table 2).

DISCUSSION

Current study findings indicated that GLB students reported greater AOD use and related consequences compared to non-GLB students. GLB students also reported feeling less safe on campus, increased stress levels, and more experiences of threats and victimization; these factors contributed to increased AOD use and in particular to consequences and suicidal thoughts/attempts related to AOD use among GLB students.

The finding that GLB students reported greater illicit drug use and greater AOD related consequences was similar to previous study findings (e.g. McCabe et al., 2003; Eisenberg & Wechsler, 2003; Ford and Jasinski, 2006). However, our study is among the first to demonstrate quantitatively that factors associated with an unwelcome campus environment (i.e. experiences of violence, feeling safe on campus), as well as perceived stress contribute to increased AOD

use and related consequences among GLBT students. Our findings are consistent with previous hypotheses suggesting that a stressful campus environment may contribute to increased AOD use behavior and related consequences among GLB students (Hughes & Eliason, 2002; Eisenberg & Wechsler, 2003). Initial findings indicate the need for further research to investigate these and other mechanisms increasing AOD use and related consequences among GLB students, particularly within the context of university settings.

The findings of the current study should be considered with recognition of several study limitations. We were unable to examine differences across subgroups of the GLB sample or by gender due to insufficient sample size for such stratifications. While confidence intervals for suicide related items were slightly wide, the effect estimates were large and demonstrated significant findings despite limited power due to the small number of participants reporting suicide-related consequences. Generalizability of the study may be limited to college populations with similar demographic profiles and we were not able to determine whether our sample of GLB students was representative of all GLB students on campus. Finally, the cross-sectional nature of the study limits our ability to identify temporal sequencing. However, our framework is supported by various longitudinal studies demonstrating that victimization and stress can lead to subsequent increased substance use among younger populations (e.g. Grayson & Nolen-Hoeksema, 2005; Meade, Kershaw, Hansen, & Sikkema, 2007).

Current study findings highlight the need for universities to implement campus-wide efforts tailored to GLB students in order to decrease AOD use and related consequences. Adapting and testing effective intervention models (Amaro et al., 2009; Borsari & Carey, 2005; White et al., 2006) with GLBT populations within university settings is clearly needed. Further, given the greater reports of not feeling safe on campus, experiences of victimization, and levels of perceived stress among GLB students in comparison to their non-GLB counterparts, there is a need for colleges and universities to address aspects of campus life that may contribute to an unwelcoming environment for GLB students. Such factors need to be addressed in order to ensure the safety and well-being of GLB students, but also, as the findings of the current study suggest, to decrease AOD use and related consequences among GLB students.

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Table 1

GLB Identification and Relation to Experiences of Violence, Perceived Safety on Campus, and Perceived Stress: Findings from Logistic and Linear Regression Models Adjusted for Gender (n=988).

Variable	% (n) *	Crude Odds Ratio (OR) and 95% Confidence Interval (CI)	Adjusted OR and 95% CI **
Physical or Sexual Violence or Threats of Physical Violence	20.2 (200)		
GLB	38.1 (16)	2.5 (1.3–4.9)	2.3 (1.2–4.5)
Heterosexual	19.5 (184)	1.0 (referent)	1.0 (referent)
Feel safe on campus	94.9 (938)		
GLB	83.3 (35) †	0.2 (0.1–0.6) †	0.2 (0.1–0.6) †
Heterosexual	95.5 (903)	1.0 (referent)	1.0 (referent)
	% indicating score among highest tertile	β coefficient, standard error (SE), p value, Crude Analyses	β coefficient, SE, and p value, Adjusted Analyses **
Perceived Stress score	39.0 (385)		
GLB	59.5 (25)	0.9 (0.4) (<0.0001) †	1.0 (0.4) (0.007) †
Heterosexual	38.1 (360)		

** Adjusted for gender

† p<0.05

Table 2

GLB Identification and Relation to Alcohol & Drug Use as well as Consequences of such Use: Findings from Logistic and Linear Regression Models (n=988)

Substance Use Variables	% (n)	Crude Odds Ratio (OR)	Adjusted OR **	Adjusted OR ***
Alcohol, past 30 days	80.7 (797)			
GLB	85.7 (36)	1.5 (0.6–3.5)	1.5 (0.6–3.6)	1.5 (0.6–3.6)
Heterosexual	80.4 (761)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Heavy Episodic Drinking at least once a week, past 3 months ^Δ	77.0 (761)			
GLB	81.0 (34)	1.0 (0.6–1.9)	1.0 (0.6–1.9)	1.0 (0.5–1.8)
Heterosexual	76.9 (727)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Illicit drug use, past 30 days ^Δ	21.0 (208)			
GLB	33.3 (14)	2.0 (1.1–4.0) [†]	2.0 (1.1–3.9) [†]	1.8 (0.8–3.6)
Heterosexual	20.5 (194)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Seriously thought about or suicide attempt due to AOD use, last year	5.3 (53)			
GLB	23.8 (10)	6.6 (3.0–14.2) [†]	6.6 (3.0–14.3) [†]	5.1 (2.2–11.6) [†]
Heterosexual	4.5 (43)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Mean (Standard Deviation)		β coefficient, SE, and p value Crude Analyses	β coefficient, SE, and p value, Adjusted Analyses	β coefficient, SE, and p value, Adjusted Analyses
Frequency of Illicit drug use, past 30 days ^Δ	7.8 (3.8)			
GLB	9.9 (9.8)	0.4 (0.9) (0.0001) [†]	0.4 (0.9) (0.0002) [†]	0.3 (0.9) (0.0008) [†]
Heterosexual	7.7 (3.3)			
Number of Illicit drugs Used, past 30 days ^Δ	0.3 (0.6)			
GLB	0.6 (1.4)	2.2 (0.6) (0.0006) [†]	2.2 (0.6) (0.0007) [†]	2.1 (0.7) (0.001) [†]
Heterosexual	0.2 (0.5)			
Frequent Consequences of AOD use (RAPI Index)	5.5 (9.2)			
GLB	11.1 (14.7)	5.8 (1.4) (<0.0001) [†]	5.5 (1.4) (<0.0001) [†]	4.1 (1.4) (0.002) [†]
Heterosexual	5.3 (8.9)			

^Δ including marijuana, cocaine, opiate, ecstasy, and inhalant use

[†] p<0.05

^Δ defined as 5 or more drinks in one day for males and 4 or more drinks in one day for females

** Adjusted for gender

*** Adjusted for whether feel safe on campus, physical threats, sexual violence, and perceived stress