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The Association between Alcohol and Sexual Risk Behaviors among College Students: A Review

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Abstract

Purpose of review—Alcohol use is prevalent among college students and may contribute to sexual risk behavior engagement. A narrative review of the recent empirical literature examining the association between alcohol use and sexual risk behaviors among college student samples was conducted. The purpose of this review was to: (a) review studies examining the association between alcohol use and risky sexual behaviors; and (b) overview research investigating alcohol expectancies and partner characteristics as factors that may influence the alcohol-risky sex relation among college students.

Recent findings—Findings regarding the direct link between alcohol use and sexual risk behaviors were mixed. Results suggest a more nuanced association between alcohol and risky sexual behaviors that is influenced by alcohol expectancies and partner characteristics.

Summary—Results highlight the importance of considering additional factors that may influence the alcohol-risky sex relation. Future interventions targeting alcohol-related sexual risk behavior engagement among college students are needed.

Keywords

Alcohol; Condom Use; Risky Sexual Behaviors; College Students; Alcohol Expectancies; Partner Characteristics

Introduction

Alcohol is the most commonly used and abused substance by young adults in the United States (U.S.; [1]). Recent data from the National Epidemiologic Survey on Alcohol and

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Related Conditions (NESARC) suggest that 70% of U.S. young adults, ages 18 to 24 years, drink alcohol, with almost half drinking above the recommended daily limit [2–4] or binge drinking (consuming 4 drinks for women or 5 drinks for men over a two hour period; [5]). Alcohol use and misuse are prevalent among college students in particular; an estimated 42% of college-aged students engage in binge drinking [6]. Alcohol use may contribute to engagement in sexual behaviors (e.g., sex without a condom) that increase one's risk for HIV and other sexually transmitted infections (STIs; [6–9]). Indeed, in a given year as many as 400,000 college students report having sex without a condom after drinking [10].

Understanding factors that may underlie the association between alcohol use and sexual risk behaviors is of considerable public health importance, as incident HIV infections and other STIs among young adults are on the rise [11]. Young adults (aged 21–29 years) are disproportionately impacted by HIV, particularly racial/ethnic minority youths [11, 12]. In 2010, young adults accounted for 26% of all new HIV infections [13]. Young adults are also disproportionately impacted by STIs, which increase risk for HIV transmission [14]. Additionally, sexual harassment, sexual victimization, and unintended pregnancy are also pressing concerns on college campuses, and alcohol use in sexual contexts may contribute to each of these outcomes [15–19].

Alcohol use is a prominent factor correlated with behaviors that increase risk for STI/HIV [20–24]. However, empirical research exploring the causal linkage between alcohol use and high-risk sexual behavior has yielded mixed findings among college students [25, 26], other at-risk populations [27], and across methodologies [7, 25, 28–30]. Global association studies that focus on overall patterns of alcohol use and high-risk sexual practices typically suggest that there are positive associations between drinking and sexual risk behavior [24, 31] and incident HIV infections [32]. However, alternative methodological approaches such as event-based studies provide a more reliable index of sexual risk than retrospective assessments of multiple events, and allow for analysis that links alcohol use to sexual behaviors within a specific sexual occasion [33, 34]. Such event-based studies suggest that there is a nuanced relation between alcohol and sexual risk behavior that is influenced by situational factors such as relationship characteristics (e.g., partner type [34, 35]; relationship duration [36]). Indeed, studies not accounting for situational factors often fail to show differences in condom use for drinking versus non-drinking sexual encounters [37, 38].

Various pathways and theoretical models have been proposed to explain alcohol-related sexual risk. Alcohol Myopia Theory and expectancy models of the alcohol-risky sex relation are two prominent theories that have been widely utilized to empirically examine this association. Alcohol Myopia Theory specifies that alcohol exerts its strongest effect on behaviors that occur in situations where there are both strong instigatory (e.g., sexual arousal) and inhibitory (e.g., HIV transmission risk) cues to engage in a desired behavior (e.g., sex without a condom; [39]). Accordingly, when strong instigatory and inhibitory cues are present, alcohol limits one's capacity to attend to distal inhibitory cues, thereby biasing attention toward more proximal instigatory situational cues [39]. In support of Alcohol Myopia Theory, experimental laboratory studies indicate that college students who have

been drinking express greater intentions to engage in sexual risk behavior [40, 41] and are less able to delay rewards as compared to sober control participants [42].

Expectancy models of the alcohol-risky sex relation postulate that one's beliefs regarding the effects of alcohol influence subsequent behavior while intoxicated [28, 43]. Thus, expectancies regarding alcohol's impact on sexual risk behaviors (i.e., sex-related alcohol expectancies) may influence sexual behavior engagement within encounters involving alcohol. Alcohol expectancy theory purports that the nature of one's beliefs, and also the strength of these beliefs, influence alcohol's impact on subsequent sexual risk behavior [28]. Thus, individuals who strongly believe that drinking disinhibits protective sexual behaviors (e.g., condom use) may be more likely to engage in sex without a condom when they are drinking alcohol.

The aim of the present review was to summarize the recent empirical literature regarding the relation between alcohol use and sexual risk behaviors, particularly condom use, among college students. This paper also discusses studies examining factors that may affect the alcohol-risky sexual behavior relation among college student samples. Specifically, the review highlights studies examining the role of sex-related alcohol expectancies and partner characteristics as two key factors that may influence the alcohol-risky sex relation.

Literature Search Methods

Database searches of PsycINFO, PsycARTICLES, Medline, and PubMed were conducted to identify published articles in peer-reviewed journals that: (a) studied the association between alcohol use and sexual risk behaviors among a college student sample; or (b) examined constructs that may influence the alcohol-risky sex relation among college students. Combinations of the following search terms were used to identify relevant articles: College, college student, risky sex, sexual risk, risky sexual behavior, condom use, casual sex, STI prevalence, unintended pregnancy, alcohol use, alcohol, Spring Break, drinking, and binge drinking. A search of references cited in relevant studies was conducted to identify additional articles.

Results

Studies Examining the Association between Alcohol Use and Sexual Risk Behavior

Findings regarding the association between alcohol and risky sexual behaviors among college student populations have been mixed. Global association studies have been conducted with college student samples to examine overall patterns of alcohol use in association with sexual behaviors. For example, Gilchrist and colleagues (2002) found that alcohol consumption during the past year was not associated with differences in the frequency of condom use among Australian female college students [44]. In a cross-sectional global association study examining the association of alcohol mixed with an energy drink and sexual risk behaviors, results suggested that college students consuming alcohol mixed with energy drinks were more likely to endorse engaging in unprotected sex, having sex under the influence of other drugs, and having sex after drinking too much [45]. In a study of college men, Olmstead and colleagues (2015) noted that young men engaged in

more unprotected sexual “hookups” in college if they had engaged in higher levels of pre-college binge drinking [46]. In a cross-sectional study of college students, there was a direct, positive association between alcohol use and reporting a sexual “hookup” in the past six months [47]. Last, in a study examining the association between alcohol use, problem drinking (as measured by the AUDIT-C) and sexual risk behaviors among New Zealand college students, results indicated that higher AUDIT-C scores were associated with a greater number of sexual partners in the past year, greater likelihood that their last sexual encounter was with a non-steady partner, and that alcohol was more likely to be reported during the last sex encounter [48]. There was no association between AUDIT score and condom use at last sex [48].

Event-based methodologies allow for an examination of the co-occurrence of alcohol use and particular sexual behaviors. For example, one study examined the co-occurrence of alcohol use and sexual behavior during Spring Break among college students; binge drinking was associated with greater likelihood of engaging in sexual behavior and also greater likelihood of condom use [49]. In a longitudinal study collecting daily diary data for 14 consecutive days collected repeatedly across each of seven college semesters, results indicated that consuming more alcoholic drinks or engaging in binge drinking on a given day was associated with greater odds of sexual behavior engagement on that particular day [43]. Scott-Sheldon and colleagues examined the association between alcohol and unprotected sex among sexually active, heavy drinking college students across multiple events within a 3-month period [50]. Condom use did not differ when comparing sexual encounters involving either heavy alcohol use or no alcohol use [50]; however, among women, partner type moderated the association between alcohol consumption and condom use such that condom use during heavy episodic drinking events was less likely with a steady partner than with a casual partner [50]. In a longitudinal, event-level study examining 1,856 unique sexual encounters among college women, Walsh and colleagues examined the association between alcohol, marijuana, and condom use [51]. Results indicated there was no association between alcohol use and condom use; however, there was a negative association between the number of alcoholic drinks consumed and condom use for sexual encounters involving alcohol [51]. Last, in a weekly diary study conducted over 2 months with U.S. college students, subjective intoxication level was not associated with differences in condom use [52]. However, greater subjective alcohol intoxication level was associated with greater likelihood of reporting sex with a casual partner [52].

Role of Sex-Related Alcohol Expectancies in the Alcohol-Risky Sex Relation

A number of constructs have been investigated as factors that may impact the alcohol-risky sex relation. Individual differences in a person's motives for sexual activity in general, as well as alcohol expectancies- that is, the cognitive, affective or behavioral outcomes one expects to occur after drinking- may influence sexual behaviors. In particular, one's beliefs regarding how alcohol affects sexual behavior (i.e., sex-related alcohol expectancies), have been shown to influence the alcohol-risky sex relation [27, 28, 31, 53–57]. Furthermore, specific drinking motives are linked to distinct sexual behaviors [58, 59]. Numerous studies indicate that alcohol expectancies predict alcohol-related HIV risk, such that individuals who strongly believe that alcohol enhances sexual arousal and performance are more likely

to engage in risky sex after drinking [28, 60, 61]. Expectancies are thought to be influenced by psychological (subjective), rather than physiological, responses to alcohol [54]. For example, among Latino college students, both social and sexual enhancement alcohol expectancies were related to sexual experiences (e.g., number of sexual partners) while under the influence of alcohol [62]. Sex-related alcohol expectancies are also related to lower levels of drinking refusal self-efficacy [63]. For example, in a sample of Australian college students, frequency of alcohol consumption was associated with greater expectancies to engage in risky sexual behaviors (e.g., sex without a condom) when drinking alcohol [44].

Individuals who believe alcohol promotes sexual risk-taking are also more likely to report alcohol use prior to sex [48] and to engage in unprotected sex after drinking [60, 61, 64–66]. Among college women providing event-level sexual episode data over 12 months, expectancies that alcohol increases the likelihood of sexual risk-taking were negatively associated with condom use when drinking [51]. Patrick et al. (2015) found that alcohol expectancies that drinking increases sexual drive moderated the association between binge drinking and sexual behaviors (when participants were in a casual or committed relationship) in a longitudinal study; the association between binge drinking and engaging in either oral or penetrative sex was enhanced among individuals with stronger alcohol expectancies [43].

Sex-related alcohol expectancies in conjunction with one's motives to engage in sex may influence sexual behaviors within encounters involving alcohol. Positive (i.e., enhancement via sexual arousal) and negative reinforcement (i.e., coping with negative emotionality) sex motives [67–69] are associated with increased STI/HIV-risk behaviors. Sexual enhancement motives, a desire to have sex to satisfy personal physical needs, has also been associated with increased STI/HIV-risk behaviors [67, 70–72]. A recent study demonstrated that alcohol expectancies for sexual risk-taking mediated the association between sexual enhancement motives and condomless vaginal sex while under the influence of alcohol among a sample of college students [73]. Findings from this study suggest that individuals with greater sexual enhancement motives may have a general proclivity for greater sexual risk-taking, including sex while under the influence of alcohol [73]. Moreover, one's belief that alcohol disinhibits protective sexual behaviors may further enhance the likelihood of condomless sex [73].

Partner Characteristics that May Influence the Alcohol-Risky Sex Relation

Several studies suggest that the association between alcohol use and high risk sexual behavior may vary as a function of relationship characteristics [34, 36, 74, 75]. The notion that there are differences in alcohol-related sexual risk behaviors based on partner characteristics is consistent with Alcohol Myopia Theory [39]. According to this theory, in the absence of alcohol use, encounters involving non-primary partners often activate restraint and inhibition of more desirable sexual behaviors (e.g., sex without a condom) due to reduced partner familiarity and concerns about a partner's sexual history [76]. Thus, alcohol may lead to unsafe sex with non-primary partners by narrowing attentional focus to the most salient aspects of the sexual situation (e.g., perception of greater pleasure associated with sex without a condom), while, at the same time, reducing a person's capacity

to focus on distal consequences of engaging in a desired behavior (e.g., potential for STI/HIV acquisition [77]). In an event-level study involving U.S. college students, alcohol use prior to sex was associated with condomless sex, but only for heavy drinking encounters involving non-steady partners [34]. Rates of condom use were identical for drinking and non-drinking occasions involving steady partners [34]. Partner type moderated the association between alcohol and risky sex such that individuals who consumed alcohol and had sex with non-steady partners were less likely to report condom use whereas rates of condom use did not vary for encounters involving a steady partner [34].

In contrast, for couples in committed relationships, condom use norms are typically well-established, with most partners opting for sex without a condom [78]; thus, alcohol-related impairment may not impact decisions about condom use in these relationships [36]. For example, Corbin and Fromme (2002) found that relationship duration moderated the effect of alcohol on condom use among college students, with alcohol effects observed for first time sexual encounters, but not for encounters that occurred with the same partner later in the relationship. In another study comparing within-subject differences between two sexual encounters, women were more likely to report having sex with new partners after drinking, relative to encounters that did not involve alcohol [74]. Results from a daily diary study of college students on Spring Break also found that the alcohol-sexual behavior relation was moderated by partner type, such that students who were in a relationship were less likely to use condoms after drinking, whereas participants not in a relationship were more likely to use a condom after consuming alcohol [49]. Similarly, as previously discussed, across multiple events within a 3-month period, partner type moderated the association between alcohol consumption and condom use such that condom use was less likely with a steady partner during heavy episodic drinking events among college women [50].

Conclusions

Alcohol use and misuse are prevalent among college students and may contribute to engagement in sexual risk behaviors (e.g., sex without a condom) that heighten one's risk for STI/HIV [6–9]. To examine the association between alcohol use and condom use among college students, our review highlighted recent research in this area. Across both global association studies and event-based studies, findings regarding the direct association between alcohol use and risky sexual behaviors among college students were mixed. However, results suggest that the alcohol-risky sex relation may be moderated by partner characteristics or other situational characteristics (e.g., perceived level of intoxication). Further, one's expectancies regarding the effect of alcohol on sexual behaviors may also influence the alcohol-risky sex relation.

Across studies, the measurement of alcohol use and sexual risk behaviors typically employed frequency measures. When measuring alcohol use, few studies assessed problem drinking, alcohol abuse, and/or alcohol dependence. Instead, measurement typically focused on the frequency and/or quantity of alcohol consumed during a particular time frame (e.g., number of drinking days in the past month) or the use of a dichotomous measure (e.g., no alcohol consumed vs. alcohol consumed). Additionally, none of the reviewed studies included biological measures of alcohol use (e.g., Phosphatidylethanol, Blood Alcohol

Concentration) or sexual risk behaviors (e.g., STIs) to complement self-reported behaviors. Measurement of sexual risk practices typically focused on engagement in sexual activity or frequency of condom use. Some studies also employed relative frequency measures of condom use (e.g., never, rarely, sometimes use a condom vs. always use a condom; [44]), which provide more general measures of sexual risk. Further, the bulk of studies focused on a single respondent within a dyad rather than examining the potential interplay between one or both individuals' alcohol use and sexual behaviors.

While most of the early research in this area employed cross-sectional methodologies, there have been several recent studies employing event-based or daily diary approaches (e.g., [50, 51, 79]). Event-level research focusing on a single recent event reduces self-report errors [33, 34] and allows for an examination of alcohol use within a single, naturalistic sexual encounter. To further clarify the association between alcohol use and sexual behaviors, future research endeavors may benefit from the use of ecological momentary assessment (EMA) methods to collect “real-time” data. Such data would facilitate a more nuanced examination of within-person covariation between alcohol use, alcohol expectancies, and situational facets (e.g., partner characteristics) across multiple, real-world events. These research efforts may further enhance tailored interventions that can better address the alcohol-risky sex linkage.

Given the association between alcohol use and/or abuse and the prevalence of STI/HIV-associated risk behaviors and adverse biological outcomes (i.e., STIs, including HIV), there is a clear need to develop and evaluate the efficacy of prevention research efforts tailored to the college student population. Optimizing future STI/HIV prevention efforts will require the adaptation of innovative, theory-based, rigorously designed interventions tailored to alcohol-using college students. Many existing efficacious STI/HIV prevention programs could be enhanced and tailored to alcohol-using groups of college students. Targeting beliefs surrounding alcohol use within the context of sexual encounters may enhance future interventions. Further, individuals may benefit from interventions that include content that addresses partner dynamics and other situational characteristics within sexual encounters involving alcohol. Such interventions offer the promise of reducing alcohol-related sexual risk behavior engagement and improving sexual health among college students.

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