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DSM-based problem gambling: Increasing the odds of heavy drinking in a national sample of U.S. college athletes?

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ABSTRACT

Despite previously found co-occurrence of youth gambling and alcohol use, their relationship has not been systematically explored in a national sample using DSM-based gambling measures and multivariate modeling, adjusted for potential confounders. This study aimed to empirically examine the prevalence patterns and odds of at-least-weekly alcohol use and heavy episodic drinking (HED) in relation to various levels of gambling severity in college athletes. Multivariate logistic regression analyses were performed on data from a national sample of 20,739 U.S. college athletes from the first National Collegiate Athletic Association national survey of gambling and health-risk behaviors. Prevalence of at-least-weekly alcohol use significantly increased as DSM-IV-based gambling severity increased, from non-gambling (24.5%) to non-problem gambling (43.7%) to sub-clinical gambling (58.5%) to problem gambling (67.6%). Multivariate results indicated that all levels of gambling were associated with significantly elevated risk of at-least-weekly HED, from non-problem (*OR* = 1.25) to sub-clinical (*OR* = 1.75) to problem gambling (*OR* = 3.22); the steep increase in the relative risk also suggested a possible quadratic relationship between gambling level and HED risk. Notably, adjusted odds ratios showed problem gambling had the strongest association with at-least-weekly HED, followed by marijuana (*OR* = 3.08) and cigarette use (*OR* = 2.64). Gender interactions and differences were also identified and assessed. In conclusion, attention should be paid to college athletes exhibiting gambling problems, especially considering their empirical multivariate associations with high-risk drinking; accordingly, screening for problem gambling is recommended. More research is warranted to elucidate the etiologic mechanisms of these associations.

1. Introduction

As indicated by the National College Health Risk Behavior Survey, college students engage in a host of risk behaviors, including excessive alcohol use, unsafe sex, illicit drug use, etc (Douglas et al., 1997). Among them, alcohol misuse has been rated by most college administrators to be the chief concern about student life (DeJong and Langford, 2002), particularly heavy episodic drinking (HED), also known as "binge" drinking, given its pervasiveness on campus and negative consequences (Wechsler et al., 1994, 2002). For example, Hingson et al. (2002) estimated that approximately 1400 U.S. college students die each year from alcohol-related causes; nearly 80% of these deaths are due to motor-vehicle crashes. In addition, student drinking is implicated in approximately 500,000 unintentional injuries, more than 600,000 assaults, and more than 70,000 sexual assaults or date rapes (Hingson et al., 2002). Also, extensive research has been undertaken in recent decades to study college student drinking and associated problems as reviewed by O'Malley and Johnston (2002) and Baer (2002).

By contrast, this body of literature on college risk behaviors has paid relatively little attention to college student gambling, although with the widespread expansion of legalized gambling throughout North America, emerging evidence has shown that youth represent a high-risk group for gambling problems (Shaffer and Hall, 1996, 2001; National Research Council, 1999; Shaffer et al., 1999; Jacobs, 2000; Derevensky et al., 2003; Huang and Boyer, 2007). For example, a meta-analysis of existing gambling studies over the past 25 years (Shaffer and Hall, 2001) estimated that sub-clinical and clinical problem gambling among college students was more than double the rates in adults; yet, out of the 139 study samples identified, only 19 were from college students, compared with 66 adult population studies.

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Albeit relatively scarce, prior college gambling research has reported associations between gambling and other risk behaviors, including alcohol use/abuse (Lesieur et al., 1991; Winters et al., 1998; LaBrie et al., 2003; Engwall et al., 2004). As such, gambling has increasingly been recognized as an emerging health problem on campus (Stuhldreher et al., 2007) and a potential correlate of college student drinking (Martens et al., 2009). However, despite previously found co-occurrence of youth gambling and alcohol use, their relationship has not been systematically explored in a national sample using standardized DSM-based gambling measures and multivariate statistical modeling, adjusted for potential confounding factors. For example, a recent study only estimated the correlation coefficients of college gambling activities and alcohol use, without using validated gambling measures (Martens et al., 2009). An earlier and also the first national survey of gambling in the general U.S. college students ($N = 10{,}765$) was the 2001 Harvard School of Public Health College Alcohol Study (CAS) (LaBrie et al., 2003). Unfortunately, although CAS included by far the largest sample of general college students in gambling research, it only compared gamblers vs. non-gamblers, without employing any standardized gambling measures to assess the level of gambling severity and its potential "dose-response" relationships with other correlates. Further, CAS did not report gambling prevalence separately by gender, and given the well-known gender differences in gambling (Lesieur et al., 1991; Winters et al., 1998; Engwall et al., 2004), its reported estimates could be biased in either direction.

Importantly, college athletes are a high-risk group for HED (Wechsler et al., 1995, 1997; Huang et al., 2006). Considering the aforementioned co-occurrence of gambling and drinking, there is reason to be concerned that college athletes, especially those who gamble, may be even more susceptible to heavy drinking. Moreover, college athletes have been reported to have higher prevalence of problem gambling (Engwall et al., 2004). These findings suggest the need for additional research into the relationship between gambling and drinking in college athletes. However, even fewer studies have investigated college athlete gambling, and the published ones thus far have been mostly constrained by small, convenience samples, and hence unable to provide representative prevalence estimates of gambling and associated alcohol use in the college athlete population (e.g., Cullen and Latessa, 1996; Cross and Vollano, 1999; Weinstock et al., 2007). It is worth noting that the National Collegiate Athletic Association (NCAA) has Bylaws (National Collegiate Athletic Association, 2009) pertaining to college athletes' gambling and substance use. Gambling in the form of sports wagering on any intercollegiate, amateur or professional team or contest is prohibited. Also banned are specific drugs, including stimulants, anabolic agents, alcohol, etc., but the alcohol use ban only applies to athletes in the sport of rifle. Tobacco use is also prohibited during practice and competition.

To date, research has found preliminary evidence that gambling athletes use alcohol more commonly than their non-gambling peers (Huang et al., 2007a). What remains unclear and needs to be further explored empirically, hence the primary objective of this study, is the multivariate relationship between various levels of DSM-based gambling severity and heavy drinking in college athletes, adjusted for potential confounders. Of note, our research question echoed several recently published journal commentaries. For example, Giesbrecht (2009) stated, "alcohol consumption and gambling often are concurrent activities, and it would be of interest to read more about convergence and divergence of heavy drinking and extensive gambling." Also, in concert with Blaszczynski's (2009) comment about gambling, "deleterious effects may occur at any level of participation," we examined the associations between heavy drinking and all levels of gambling, not just problem gambling. Finally, Petry (2009) commented, "some first steps should precede more complex study designs," suggesting that a better understanding of cross-sectional data regarding gambling diagnoses, classifications, and gambling-related harm should perhaps be the initial approach.

In view of these commentaries and the aforementioned methodological constraints encountered in previous college athlete gambling research, the present study analyzed data from a national sample of college athletes, including the DSM-IV Gambling Screen (Stinchfield et al., 2005) questions to assess the level of gambling severity. Illumination of the relationship between gambling severity and heavy drinking can enhance our understanding of the added risk and harm of gambling in terms of its associated high-risk alcohol use, and can inform the development of prevention programs and future research. Possible mechanisms and explanations for the relationship between problem gambling and heavy drinking were discussed. Additionally, males and females were also analyzed separately throughout this study to evaluate potential gender differences.

2. Materials and methods

The present study is based on survey data from the 2003 NCAA national study on gambling and associated health-risk behaviors, which, to our knowledge, is the first national assessment of problem gambling behavior among U.S. college athletes.

2.1. Survey procedure

The sampling plan was designed so that atleast 12% of the NCAA member institutions that sponsor a given sport would be selected at random to survey their athletes in that sport. Approved by the Institutional Review Boards of NCAA and participating schools, the survey was conducted in consultation with the Director of Athletics and with the assistance of the Faculty Athletics Representative (FAR) at each participating school. The FAR was provided with a specific protocol to follow and script to read which emphasized that the study was completely voluntary, each student's responses were anonymous, and voluntary completion of this study constituted the informed consent to participate, as reiterated on the survey form. The FAR distributed the survey to all athletes of a sampled team on the same occasion. The last team member to complete the survey was asked to seal and mail the pre-addressed, pre-paid envelope containing completed surveys to NCAA.

2.2. Participants

A total of 20,739 surveys were received. The response rate was between 65 and 75 percent. Males (approximately 62%) were slightly overrepresented in this sample, compared with the full NCAA student-athlete population (58% males). In regard to age, 88.8% of this college athlete sample was 18–21, 10.8% was 22 or older, and 0.4% was under 18. With respect to their race/ethnicity, 75% described themselves as white, 15% as African–American, and 10% as from another racial/ethnic group. These proportions approximate those seen in the overall U.S. population of student-athletes (National Collegiate Athletic Association, 2004). Since the present study examined gambling and alcohol use behaviors among college athletes, we only included 16,030 participants with DSM-IV Gambling Screen (Stinchfield et al., 2005) information for analyses.

2.3. Measures

2.3.1. Gambling

Problem gambling was assessed using the DSM-IV Gambling Screen (Stinchfield et al., 2005), which consists of 10 questions